The transformation of Teacher Work through digital learning platforms

Lars Birch Andreasen, Aalborg University, Denmark
Rene B Christiansen, University College Zealand, Denmark

This paper examines a new mandatory initiative in the Danish primary school regarding digital learning platforms for students, teachers and parents and regards this as a part of a global process that leads to a transformation of teacher work and thus everyday life for teachers in schools. We list four transformation tendencies in the educational system regarding teacher work and discuss these in relation to a recent research project which aims at looking at the organizational and didactical implications for teachers working with digital platforms in the Danish primary school.

Keywords: Teachers’ competences, digital learning platforms, transformation of teacher work.

The paper brings forward some results from a part of the project “Using Digital Learning Platforms and Learning Resources” supported by The Danish Ministry for Children, Education and Gender Equality and The National Agency for IT and Learning. The material presented here is very much a work in progress since the project is still on-going. The findings presented here comes from a part of the above mentioned project where 14 danish primary schools in the period 2016-2017 is carrying out design experiments with digital learning platforms.

THEORETICAL FRAMEWORK AND RESEARCH QUESTION

During the past 10-15 years international experiences with e-learning and use of digital platforms in the educational system have been examined (Dumont et al. 2010). However the knowledge of how the use of digital learning platforms in teaching and learning transform the practices in schools is still relatively scarce (Murgatroyd 2010, Adams Becker et al. 2016). The Horizon Report (Adams Becker et al. 2016) shows that for the most part digital learning platforms in schools are understood as social media platforms that teachers and students use much the same way they use other open and free learning resources on the internet. However, in our case digital learning platforms refer to institutionalized educational media that is anchored and supported by the municipality and the government and thus specifically designed for the use in the school system by teachers, students and parents. Furthermore, the platform is mandatory to use for teachers in the Danish primary school. This challenges teacher work in a way not seen before and this lead to our focus on examining what teachers’ decisions, understandings and responses of these new task and demands are.

Up to now the educational system has to some extent remained widely untouched by new forms of educational design supported by digital technologies as Murgatroyd states: “Many teachers still teach subjects in a way that resembles how this was done 25 years ago or more. The curriculum, rather than being radically different from what it was before the widespread use of the Internet began in 1993–94, is basically similar with more items added, giving less time for creativity” (Murgatroyd 2010: 259-260). Digital platforms in primary schools challenge this culture and teachers are forced to innovate on their daily routines to meet these external and governmental decisions.

The empirical material that forms the basis of this paper comes from working with a group of teachers in a primary school in Denmark. The teachers have participated in a future workshop and a design workshop and thereby developed and launched design experiments (Brown 1992) that we have followed. The material is analyzed based on current research on the development of
teachers’ competences and professional teacher work, e.g. Darling-Hammond & Bransford (2005), who focus on teachers’ learning in and from practice, and who analytically highlight as well the content of teaching, the learning process and the context of learning. Furthermore, we use Rogers’ (1983) key principles for sustainable innovation as an analytic tool to understand the choices teachers make when asked to transform their practice.

A systematic literature review (Nordenbo et al. 2008) have outlined three key competences for teachers: (1) Entering into a social relation in respect of the individual pupil, (2) directing the teaching work of the class and gradually ceding responsibility of establishing and maintaining the rules to the pupils, and (3) possessing competence in the general teaching-learning process and in the individual subjects taught.

As an addition to this Sahin et al. (2010) emphasize teachers’ digital competencies (Sahin et al. 2010: 547) and the UNESCO ICT Competency Framework for Teachers (UNESCO 2011) uses the term digital literacy for teachers and list key competences that teachers who embody digital literacy are able to master in their teacher work. Among them being: - The understanding of ICT in education; referring to the understanding of basic principles of using ICT in teaching. - Curriculum and assessment; referring to ICT offering new approaches to skills in the curriculum. - Pedagogy; referring to the possibilities of multiple entrances for the benefit of students with different learning profiles. - Teacher professional learning; referring to the continuous development of teacher professional competencies using ICT to add to his/her pool of educational resources and in this being able to validate the quality of the resources found (UNESCO 2011: 14).

From this list it also comes clear that “the ict-teacher” is a person who uses ICT in his/her classroom to create better learning situations for the students and/or are able to create different learning situations that cannot in the same way be achieved without using ICT.

In the case of new digital learning platforms for teachers, students and parents the challenge is yet another: How can teachers and students (and later on parents) use this new mandatory platform in the everyday teaching and learning in schools? This brings us to the issue of meaning and transparency; what can teachers gain from integrating their teacher work in a digital learning platform? What’s in it for them? At the same time as teachers must be able to act according to these basic competencies, other factors are needed if teachers are to transform their work using digital platforms: Rogers (1983) talks about innovation in according to practices and lists five elements that has to be transparent for practitioners in order to transform their everyday practice (Rogers 1983: 15-16).

