HELSINGIN YLIOPISTO
HELSINGFORS UNIVERSITET
UNIVERSITY OF HELSINKI
KASVATUSTIETEELLINEN TIEDEKUNTA
PEDAGOGISKA FAKULTETEN
FACULTY OF EDUCATIONAL SCIENCES

Teachers' Agency and Identity in Flipped Learning

Marika Toivola
Doctoral Researcher
Learning, Culture and Interventions Expert Group, Faculty of Educational Sciences, University of Helsinki, Finland
marika.toivola@helsinki.fi

INTRODUCTION AND GOALS

Currently, the flipped classroom (FC) and flipped learning (FL) seem to be attracting many mathematics teachers who are trying to change the traditional learning culture of mathematics to a more learner-centered and active way of studying the subject. The FC is often associated with watching videos at home and doing "homework" at class. FL seeks to promote students' autonomy and collaboration, and to meet the needs of individual learners [1, 2]. FL denotes professional development in which teachers consciously place themselves in a position that requires them to completely rebuild the role of the teacher.

Despite these promises, both FC and FL are under-theorized, and under-researched in general. This doctoral study focuses on whether and how these novel pedagogical approaches allow teachers to enact a sustainable educational change in their classrooms and what are the processes of professional growth and development in play for the teachers. The study holds that a successful educational change asks for teacher agency, i.e. capability to critically evaluate and reconstruct their work conditions and professional identities [3], and contributes to existing research knowledge in two ways:

- The study helps understand the process of conceptualization of the phenomenon of FL.
- The study is contributing in particular to efforts at promoting a change in the teaching of mathematics.

THEORETICAL FRAMEWORK AND OBJECTIVES

A sociocultural approach will be used to understand teachers' agency and identity [4] in FL, in particular applying the concepts of figured worlds, positional identity, and authoring [5]. The focus is on the dynamic interplay of iterative (past), projective (future) and practical–evaluative (present) dimensions of agency [3]. Teachers' professional development is seen as a change in their participation with a set of resources; whether, how, and why those resources are recognized and acted on can be understood as the influence of one's identity [6].

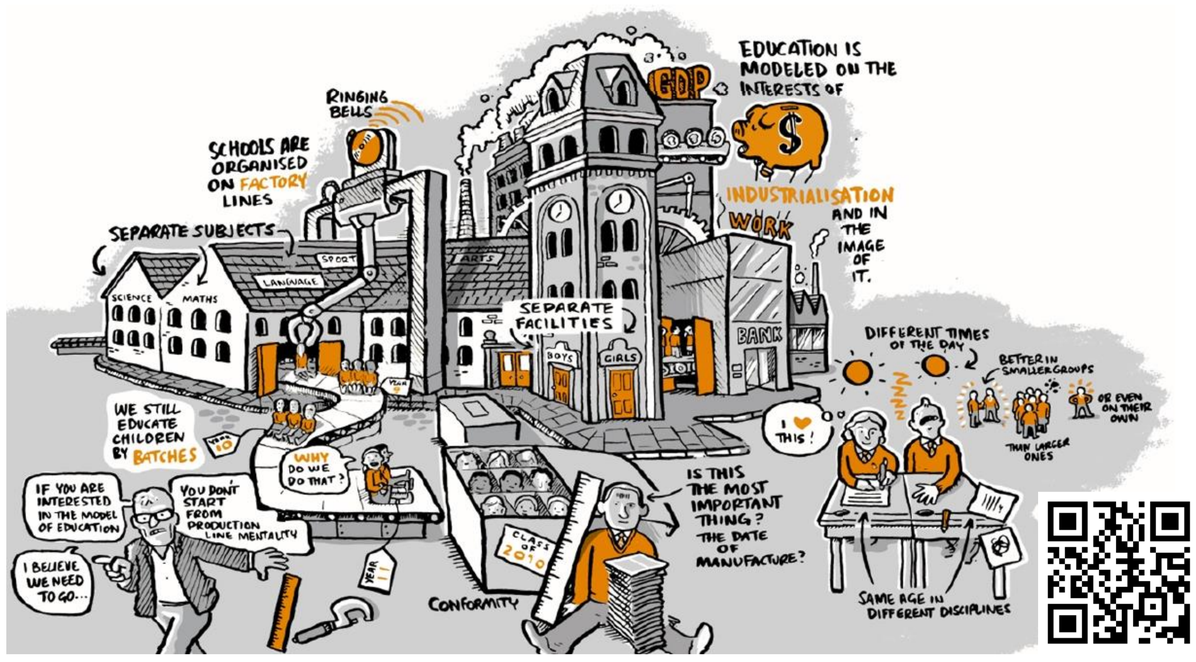
The dissertation consists of three co-authored sub-studies:

