

# Purposeful Learning across Collaborative Educational Spaces

Teresa Cerratto Pargman, Stockholm University, Sweden, [tessy@dsv.su.se](mailto:tessy@dsv.su.se)

Nuno Otero and Marcelo Milrad, Linnaeus University, Sweden, [nuno.otero@lnu.se](mailto:nuno.otero@lnu.se); [marcelo.milrad@lnu.se](mailto:marcelo.milrad@lnu.se)

Daniel Spikol, Malmö University, Sweden, [daniel.spikol@mah.se](mailto:daniel.spikol@mah.se)

Ola Knutsson and Robert Ramberg, Stockholm University, Sweden, [knutsson@dsv.su.se](mailto:knutsson@dsv.su.se); [robban@dsv.su.se](mailto:robban@dsv.su.se)

**Abstract:** This paper presents the overall goals and preliminary results of an on-going research project that aims at: understanding the intricacies and complexities of introducing mobile technologies into schools' curriculum and accepted teaching practices; analyzing actual transformations that the use of mobile technologies in schools brings to contemporary forms of learning. The results of the project will contribute to a better understanding of new media literacies and their implications for curriculum design and everyday educational practices.

## Introduction

Digital competence and social networking practices are today seen central for citizens of the 21st century (Lucas and Moreira, 2009). However, recent studies have shown that most of the innovations related to the use of ICT in schools have not impacted pedagogical or school development (Buckingham & Willett, 2006; Coiro et al., 2008; Snyder et al., 2010). The problem is far from being trivial since online communication and interaction are not longer a separate phenomenon from children's daily lives. In this socio-technical reality, schools, in particular, are deeply challenged as they are confronted with questions such as: What kinds of strategies, skills and competencies are learners developing outside schools? What are they learning in their interaction with digital tools? Which opportunities for learning and work do digital tools really afford? How are schools aligned to the conditions for learning and teaching that the use of digital tools promotes today? Goodyear (2011) claims that we are facing two perceptible changes in the field of educational research. The first is a shift in our sense of the spaces and contexts in which education takes place, as different learning activities are becoming more commonly distributed across a variety of contexts. The second change is a wider understanding with regards to the conception of educational praxis, acknowledging the growing importance of design. In order to better understand some of these emerging challenges, we have recently started a 3 years research project aiming at: i- understanding the intricacies and complexities of introducing mobile technologies into schools' curriculum and accepted teaching practices and ii-analyzing the actual transformations that the use of mobile technologies in school bring to current and future school practices. In order to address these research challenges, we have decided to focus on two distinct but complementary domains as starting points for our investigation: the teaching of mathematics and Swedish as a second language.

## Research Questions

- Why and how do schools introduce mobile devices into mathematics and language learning everyday classroom practices? And which pedagogical standpoints should be considered in such endeavor?
- How does the use of mobile devices transform classrooms' practices and, in particular, learners' understanding of mathematical and linguistic concepts? And how are mobile devices adopted and shaped by teachers and learners' practices in mathematics and language learning classrooms?

## Methodology

The research project consists of three main phases: i-examining teachers' ideas and prejudices about using mobile devices in the classroom; ii- preparing the introduction of mobile devices into the classrooms of mathematics and language domains; iii- studying the transformations that the introduction of mobile devices bring to the classrooms' talk structure and examine what kinds of instruments teachers and learners can create from mobile devices introduced into the learning of narrative genre and basic geometrical concepts. The project is grounded in design-based research (DBR) research methods (Brown, 1992; Hoadley, 2004, Mor & Winters, 2007), and it thus blends empirical education research with theory-driven design of learning environments. For studying types of transformations the use of mobile devices brings to the classroom, we have chosen to focus on the analysis of verbal interactions (Kerbrat-Orecchioni, 1990; Pachler et al., 2010) and on the outcomes produced by the learners such as multimodal texts, diagrams, graphs, films, interactive presentations, experiments etc. from the perspective on multimodality developed by Kress (2010).