There has to be, says Rogers, a clear advantage; the transformation of practice must lead to better practice - or at least the practitioners must carry this assumption. Next there has to be a level of compatibility present. By that Rogers refers to an innovation that is related to “existing values, past experiences, and needs of potential adopters” (Rogers 1983: 14). If a new kind of practice or a new technology is not compatible with existing values it is not likely to be adopted, according to Rogers. Furthermore, the level of complexity has to be on a balanced level; by this Rogers refers to the way an innovation is understood or perceived by those - in our case primary school teachers - who are going to carry out the actual work. Then comes the element if trialability - the possibility to try out what is going to be innovated - in this case, the transformation or mediation of teacher work in a digital milieu; and last the element of
observability: is the innovation (of a certain practice) able to be seen by others? Is it easy to understand for people outside the group of innovators?

In the findings section below we will bring forward the five categories of Rogers as a tool for analyzing our research question which is:

- When teachers transform parts of their teaching work practices into a digital learning platform, what transformations can be seen and what is the rationale behind them?

Through our work with primary school teachers we are able to contribute with preliminary answers to the above questions and thus contributing to the pool of knowledge about how teachers adapt to the ongoing demand for transformation of professional teacher work that is one of the most insisting discussions in the educational system today.

DATA COLLECTION

Data has been collected during our participation in two workshops where groups of teachers have worked on developing design ideas for transformation of teacher work through a digital learning platform. In these workshops we have had talks with the teachers during their work and they have produced a variety of design ideas that we have grouped.

TRANSFORMATION OF TEACHING AND TEACHER WORK

The transformation of everyday teacher work has undergone heavy discussion during the past decade. In this section we use two resources to point out the needs for an understanding of teachers and teacher roles. Lenoir points out five factors that on a large scale pushes the educational system and its staff to re-think their practices (Lenoir 2011: 108-111). These can be summed up by pointing out that the knowledge gained during the past half century regarding psychology, didactics, children, pedagogy, and society should lead to a fundamental discussion about how schools are conducted and how teaching and learning are understood. However, Lenoir fails to mention technology and educational media as a dimension or factor that challenges teacher work. This aspect is more clearly stated in a paper by Stephen Murgatroyd (2010) that points out four factors that call for the transformation of teacher work in school:

1) The view that the skills needed for the 21st century are different from the skills needed in last century (Partnership for Twenty First Century Skills 2008, Ananiadou & Claro 2009)

2) The awareness that student profiles are changing and the role of the educational system has to develop new solutions in forms of new educational formats, that can provide appropriate solutions for a future labour market (Nanfito 2013).

3) Disruptive technologies and the demand for new synchronous and asynchronous formats to be developed for teaching and learning (Lindsay 2016).

4) The demand for accountability and ableness (and willingness) for the educational system to be able to demonstrate visible (and often measureable) outcomes (Figlio et al. 2004).

In one form or another all of the four factors address new digital media in relation to teaching and learning and all four of them has its advocates and its opponents. In this matter we do not want to go further into discussions about these pros and cons but merely point out
that whether you argue that these four are beneficial for the educational system or they are counterproductive and dangerous there seems to be a broad consensus that these tendencies in the practical outcome of political initiatives both local and worldwide are the areas to focus on (Murgatroyd 2010).

The schools and the municipalities are forced to respond to these factors and they do this according to Murgatroyd in a strategic way: Murgatroyd labels 21st Century Schools and these tendencies they are subject to as “The Factory Model of Schooling … [which is an educational institution forced to develop] … “a load-up strategy … [alongside an] … “innovation strategy” … [that should lead to an institution where teachers and students design solutions that make them able to] … “teach less and learn more” (Murgatroyd 2010: 263).

To sum up, the two key concepts in Murgatroyd’s analysis is innovation and design (Murgatroyd 2010: 264). This means that one way of addressing these four factors or tendencies is to view them as design problems or design challenges (Laurillard 2012) that calls for innovative solutions.

So teaching and educational institutions are transforming - and so is professional teacher work within these institutions. Digital platforms run alongside these transformation initiatives. We will now look further into the context of digital platforms in Denmark at the moment.

SOME EMPIRICAL FINDINGS

Our empirical findings so far show that teachers during these transformation processes of teacher work:

- are reflective of their choices and deselections made.
- are aware of the consequences these choices will have on their practice.
- choose design ideas that support ongoing activities.
- are aware that their willingness for experiments are low and that their choices result in the development of practice and not new practice itself.
- have a lot of ideas of how to change and improve the actual design of the platform (which probably is very difficult to achieve), but fewer ideas when it comes to the actual educational use of the current design.
- have a hard time recognizing the relevance and advantages of the transformation of teacher work through digital learning platforms. Our study shows that is difficult to crack the code.

These transformation choices of teacher work support, develop and/or challenge existing practices. This is not new in teacher research and is a well-documented way for teachers to cope with the complexity of teacher work (Darling-Hammond & Bransford 2005, Darling-Hammond 1997, Lortie 1975). The complexity of teacher work leads to a certain kind of design ideas namely ideas that are compatible with the teachers’ underlying assumptions about teaching and learning. Assumptions that have a major influence on the pedagogical design that they choose (Lindsay 2016: 883).

