**The materiality of teaching: a genealogy public semantic data**

My thesis is about how ideas about the biodigital child is changing measures of objectivity within pedagogy and education research. I ask how changing imaginations of the classroom within a new surveillance paradigm can let us revisit the question of what a teacher does. What work they perform and whether it can be measured. More specifically I ask how semantic data changes the accountability with the school system?

I apply to the Science Studies Colloquium with a hope of getting your support for my investigation at moment when I’m planing a trip to the Uninett 2017 conference in Trondheim. The trip could be described as a climax in my ethnographic research, as I am nearing the end of my data-gathering.

Topic

My thesis is about the evolution of the Education Technology (EdTech) landscape and the role of human identification within post-human approaches to learning. Throughout my research I have encountered computer scientists working with questions at the core of educational research and pedagogy as well as pedagogues that construct, or cares for, computer systems. For example the computer engineer is needed to point to the difference between talking about learning designs – as the product of teaching - and talking about designing for learning – the engineering of tools. Pedagogues can perform both functions, there has been a willingness to treat the materiality of learning as secondary to the internal processes (Sørensen, 2009). On the other hand post-human approaches to learning science is intimately linked with cybernetics.

The co-construction of a new culture of experimentation within education governance and science has raised the stakes for the surveillance of pedagogues. What does teachers do? What ‘work’ do they perform? And can it be measured? These are the questions that form the basis not only of my work, but of many within the emerging fields of learning science, learning/teaching analytics etc. The one that can answer this question wields a lot of influence. I pose these questions not simply because of my concern with schooling, or even politics. My interest lies with learning as a branch of (multidisciplinary) science, and the wider associations of ‘education’.

By engaging with the hybridization of expert cultures from pedagogy and computer science I hope my work will contribute to an understanding of post-human approaches learning. Furthermore, by studying the architecture of surveillance practice I hope the thesis can show to how one can understand the historiography of such new forms of computing in education.

Methods

The thesis is an ethnomethodological account of the computerization of schooling. It is based on a grounded approach and the feminist literature on the ethnography of infrastructure. What I do is that I try to look at the ‘frames’ in which measures of learning is made objective, and their historical contingencies. There are many intricacies to be solved; such as who and what that is to be the research object. I take as my premise that idea of objectivity result (at least in part) from what we know the teacher (as the pedagogue) to be doing. ’m thinking is that this is really a question of being able to ‘see’ the subjective position of the teacher among the inter-subjective interactions of the school (and its materialities).

At the end of last year I did a participatory observation at a secondary school in the throws of implementing a cloud based computer system and was at that point trying to investigate the influence of financial technologies (Fintech) on the education sector. My focus was the position of the teacher in relation to the accounting devices that are co-produced in the new technology. From this starting point I however also ventured out from the original location and began to follow the position of the teacher within its abstractions; its ontology within the large information infrastructures of the wider education system.

By studying how Microsoft 365 developed as a framework for a ecosystem metaphor that co-evolved between these cites and communities of practice I developed an understanding of the personal computer as the object of my investigation. In the first part of the study I had participated as a substitute teacher, and as an observer in the classroom, in meetings and seminars, as well as in daily life in the teachers’ office. Both then, and later on, I also talked to other staff, like IT-supervisors, teaching-supervisors, and administrative-supervisors, about changing tasks, systems and strategies. I have also been in a meeting with the managers of the municipality’s IT services.

In the second part of the study, I began investigating cites outside of the spaces of the school. I had already partaken in several conferences (small and big) in which I learned about the education technology market. Both within the school and within these forums for the technology providers the idea of ‘deep learning’ gained a lot of attention. The term also caught my attention because it was identical to the name of Google’s new ground breaking Artificial Intelligence technology.

