

From Paralyzing Myths to Expansive Action: Building Computer-Supported Knowledge Work into the Curriculum from Below

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ABSTRACT

Technology-driven CSCL solutions are often difficult to integrate into the instructional practices of a school community. We report on an intervention study in a middle school where the entire teaching staff engaged in a year-long effort to change their instructional practices by means of incorporating information and communication technologies in pilot curriculum units. The teachers set out to make pedagogical changes along two dimensions, from procedure-oriented drill to problem- and principle-oriented knowledge production, and from encapsulated classroom work to networked learning in partnerships between the school and organizations outside. They employed conceptual models to anchor their change efforts 'upward' in a long-term general vision. They also anchored their change efforts 'downward', in videotaped examples of classroom practice. Technical tools were subordinate to a pedagogical object. For the pedagogical object to gain momentum and become a true motive for the teachers, they needed to take expansive actions that moved them from myth-driven to object-driven discourse. These expansive actions were actions of redefining the students as capable, and consequently redefining a new model of teaching as possible.

Keywords

Computer-supported knowledge work, school change, expansive learning

INTRODUCTION

In the school year 2000/2001, we conducted a longitudinal intervention study at the Jakomäki middle school in Helsinki, Finland. The school is located in a socio-economically disadvantaged neighborhood of the city, with some 30% of the students coming from recent immigrant and refugee families. The school has 30 full-time teachers, all of whom participate in the intervention. The intervention, called Knowledge Work Laboratory, was a continuation and extension of a Change Laboratory intervention we conducted in the school in 1998/99 (Engeström, Engeström & Suntio, in press).

A central outcome of the intervention work in 1998/99 was a modeling of the inner contradictions of the teachers' activity system (Figure 1).

"...the inner contradictions of the work of Jakomäki teachers appeared only in latent forms, as dilemmas within components of the activity system, not yet as aggravated contradictions between components causing constant manifest troubles or 'double bind' situations in everyday practice. The two lightning-shaped arrows in Figure 1 represent the latent contradictions we found salient in the teachers' activity system. The first one (within the object) was manifested in the teachers' repeated talk about students as apathetic -- and in occasional utterances where they would contradict their very assessment. The second latent contradiction (within the instruments) was manifested in the teachers' repeated talk about the need to control the students' conduct -- and in occasional statements suggesting that the students should be trusted." (Engeström, Engeström & Suntio, in press)

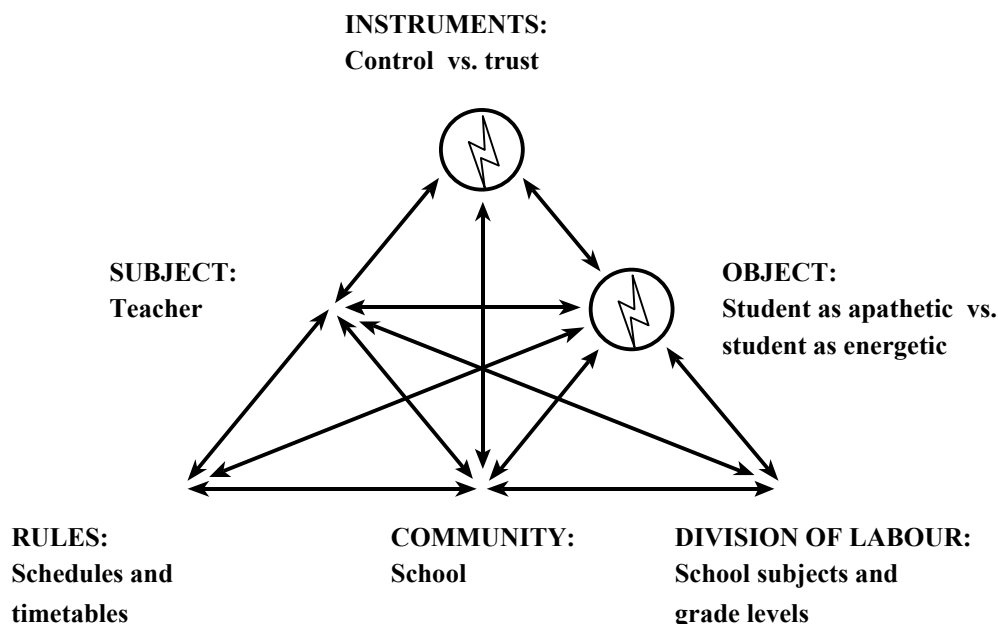


Figure 1. Inner contradictions of the teachers' activity system at Jakomäki middle school (Engeström, Engeström & Suntio, in press)

In the first intervention, we found that the teachers cherished a stubborn collective myth of their students as 'apathetic' beings who could not be trusted. What surprised us was that in spite of this paralyzing myth and the 'underdeveloped' state of the inner contradictions of their activity system, the teachers went on and created potentially expansive and quite durable changes in their work practices.

