Learning across sites: Crossing Boundaries with Digital Resources

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Learning across sites...

- Learning across sites: New tools, infrastructures and practices
  - Learning what's' given
  - Framing and relevance structure
  - Learning to produce for ....
Learning across sites...

- Expectations...
  - In the last decade very high expectations as to what information and communication technology (ICT) can achieve in terms of increased efficiency and quality enhancement,
    - More than one level of description is needed
Learning across sites...

- Types of task
  - Degrees of openness
  - Socio-scientific issues in ICT-related settings
  - Types of problems

- Tasks as resource for engagement and motivation
Learning across sites...

- **Network society**

  - Development of meta-communicative and meta-cognitive competence to interpret and orient towards the many and diverse demands and requirements that are situation and context specific.

  - This requires more than a 20th century canon of competence which can be summed up in “the three Rs” - reading, writing and arithmetic. However, what exactly a 21st century canon entails is a question of much discussion and covers areas such as digital literacy, cultural competence, networked literacy and - above all - capacity to take on complex and unexpected challenges.
Learning across sites...

- Metaphors
  - Internalization
  - Externalization - Appropriation
    - External memory systems - emerging objects - adaptive systems
Learning across sites...

- Types of questions/issues addressed in TEL:
  - Large scale - performance and efficiency
  - Knowledge development, coordination and sharing
  - Emerging interaction structures and talk
Learning across sites...

- How can we accumulate knowledge in and between different approaches in TEL?
  - Why is it an important problem?
Learning across sites...

- Oversold and underused - classroom culture
  - Historical perspective on computers in education
  - Ethnographic analysis includes analysis of what goes on when the ‘screen lights up’.
  - The robust results is strongly connected to the fact that the classroom social function change when the students work with computers, which includes structures of participation and the teachers’ role.
  - However in which direction differs in the different classrooms, this is related to nature of the technology, weather we speak about generic or specific technologies, frequency and intensity of use and centrality to the curriculum.
Learning across sites...

- **Systemic versus dialogic research in TEL**
  - General issues
    - Different ways of doing research
    - Data collection, types of data, levels of descriptions, units of analysis
    - Implications for reliability, validity and generalization
    - Types of claims and explanations
Learning across sites...

- Systemic research in CSCL
  - Models of how specific features structure - affect collaboration:
  - Specific features of knowledge domains
  - Configuration of elements, variables
  - To discriminate between variables with a significant impact on learning
  - Impact on activity and outcome
  - Formulation or reformulation of models of collaboration and learning

- Externalization - Models - formalizing

Internalization
Learning across sites...

- Dialogic research in CSCL
  - Interdependency
  - Sense-making
  - Dynamic understanding of context
  - Multiple layers of activities
  - Mediated
  - Emerging talk
  - Sequences – but not only
  - Historical influence
  - Appropriation
Learning across sites...

- Institutional context
  - A context of relevance
  - New technologies/pedagogies are adjusted, changed, transformed
Learning across sites...

- Experimental studies and in a number of experimental designs within specific fields of knowledge, it has been possible to show positive results in favor of CSCL environments (mathematics, science, and writing).

- Pupils and students perform better when they participate in learning environments where the content is structured in defined ways, and where they cooperate with the help of information and communication technology.

- At same time, it has only been possible to a lesser degree to demonstrate this when the studies are performed in common classrooms.

- This clearly points in the direction of institutional conditions having a decisive importance. In order to analyze institutional conditions we need a set of terms that are especially appropriate for understanding the relationship between the different elements in a social system.
Learning across sites...

- Hakkarainen, et al 2002

- Compared two Canadian classrooms with a classroom from a Finnish school

- In a Canadian project emphasizing how the design of the surrounding environment contributes towards a deeper understanding of the academic content, a number of positive findings were reported (see e.g. Scardemalia & Bereiter, 1994). These findings have been confirmed through studies comparing Canadian and Finnish classrooms (Hakkarainen et. al 2001).

- The most interesting aspect of these findings was that the Canadian students - who had been exposed to more demanding forms of work over long periods - had the best results.

- In the Finnish classrooms that were studied, the students used fact-oriented patterns. This means that the students were not particularly engaged in activities that stimulated a deeper understanding and involved more advanced cognitive operations within the various areas of knowledge. The students solved problems with help of factual information gained from the Internet and from textbooks.
Learning across sites...

- Key issues: if learning with ICT requires higher order skills, or ICT can foster such skills

- School as social institution - how ICT is picked up and transformed in such settings.

- Its beyond doubt that ICT both become part of social practices that transform important aspects of schooling however this transformation is not necessarily in one single direction - is can strengthen both teacher-led instruction and student-oriented approaches
Learning across sites...

- Productive learning and ICT is dependent on four main factors.
  1. Active engagement among students and teachers.
  2. The second factor is that students’ works in collaboration.
  3. The third factor is systematic feedback on conceptual development and performance.
  4. The fourth is anchoring in realistic task which create and mobilize motivation among the students.

This review study underline the key point that productive learning is constituted by different factors, and the productive use of technology is dependent on the social organization of the learning activities.
Learning across sites...

- The systemic approach provides important findings in terms of what works and what does not across contexts,
  - Effectiveness of CSCL-applications might be systematically related to student’s and teacher’s previous experiences or features of the institutional context

- The dialogue approach provides insights about how and why participants responding to various normative features of the setting.
  - In order to analytically make sense of this, there is a need to examine the sequential unfolding of activities along different time scales.
Concluding remarks

- Learning over time: trajectories and creation of new objects
- Shared understanding of what it is that affords learning, regardless of whether learning is conceived as “internalization” or appropriation.
- What is required for productive learning to happen; cognitive conflicts, break downs, framing, reframing, perspectives, gaps, disagreement and elaborations.
- All of these concepts point to the fact that students need to go beyond what is given in order to develop more advanced problem solving skills and understanding of complex domains of knowledge;

- Social and cognitive dimensions - not reducible to....
Concluding remarks

- Incommensurable research practices or merge at analytical level - intelligent reasoning (Phillips 2006)
  
  - Model based approaches to learning and social practices as premises'
  - Formalization and practices based
  - Historical transformation
Learning across sites...

- **Multiple levels**
  - ICT works at different levels: cultural, social and cognitive
  - Key point: to understand the relation between ICT;
    - infrastructures, medium, tools and human cognition at these levels
  - Design: design principles and tools that scaffold types of guided inquiries'
  - Results: conceptual understanding - and productive use
    - Discrete and connected concepts
Learning across sites...

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