Below we will focus on the ideas developed by the teachers at the workshops at the primary school, and afterwards consider the five factors or principles that Rogers stated need to be present for teachers to transform parts of their practice: a clear advantage for the users is essential if the transformation is to be successful, there has to be a level of compatibility present, complexity must in some way be able to be reduced or transformed, it must be able for users to try out the actual transformation choices and it must be able to show and communicate the transformation to
others. In the light of Rogers it is probably furthermore fair to assume that teachers in their transformation when developing an existing practice are in danger of missing out some of the potential that lies in the digital platforms for more radical transformations.

During the workshops, the teachers developed ideas for design experiments that they would like to try out. The design ideas that the two groups of teachers ended up formulating was:

**Group 1:**

“We want to investigate whether outer-directed students will profit (in terms of learning, and learning more) from using the platform to teach via the flipped learning method”.

In this work the teachers produce instructional videos that the students shall see at home with their parents.

“The purpose is to see, whether the understanding is increased when the examination of the videos is carried out in a home setting. The intention is that every time a student has watched a video he/she must ask themselves if or if not they understood the video and whether they watch the video with an open or closed mindset. Sign: The behaviour of these outer-directed students in the beginning of a lesson changes to be more active and confident (“I know what and how I can do this task”)”.

**Group 2:**

“It is a well-known problem that teachers and pedagogues has limited possibilities of planning their teaching together. This is a problem. Our design proposal suggests that a firm time frame will be allocated in our work table for common planning for teachers and pedagogues. This could be a weekly common working day that last till 5 pm. All teachers and pedagogues shall be familiar with the learning platform and the platform is to be the basis of this common preparation and planning.”

We will now turn to the five principles from Rogers and point out the rationale that these groups of teacher find in their choice of field of transformation of a part of their teacher work:

**A need to be able to see a clear advantage:**

Both teacher group 1 and 2 can see an advantage in their choice of transformation ideas. They are both based on discussions they have had prior to this project - and the new perspective is that they have discussed how the digital learning platform can help them in dealing with these issues; for group 1: “doing something with these outer-directed students” as one teacher from the group puts it: “We have for a long time wanted to do something about it … they take up much of our attention and time”; and for group 2 especially the pedagogues have sought after solutions to be better able to collaborate with the teachers in terms of planning. During the two workshops it became clear that the teachers also wanted this - and that the digital platform combined with a weekly planning afternoon together could be an answer to this.

**A need for compatibility:**

The two suggestions by group 1 and 2 meet a high level of compatibility. According to Rogers “an idea that is not compatible with … [existing and common shared] … values and norms of a social system will not be adopted easily” (Rogers 1983: 15, our insertion). In both groups the needs to carry out these initiatives - an environment, both virtual and on campus, for common planning between two professions that need to work closely together during the week (group 2); and the need to take steps to include a certain type of students better in the
class community via task-based assignments (group 1) - are insistent and current.

A need to deal with complexity:
In group 2 the need to deal with the complexity of everyday work is quite clear; there is an important and urgent need to structure the week differently. They not only want to use the platform for planning together, they also want to do so in the same room at the same time. This is an attempt to reduce some of the complexity that comes with urgent decision-making, and the skills developed when using the platform can be easily distributed when they work together.

A need for trialability:
The level of trialability is relatively high: these experiments using the platform is on a realistic level: In group 1 the teacher have produced the planned videos and they are used in the class for this particular type of students.

A need for observability:
It is easy to observe what is actually taking place: are these videos produced and are they seen by the students. Here we see the need for observability from the teachers of group 1 - they insert “a sign”; how are the students acting in relation to the videos? In group 2 the common practice can be observed (also by their colleagues) till late in the afternoon and the common amount of work being produced in the digital platform is transparent to all in the group and can be shared by colleagues and management.

As we can see from the discussion above the design ideas of the two groups meet the principles suggested by Rogers and therefore hold the opportunity and potentiality to become a new, transformed part of the everyday work of the teachers and pedagogues. However, we are still in the middle of the activities and therefore it remains to be seen how these actions go and if they do become successful or at least useful for the teachers.

FURTHER RESEARCH
As part of the national initiative mentioned above, all Danish primary schools has to implement a digital learning platform by 2017. It is essential that this initiative is followed closely, as the transformations that will take place in the practices of teachers' everyday life in schools are of key interest for the research on understanding professional teacher work and the development of teacher competences. Further knowledge is needed about what processes of teachers work are easily transformable and which parts are more difficult and why this is so.

Whether digital learning platforms contain a qualitative potential in the meaningful transformation of teacher work is yet to be examined further, but our preliminary studies show that radical transformations has not materialized in this work with digital learning platforms.

REFERENCES