"In similar intervention studies we have conducted in other organizations (e.g., Engeström, 1999), the practitioners' involvement in serious and sustained change efforts has typically been explained by aggravated contradictions in the activity system. Such aggravated contradictions generate disturbances and double bind situations in everyday work, making it evident that something must be done.

In Jakomäki, this explanation works poorly. As we have already indicated, the teachers did not experience the kind of urgent pressure or pending crisis that would make expansive transformation a deeply felt necessity. Yet the teachers were very willing to design and try out new forms of practice. (...) Instead of dwelling on problems and their causes, they formulated calls for change. This is in stark contrast to our experiences in many similar projects, where the practitioners have interpreted the absence of crisis as a license to protect the status quo." (Engeström, Engeström & Suntio, in press)

Furthermore, we found that in Jakomäki the teachers had an unusually rich and strong relationship to their students' lives – that is, to the dynamics of their object. The 'staring back' of students' reality (Hargreaves, 1997, p. 6) is of course common to any school located in a tough neighborhood. In Jakomäki, the teachers seem unusually sensitive to and energized by this 'staring back' – paradoxically, in spite of their cherished myth of student apathy. As we concluded in an analysis of the first intervention (Engeström, Engeström & Suntio, in press): "Students may be talked about in negative, nostalgic and frustrated terms. But they are not deleted or covered up with the help of fashionable jargon."

Our hypothesis was that the teachers' ability to 'surpass themselves' (Bereiter & Scardamalia, 1993) demonstrated in 1998/98 was not an accidental phenomenon but an historically accumulated property of their activity system. Thus, in the intervention of 2000/01 we *first* of all expected to witness again such a movement from paralyzing myths to expansive action. We *secondly* assumed that this movement would be mediated by the teachers' turn to the students, that is, by anticipatory and actual involvement in students' expectations, reactions and lifeworlds.

In the intervention of 2000/01, the teachers specifically wanted to integrate tools of information and communication technology into their instruction. That is why the intervention was called Knowledge Work Laboratory. They wanted to do this as a step toward new pedagogical practices, not merely because it is fashionable to use computers in teaching. The teachers were very suspicious of technology-driven packages and models of instruction. We might add that our research group also has no particular interest to promote information and communication technologies, and certainly no preferred model or package that we would propagate. Thus, in groups of two to four members, the teachers selected pilot topics, curriculum units in which they applied information and communication technology to facilitate pedagogical change from

below. Nine pilot units were formed, and 27 out of the 30 teachers were involved in their design and implementation. So the challenge here was to overcome the phenomenon of evaporating technological reforms brought in from the outside (Cuban, 1986, Tyack & Cuban, 1995). A key question was: Can the teachers as a collective create in their school a sustained movement that turns available information and communication technology tools into locally grounded means or infrastructures of serious pedagogical change?

In the following, we will first introduce the concepts of myth, object and expansive action as key theoretical constructs to be used in our analysis. We will also briefly describe the procedures and conceptual tools of the Knowledge Work Laboratory. After that, we will present and analyze data from the fall 2000 sessions of the Knowledge Work Laboratory, demonstrating the nature of myths expressed in the teachers' discourse. We will then move on to an analysis of data from the winter 2001 laboratory sessions in which we can see how a turn toward the object began to take shape and mediate a transition toward expansive action. At the end, we will present some very preliminary conclusions, aware of the fact that our analysis of the intervention process is still in progress.

MYTH, OBJECT AND EXPANSIVE ACTION

According to Roland Barthes (1972), "myth transforms history into nature." Myths eliminate the tensions of human activity from our ways of speaking and thinking.

"The world enters language as a dialectical relation between activities, between human actions; it comes out of myth as harmonious display of essences."

"Myth does not deny things, on the contrary, its function is to talk about them; simply, it purifies them, it makes them innocent, it gives them a natural and eternal justification, it gives them a clarity which is not that of an explanation but that of a statement of fact." (Barthes, 1972)

The language of myth "organizes a world which is without contradictions because it is without depth." In other words, myth hides away contradictions, it harmonizes and normalizes them.