- *FL as a mathematics learning culture*: How do pioneering teachers characterize FL as a learning culture? What potential do the teachers see in FL to transform teacher and student agency and identity in mathematics classrooms?
- *Teacher agency in educational change*: What kind of agentic orientations do teachers display in their accounts of implementing FL in their mathematics classrooms? Which sociocultural tensions emerge in the process, and how are they managed?
- *Teachers' identity and professional growth*: What is the potential of implementing FL to challenge and support the teachers' professional identities as mathematics teachers? What kind of development of their professional identity, if any, do the teachers report in their accounts of implementing FL?

RESEARCH METHODS AND DATA

The study follows ethnographically grounded logic-of-inquiry. An inductive research approach and the constant comparative method will be used. In study 1, the concepts of figured world, positional identity, and authoring inform the discourse analysis of the teachers' accounts of the culture of FL. In study 2, agentive orientations are indicated by critical evaluations or attempts to reconstruct one's conditions of work and will be analyzed according to three temporal dimensions of agency. The passages involving display of agentic orientations will be reanalyzed to identify sociocultural tensions in accounts. In study 3, discourse analysis will be used to analyze how the teachers assemble situated meanings about what identities are relevant to their work. Attention will be paid to their attitudes and ways of feeling, ways of knowing and believing, as well as ways of acting and interacting.

Four mathematics teachers (from primary to upper secondary school), who are well known pioneers of FL in Finland, have been purposely selected as 'extreme' and 'positive deviant' cases for this study. Their semi-structured in-depth interviews, texts from their blogs, observations in the classes, and questionnaires for their students accounts form the empirical data for this study. The data were gathered from 2013 to 2016.



REFERENCES

[1] Toivola, M. & Silfverberg, H. (2016). The Espoused Theory of Action of an Expert Mathematics Teacher using Flipped Learning, *13th International Congress on Mathematical Education* (ICME)

[2] Toivola, M., & Silfverberg, H. (2015). Flipped learning –approach in mathematics teaching – a theoretical point of view. Proceedings of the Symposium of Finnish Mathematics and Science Education Research Association, Oulu

[3] Rajala, A., & Kumpulainen, K. (2017). Researching Teachers' Agentic Orientations to Educational Change in Finnish Schools. In M. Goller & S. Paloniemi (Eds.), *Agency at work: An Agentic Perspective on Professional Learning and Development* (pp. 311-329). Springer.

[4] Boaler, J., & Greeno, G. G. (2000). Identity, agency, and knowing in mathematics worlds. In J. Boaler (Ed.), *Multiple perspectives on mathematics teaching and learning* (pp. 171–200).Westport, CT: Ablex Publishing.

[5] Holland D., Lachicotte W. Jr., Skinner D., & Cain C. (1998). *Identity and agency in cultural worlds*. Cambridge: Harvard University Press.

[6] Hand, V & Gesalfi, M. (2015). The Joint Accomplishment of Identity. *Educational Psychologist*, 50(3), 190–203

I am recognized as an expert of FL in Finland and to some extent abroad at the practical level. In 2012, Ken Robinson's talk "Changing Education Paradigms" made me realize that I need to become a better teacher. I made some technical changes in teaching and the new way of acting got me into a new way of thinking about teaching and learning. In 2013, when I started this PhD study, there were 10 of us who were networking and from whom to choose the teacher informants. These days, our Facebook group has 15 000 members.