By working on the problem of how to analyze ‘deep learning’ as a knowledge/boundary object within the school system I came to shift my gaze towards the sociology of high-tech in education and the politics behind of LA. By pursuing these questions further I got a permission to be an observer at the meetings of the ‘Learning Comity’ (Læringkomiteen). The comity is an open forum for interested organizations, hosted by Standards Norway, but in practice run by the Center for ICT in Education. The body is responsible for discussing applications of international (or transnational) standards in the Norwegian education system, and the body consists of representatives from the Norwegian Directory for Education (UDIR), Institutions in higher education, publishers, and the education technology sector.

Through this process I began to follow Uninett’s Feide technology. I ask how it acts as a mediator within the education technology landscape, and a framework of ‘interfaces’ between different contexts of regulation. I ask how technical convergence is enacted as social convergence? How Uninett’s computer engineers are intervening into the ethics of openness in education and adjusting the governance of education to the values of privacy, in ways that teachers (by virtue of their position) cannot. At the end of November I am going to the Uninett 2017 conference. At the end of the year Uninett splits up into two organizations; a infrastructure specific and application specific. When I visit the Uninett conference in Trondheim next week I will therefore be studying how such an ethics of governance is translated into the infrastructure of education research.

Theory

I study valuation practice and the economizing influences of accounting devices in the organization of schools. In the last few years there have been several research papers outlining a framework for the critical study of digital data and education (Selwyn, 2014) and the idea of open education (Bayne, 2015; Edwards, 2015). Such approaches to education are also intrinsically linked to the study of governance, and similar calls to a critical framework has emerged in relation to the study digital educational governance (Williamson, 2016). Nonetheless, few, if any, employs minimalist methodologies. Methodological minimalism is often associated with forms of new materialism. I do indeed want study the vibrant materiality of so-called networked approaches to digital education governance. I have wanted to study the ontology of the one-laptop-per-child policy in action. By studying the laptop as what Latour has described as ‘object institution’ I hope to look at the construction of openness as a technoscientific achievement.

My interest in with convergence as a concept within Actor-Network Theory (ANT). I follow ‘deep learning’ as a boundary object in the construction of the experimental system of learning science in education. The idea of boundary objects, as it was developed by Susan Lee Star, is well known as formative to the study of information infrastructures. The social-ontology of ‘deep learning’ is closely tied to the technical ontologies of ‘networked approaches’ to curriculum development. Moreover, it also works as a form of accountability in the classroom, and the spaces of the school. The contexts in which these forms of accountability are enacted are distributed across the many cites of the education system, including the classroom and the educational technology conference.

To be able to ‘see’ the materiality of teaching require one first to understand how to study the opposite perspective of the student’s subjective perspective, that have been theorized by Estrid Sørensen. And, secondly, one has to figure out how to be an outsider within the architecture of the education technologies that inhabit the materiality of the school. Like Sørensen has shown, this is just as hard in relation to the invisible infrastructures of the culturally bound – ‘traditional’ in Sørensen’s words (or sunk, to use a term from the economic sociology of innovation) - as it is with the invisible infrastructures of the virtual (or digital; or algorithmic).

This is the triangular model that describes the relationship between the actors (teacher, student-pupils, and media) in this (imagined) network. My interest is how imaginations of such network(s) are changing, and especially according to the metaphors used about the digital. This is what could with an advantage be thought of as a post-human approach to what I describe as cognitive-computing - literally a form (i.e. fluid) of computing.

*Timeline*

I will hand my thesis in by the end of February, mid-March. After I come back from Trondheim I will be handing in an outline of the chapters. Before Christmas I want to hand in a draft off all the chapters. I also need to go back to my empirical materials and begin a more systematic analysis. The process of coding and applying my analysis in text will therefore go hand in hand.

I have already read up on a great deal of theory. Yet, gaining the ability to express the most important elements of this wide-ranging literature will take time. I imagine myself going back to much of what I’ve already read to be able to write it down. Especially in the first weeks of the new year. At the beginning of February I want to hand in a second draft.