Myth may be contrasted with the concept of object. According to Leont'ev (1978), the object is the true motive of activity. Object is the horizon of possible actions, a permanently unfinished project. As Jean Baudrillard puts it:

"In our philosophy of desire, the subject retains an absolute privilege, since it is the subject that desires. But everything is inverted if one passes on to the thought of seduction. There, it is no longer the subject which desires, it's the object which seduces. Everything comes from the object and everything returns to it, just as everything started with seduction, not with desire. The immemorial privilege of the subject is overthrown." (Baudrillard, 1990)

Karin Knorr-Cetina (2000) adds the important observation that today's expert activities are increasingly oriented at epistemic objects with extraordinary holding power, motivating force and developmental perspectives.

A move from myth-driven to object-driven talk and action requires expansive actions. By expansive action we mean actions which question the existing mythical definitions of the activity and redefine the object of activity in ways that radically broaden the scope of possibilities for the community (Engeström, 1987).

KNOWLEDGE WORK LABORATORY AND ITS CONCEPTUAL TOOLS

Before the actual intervention sessions, we first videotaped lessons where teachers used information and communication technologies. After such a lesson, we asked the students and teachers (first separately, then jointly) to reflect and comment critically on the lesson – the commentaries were also videotaped.

In the first laboratory sessions in the fall of 2000, the teachers watched and discussed selected excerpts from the lessons and commentaries. On the basis of these discussions, the teachers selected nine topics and formed nine groups to design new curriculum units to serve as spearheads of change. Plans for the new curriculum units were presented and discussed in sessions in the winter of 2001. The new units were implemented in the spring of 2001, and implementation lessons were again videotaped. At the end of the school year, the new units and their implementation were assessed jointly.

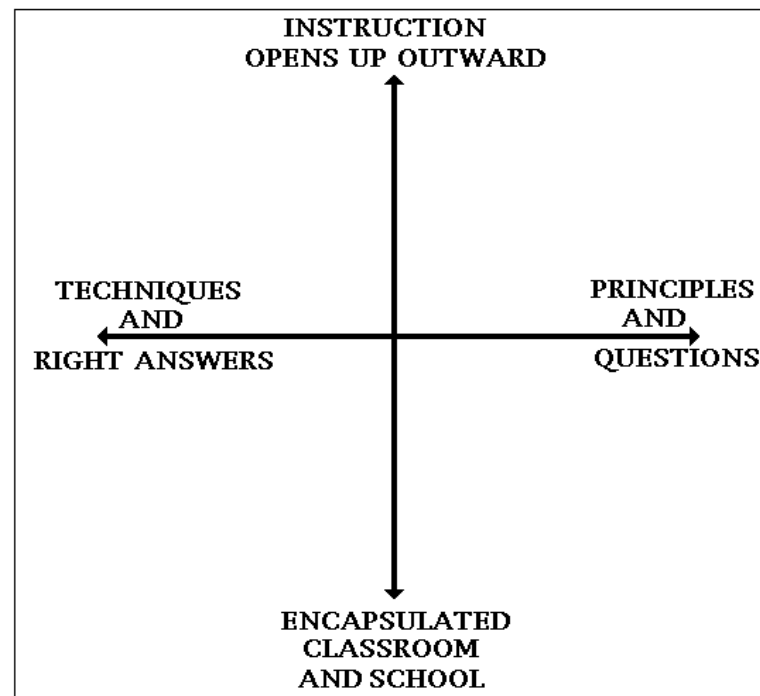


Figure 2. Two dimensions of change in instructional practice

Practices of school instruction and learning may be problematized along two dimensions: (1) the cognitive dimension, ranging from procedure-oriented drill to problem- and principle-oriented knowledge production, and (2) the socio-motivational dimension, ranging from encapsulated classroom work to networked learning in partnerships between school and organizations outside. We used this simple two-dimensional framework as a shared conceptual meta-tool in our intervention sessions at the school (Figure 2).

