Chapter XXIII
Learning and Meaning–Making in the Virtual Space

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ABSTRACT

School pedagogy is being questioned. Increasing migration as well as increasing access to information and new patterns of communication are challenging traditional school work and school curricula. Teachers' and students' positions as didactic agents seem to be changing. The individualized curriculum puts new demands on schools. Teachers not only function as subject experts but also as individual "coaches" or "mentors." To a greater degree than ever before students are obliged to understand their own learning paths and to develop strategies for their school work. A new perspective on learning is needed to capture these changes in learning in institutional settings. Our aim is to outline a new perspective on designs for learning.

INTRODUCTION

The Swedish National Encyclopaedia ("Nationalencyklopedin") is, in its own estimation, the largest information base, constructed by 4,000 experts in different fields. Its data basis is continuously updated, and to be able to use it, one has to pay (Nationalencyklopedin, 2006). Wikipedia, on the other hand, is the "free encyclopaedia," whose content is constructed by the users themselves. Anyone with access to the Internet and a free Wikipedia account can create an entry or redefine an entry in this encyclopaedia. In Wikipedia it is possible to see who wrote the initial article and who has updated it. Added to each article is a forum for discussion and critical remarks. Wikipedia is an example of what today is called Web 2.0.

The "massive amounts of content" (Anderson & Whitelock, 2004) in digital space make traditional curriculum content and much of the teachers' subject knowledge obsolete. The development of local curricula and new demands on individualized content knowledge can be understood from this background (Alexandersson, 2003). The new emphasis placed on the students' capacity to communicate, collect, and judge information, as well as to present this information to others, involves a design perspective on learning (Kress & Selander, 2006). Interestingly enough, we also see developments towards stricter curricula, with international criteria for the assessment of knowledge acquisition. This development also calls for an institutional understanding of school activities.

FROM PREDEFINED LEARNING OBJECTS TO SHARING MATERIAL ON THE INTERNET

Koschmann (1996) argued that four different paradigms in the development of IT for learning could be identified. When computers were introduced into classrooms, the focus was on efficient learning; the CAI-paradigm (*computer assisted instruction)* was constructed on a behaviouristic perspective on learning. Each application was constructed in relation to a specific set of predefined goals. These goals were divided into small learning objects that the student worked through. The student became a passive receiver of predefined information. The role of the teacher was to check that the student had learned the different steps correctly. The feedback process was integrated in the program as a randomized feedback with phrases like "Well done!" or "Not so good, try again." Rapid e-learning applications can still be referred to this paradigm.

In the next paradigm, teachers as persons disappeared from the learning scene. The ITS-paradigm (*intelligent transportation systems,*

influenced by *artificial intelligence*) was based on the proposition that education could be globally improved by providing every student with a "personal" digital tutor. These applications were similar to those in the CAI-paradigm. The difference was mainly that it was the interaction between the computer and student, and not between the teacher and the student, that was in focus.

The third paradigm, *Logo-as-latin,* was built on a constructivist perspective of learning, inspired by Seymour Papert's (1995) use of the computer programming language *Logo* which he used for young children. The students could themselves play the role of the teacher. The program was also directed towards more general educational objectives. The fourth paradigm, CSCL (*computer supported collaborative learning*) was based on socio-cultural theories. The focus shifted towards the understanding of language, culture, and aspects regarding the social context. The applications were open, designed for the student's different aims and ways of using them. Interaction, communication, and assessment through portfolios now became the main strand of educational thinking (Dysthe, 2003). In this paradigm, the focus was on the learning process itself, not the outcome.

Today, yet another paradigm is emerging, focusing on the user as a producer of his or her own learning resources. The shift in interest from hardware to software, and from technological to pedagogical possibilities, indicated a shift in school work, although not all teachers have been trained for this change.

The educational Semantic Web highlight the role of the new tools in education, in relation to what is understood as learning in schools (Anderson & Whitelock, 2004). The concept "the educational Semantic Web" underlines a change in the understanding of communication, in line with semiotic tradition. Instead of seeing communication as a series of steps in the transportation of a message from a sender to a receiver through a medium that in different ways disturbs the

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