Obstacles Supporting Expansive Learning
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Abstract: We discuss key findings inspired by concepts of expansive learning theory by illustrating results from empirical research on technology-mediated cross-border collaboration in an educational setting. The study reports from a three-year school development project and aims to examine what factors that influence expansive learning and how we can design for it.

Keywords: expansive learning, activity theory, cross-border collaboration, technology-mediated

Introduction
The digitalization of schools enables new forms of teaching and learning and demands major shifts in teachers’ professional practice. Thus professional development needs to be redirected from refining established practice (Higgins et al. 2007) towards pervasively transforming practice (Mishra & Koehler, 2006). A transformed teaching practice requires comprehensive learning towards the notion of expansive learning (Engeström, 2001).

In expansive learning the subject of learning is transformed from an individual to a collective or a network of activity systems. Engeström’s (2001) concept of expansive learning belongs to the third generation of activity systems theory where two interacting activity systems and its interrelated elements: subject, object, tool, community, division of labour, and rules, is the minimal unit of analysis. An activity system may be an organisation, or a group of people working together in order to solve a task and eventually begin to question the existing order and logic of their activity. The aim of this study is to examine and understand which factors that influence teachers’ expansive learning by studying a situation where different activity systems collaborate as part of the project design, thus results in expansive learning. We address the following research question: How can we design for expansive learning in technology-mediated cross-border collaboration?

Empirical case and analytical framework
We report from a school development project, where researchers and practitioners collaborated in an action-oriented approach to develop innovative cross-border teaching models between Scandinavian school systems. Since the project design rely on distance collaboration teachers were put in a new situation where traditional forms of teaching is not an option since using technology is a necessity to mediate the geographic distance. In addition, the teachers were speaking closely related, yet distinctive languages. Hence they were facing obstacles related to technological and linguistic difficulties due to the project design. During the project teachers were working in transnational teams, referred to as “class-match groups”, consisted of teachers, their students, and researchers from the respective countries. Within the class-match groups cross-border didactical design were planned, implemented and evaluated in a virtual classroom. A didactical design refers to a pre-planned sequence of lessons with specified learning objectives. The investigation involved 22 mathematical teachers and 600 students from 9 middle and upper elementary schools. A variety of data such as; classroom observations, chat logs, video productions, video calls, shared images and documents on mutual accessible forums, interviews and content analysis of teachers’ planning and reflection notes provides the basis for our analysis along with activity theory as an analytical framework.

In the empirical case, the class-match group can be seen as two local activity systems, each consisting of national teams of teachers, researchers, and students, together with their local classrooms, equipment, and school policies. These two local activity systems interact and collaborate with each other in a cross-border, technology-mediated context. Even though the national teams try to be aligned with the overall rules and division of labour defined by the Nordic virtual classroom as such, they still need to submit to the local national rules, division of labour and the tools defined by their local team or school organisation. Differences in conditions may cause tension between the teams.

During the analysis, our attention was drawn towards obstacles or difficulties of different kinds. We came to recognize obstacles as playing a crucial role in the project, since they continually arose, were tackled and overcome. It seemed that these contradictions originating from slight cultural differences, language barriers and differences regarding rules and tools constituted a key element in providing opportunities for expansive learning to occur. In the planning phase, conflicts originated for example from different teaching philosophies regarding levels of student governance or varying ambitions. In the implementation phase, difficulties arose for example when technology shut down and failed to support the collaboration resulting in a somewhat chaotic learning situation.
Evidence of expansive learning

We have identified two sources of evidence supporting that expansive learning did occur during the project both from an outer perspective (the researchers) and from an inner perspective (the teachers).

The first source of evidence is supported by an analysis regarding progression of didactical designs complexity and pedagogical value (Willermark & Pareto 2015). In this analysis we focus on the innovation process involving all teams and didactical designs, where we identified four distinct phases of the process. These phases cover all seven steps in the cycle of expansive learning, where 1) contradictions are identified, 2) analysis of the organizations’ histories are made, 3) models are constructed, with new and improved procedures and 4), the new models are tested in the in the organization, and 5) are implemented in daily work. Finally 6) reflection on the process is carried out and 7) the new practice consolidated (Engeström 2001).

The first phase is characterized by a “Practitioner-driven initial innovation” where the researchers deliberately resisted from intervention in order to allow for innovation driven by the teachers. However, the teacher teams focused on how to organize the collaboration, rather than the learning content. This led to the primary contradiction (step 1), where the teachers started to question the value in conducting cross-border teaching. This led to the next phase “Researcher-invention of a new boundary object” in which the researchers tried to meet the growing doubt from the practitioners: Here the researchers worked on designing a tool to support the planning of new didactical designs, where the issue of didactical value is addressed from start. This phase corresponds to step 2 in the expansive learning cycle, where doubts in some members are reflected in more questioning and further investigations related to the overall objective. The third phase was characterized by a “Researcher-supported collaborative innovation” where practitioners explored new didactical designs with support of the new boundary object and the researchers as active participants in the design process. This phase corresponds to step 3-5 in the expansive learning cycle, where a new approach towards didactical design innovation is discovered, modeled, and implemented in the activity systems. The forth phase was characterized by a “Practitioner-driven informed innovation” where the practitioners have internalized and adopted the new thinking and approach from previous phases, as evident from their autonomous and confident acting through the planning, implementing and evaluative their final didactical designs. This phase corresponds to the last two steps in the cycle, the reflection on the entire process and consolidating the new practice.

The second source of evidence is the teachers’ reflections. Teachers reported numerous examples of obstacles during the project e.g. how different teaching philosophies had to be negotiated between teachers from different countries, as illustrated by: “We wanted different things” or how the cross-boarder collaboration was hard to handle due to technological failure, as stated by: “There were a lot of technology related difficulties”. However teachers also described how they gained knowledge about the teaching profession in general, but also how they developed subject-specific competences when collaboration with their Nordic colleagues, as illustrated by: “We gain a lot as we tested each other's theories and thoughts.” Furthermore, they described how they both developed technology skills and practiced their general problem-solving ability.

Conclusions and implications

Obstacles could serve as catalysts for innovation and change, and consequently expansive learning, even though they often imply disturbances and conflicts. We argue that three types of obstacles, despite being sources of frustration and sometimes despair, were the main reasons for expansive learning to take place: 1) language difference, which became an obstacle as the mean of communication, but also made teachers reflect over conceptual meaning; 2) contextual difference, which became an obstacle as the frame of reference differed due to national or cultural variations and thus made teachers reflect on and re-evaluate their own practice; and 3) distance collaboration, which became an obstacle since technology sometimes failed, lagged or had inadequate sound, which resulted in teachers developing their communication skills by becoming very explicit, clear and concrete and by developing a flexible mind-set and innovative ways to cope with the situations.

References