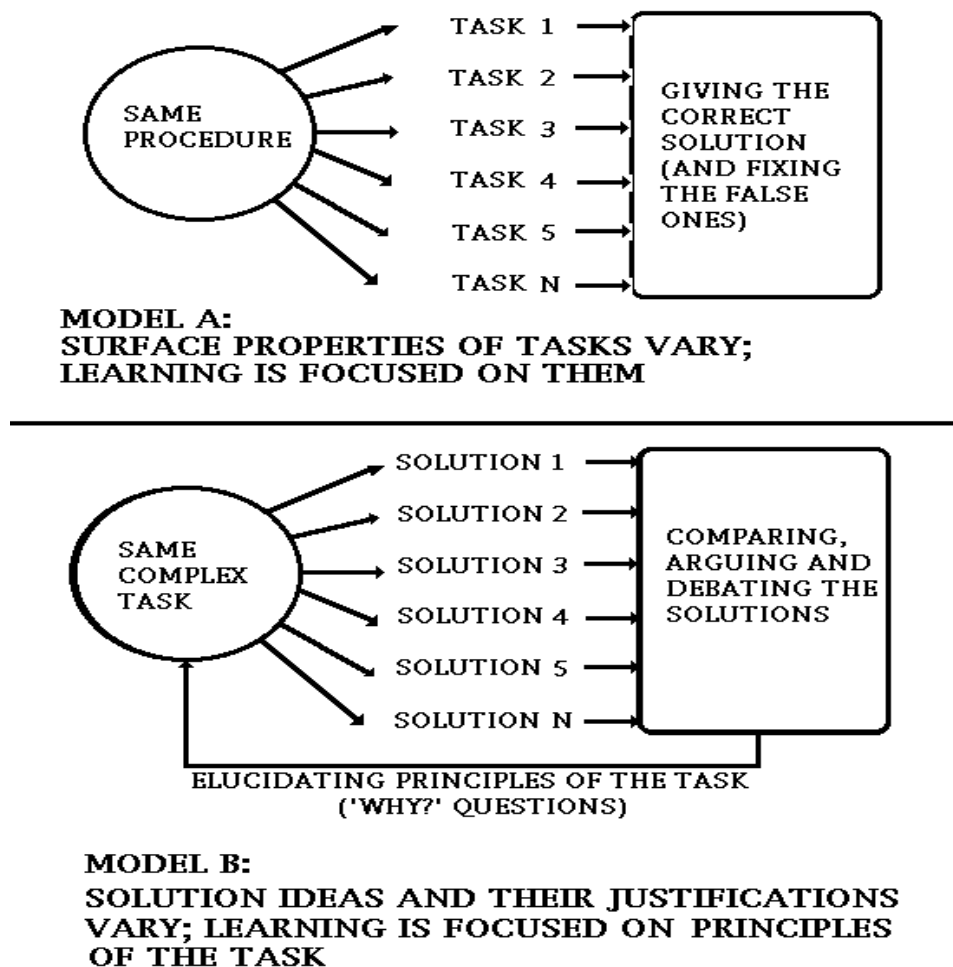


Figure 3. Two models of instruction: variation is the mother of learning

Another central conceptual tool we used in the laboratory sessions distinguishes between two basic models of instruction (Figure 3). This tool is based on Ference Marton's (personal communication) insight: variation is the mother of learning. In the traditional model A, variation is in the surface properties of basically similar tasks. In the challenging model B, variation is in the different solutions produced by students to a single complex problem or task.

FALL SESSIONS: PARALYZING MYTHS

In the first laboratory sessions in the fall of 2000, the teachers repeatedly explicated two myths that were used as warrants for rejecting the possibility of change in instructional practices. The first myth is crystallized in the statement "They just don't have the basic skills. And basic skills can only be learned by Model A." The second myth is condensed in the statement "Certain students only want to copy." Below is an example from the third laboratory session.

Excerpt 1: Laboratory session #3, November 1, 2000

DISCUSSION OF MODELS A and B

Teacher 13: As I see it, in order to be able to work according to model B, they must first learn the basics about the subject, they must have basic knowledge, and one almost has to do it according to the simple model A. Only when they have some knowledge about the subject, then one can go deeper.

The two myths seemed to be unshakable. The more we challenged and questioned them, the more solid they seemed to be. Against this background, we were quite relieved when the teachers actually did select topics and form groups for designing the pilot curriculum units.

WINTER SESSIONS: TURN TOWARD THE OBJECT

In late January, 2001, we started another set of three laboratory sessions, devoted to the presentation and discussion of the teachers' plans for the new units. We were struck by how different the tone of these discussions was compared to the ones held only some three months earlier. Pilot group 3 which designed a unit called 'Project work and ICT professions' is a case in point. During the planning process, the group took up and discussed their idea with the students who expressed enthusiasm for the idea of studying ITC professions by actually taking the roles of different professionals in a real production process. Such a discussion with students was *an expansive action*, quite atypical to the everyday instructional practice in the school. It meant that the teachers plan was not merely an ideal image; it was already grounded in *a turn toward the object*, the students and their concerns. Below is an example from the fourth session.