## Ongoing Data Collection

We have so far conducted 20 interviews with K-12 teachers working in four different schools located in Sweden. Three of the schools have already implemented the use of tablets (Ipads) in their classroom and one of

them is considering starting using tablets in their teaching. So far, teachers of Swedish as a second language, who daily use tablets for teaching purposes, mentioned children use these devices for expressing themselves as they can easier communicate their ideas through films, presentations, and drawings. They make use of applications such as Dragon speech recognition software that convert voice into text helping them to visualize how they and others talk and thus use spellings and grammar in their conversations. Audio books are also an application that students having Swedish as a second language appreciate, as they can read texts while being introduced to the prosody of the Swedish language. We think in some ways, Ipads are supporting affordances of visuals for communication that help children to both learning about the target language and to express themselves using different communication channels (cf. visual, auditive, pictorial). In teaching mathematics, teachers consider children's use of applications including graphs, pictures, images or films, as tools that scaffold children's understanding of abstracts concepts.

## Next Steps

The next steps of the project involve two distinct phases: 1-exploration of the design space and 2-study of transformations reflected in the classrooms' interactions and students' outcomes. In phase 1, we will continue conducting interviews and future workshops with teachers. The aim with the interviews and workshops is to identify: a) current problems in the teaching of mathematics and language concepts of narrative genre and basic geometrical concepts; b) teachers' views on mobile devices being used in the classroom; c) advantages and disadvantages related to learners' use of mobile devices in schools. At the end of this phase we will have a clearer picture of potential scenarios and supporting digital tools along with concrete pedagogical models. This should allow us to make concrete design proposals to the teachers and scaffold the development of phase two. In phase 2, we will direct our efforts toward the study of the transformations that the use of tablets or other type of mobile device bring to the classrooms' interaction structure and we will examine what kinds of instruments mobile devices actually become in teachers and learners' hands. During this phase we will also, together with the teachers, construct design and pedagogical interventions aimed to explore social, pragmatic, epistemic and reflexive transformations in classrooms (Cerratto-Pargman, 2006).

## References

- Brown, A. L. (1992). Design Experiments: Theoretical and Methodological Challenges in Creating Complex Interventions in Classroom Settings. *Journal of the Learning Sciences*, 2(2), 141-178.
- Buckingham, D., & Willett, R. (2006). *Digital generations: Children, Young People, and New Media*. Mahwah, NJ, Lawrence Erlbaum Associates.
- Coiro, J., Knobel, M., Lankshear, C. and Leu, D. (eds). (2008). *The Handbook of Research on New Literacies*. Mahwah, NJ: Erlbaum.
- Cerratto Pargman, T. (2006). Pour une conception des technologies centrée sur l'activité du sujet. Le cas de l'écriture de groupe avec collectifiel. Dans *Modèles du sujet pour la conception : Dialectiques activités développement*, Dirigé par Pierre Rabardel et Pierre Pastré. (pp. 157-188). Octarès, Paris.
- Goodyear, P. (2011). Emerging Methodological Challenges. Book chapter in Markauskaite, Freebody & Irwin (Eds). *Methodological Choice and Design*, Volume 9, Part 4, pp. 253-266. Springer Netherlands.
- Hoadley, C. (2004). Methodological alignment in design-based research. *Educational Psychologist*, 39 (4), 203-212.
- Johns, A.M. (1998). "The visual and the verbal. A case study in macroeconomics." *English for Specific Purposes* 17: 183-197.
- Jungk, R., & Müllert, N. (1987). *Future workshops: How to Create Desirable Futures*. London, England, Institute for Social Inventions.
- Kerbrat-Orecchioni, C. (1990). *Les interactions verbales*. Vol. I. Paris: Armand Colin, Pp. 318.
- Kress, G. R. (2010). *Multimodality. A social semiotic approach to contemporary communication*. London: Routledge
- Lucas M and Moreira, M. (2009). Bridging formal and informal learning- A case study on students' perceptions of the use of social networking tools. *Lectures notes on Computer Science* 5794, pp. 325-337.
- Mor, Y., & Winters, N. (2007). Design approaches in technology enhanced learning. *Interactive Learning Environments*, Taylor & Francis, 15(1): pp. 61-75.
- Pachler, N.; Bachmair, B., Cook, J. (2010). *Mobile Learning: Structures, Agency, Practices*. Springer, London.
- Snyder, K; Panichi, L; Lindberg, O. (2010). On the issue of quality of experience in technology supported learning. *Designs for Learning*. No, 1-2/ December 2010 pp. 42-51.

## Acknowledgments

We would like to thank the Swedish Research Council for funding the PLACES project.