Excerpt 2: Laboratory session #4, January 31, 2001

PILOT GROUP 3: "PROJECT WORK AND ICT PROFESSIONS" (8th grade)

Teacher 3: Will all the students have sufficient skills? Such a question came up in our group.

Teacher 13: With us...

Teacher 4: They certainly will.

Teacher 13: Yes, they will. Our plan is that when the graphic artists, for example, are put into their own group, one of us, either me or Annie and possibly someone else will be there all the time available, helping them. And the content producers will get guidance from the Finnish language teacher, and so on.

Notice that Teacher 13 is the very same teacher who in Excerpt 1 insisted that complex tasks typical to model B cannot be used because the students do not have sufficient basic skills. Now she had been member of a pilot group which had designed a curriculum unit very much based on complex tasks of type B – and she insisted that the students will indeed have sufficient skills. This kind of change was pervasive throughout all the nine projects. There was practically no use of the two paralyzing myths in the three winter sessions. Excerpt 3 below sheds some light on the dynamics of this change.

Excerpt 3: Laboratory session #4, January 31, 2001

PILOT GROUP 3: "PROJECT WORK AND ICT PROFESSIONS" (8th grade)

Researcher: Someone said that this is so fancy, did you mean too fancy? It is after all a fact that more and more young people go into those professions...

Teacher 6: Well, and a certain part of the students... some small part of the students will be really into it.

Teacher 20: And I think it is very good to try, it doesn't matter if you try to accomplish a bit too much. What have you got to lose, nothing!

Teacher 5: Yes, and the outcome, it's not so clear what measures we use to assess it. I mean it's not the best outcome that you've got the fanciest CD-ROM and the timing and division into groups were the smoothest. It's an outcome and a result always when the process has worked...

Teacher 20: ...We will help the students as much as we can and that will lead to an outcome, whatever it'll be. If we do this in a traditional way, we won't learn from what we do now, and do it better next year, and so on. We can all only succeed in this.

Teacher 3: I guess many of us think that this pilot will waste, when you know those certain students, that it's a waste of time...

Teacher 5: Well, like Pat (Teacher 20) said, the idea was not to plan something traditional, where we pretty much write the students' correct answers ahead of time, that this is how they'll answer. Wasn't this supposed to be a plan?

In this excerpt, Teacher 6 and Teacher 3 questioned the plan of the pilot unit as being too fancy and unrealistically demanding – a waste of time for the majority of the students. Teacher 20 (Pat) defended the plan, pointing out that they had nothing to lose. Importantly, Teacher 20 was not a member of this particular pilot group. She was a teacher of immigrant students, used to having to find untraditional methods to reach students who do not know Finnish and have little idea of the workings of the traditional

Finnish classroom. Teacher 5 was a member of the pilot group. Challenged by the critics and supported by Pat, she nicely captured the pedagogical idea of model B, as an opposite to “something traditional, where we pretty much write the students’ correct answers ahead of time.”

PRELIMINARY CONCLUSIONS

In the case analyzed in this paper, the entire teaching staff of a middle school engaged in a year-long effort to change their instructional practices by means of incorporating information and communication technologies in pilot curriculum units. However, the means were not seen as the end – or to put in activity-theoretical terms, the tools were not confused the object. The teachers set out to make pedagogical changes along two dimensions, from procedure-oriented drill to problem- and principle-oriented knowledge production, and from encapsulated classroom work to networked learning in partnerships between the school and organizations outside. They employed conceptual models, in particular the models designated as A and B type of teaching (Figure 3), to anchor their change efforts ‘upward’ in a long-term general vision. They also anchored their change efforts ‘downward’, in videotaped examples of classroom practice. Technical tools were subordinate to a pedagogical object.

For the pedagogical object to gain momentum and become a true motive for the teachers, they needed to take expansive actions that moved them from myth-driven to object-driven discourse. These expansive actions were actions of *redefining the students as capable, and consequently model B as possible*. When pilot group 3 submitted its idea to discussion with students, it took such an expansive action which in itself redefined the students as capable of having meaningful points of view. On the other hand, the teachers’ expansive actions of turning toward the object were in large part induced by and performed in debates in the laboratory sessions. In both Excerpt 2 and Excerpt 3, the optimistic articulation of students as capable and model B as possible happened through debate, in response to questioning, critique, and support. Of course these discursive expansive actions had to be accompanied by equally expansive practical actions in classrooms. The two require each other. The pulsating transitions between these different contexts of action are of crucial importance for the accomplishment of sustainable innovation from below in a school community.

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