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Towards infrastructure literacy in media education

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Abstract

This paper suggests that a broadening of MIL to include what Lisa Parks (2010) call *infrastructure literacy*—a close understanding of the material and infrastructural conditions of our current media landscape—is necessary in order for citizens to develop the critical skills needed to navigate and participate in the contemporary media society, as well as to shape the world of tomorrow. By exploring digitalization policy and K-12 curricula for Sweden, the paper shows that the field is currently dominated by an understanding of media as content or tools for communication, and of the future as predetermined by technology. It also shows a lack of critical perspectives when it comes to media used within education.

Keywords: media infrastructures, infrastructure literacy, policy, educational technology

One of the key arguments for promoting media and information literacy (MIL) is the increased information flow following contemporary digitalization processes. Combined with a culture of mistrust, where experience is valued over expertise, the ability to access, analyze, value and produce media content is more important than ever (Hobbs, 2017). It is also argued that we have to look beyond the formal learning taking place in schools and recognize the learning processes taking place online, or through other kinds of media practices (Erstad, 2013). These are all important and valid arguments, but what is often overlooked in the discussion is that schools are

also undergoing profound processes of digitalization that needs to be critically examined in the same way as other media words. In addition, media—both inside and outside schools—are often understood as either content or tools, rather than as environments.

In this paper, based on analyses of Swedish media education and digitalization policies, I point to a lack of material perspectives in the discourse on media in education that recognizes the ubiquitous and structuring qualities of media, and that pays critical attention to the growing field educational technology. The article intends to contribute to an ongoing discussion about the need for a “material turn” in media education (c.f. Friesen & Hug, 2009; Pöttsch, 2016) by suggesting an expansion of the field with what Lisa Parks (2010) call *infrastructure literacy*.

What is infrastructure literacy?

Media studies have traditionally been dominated by studies on media content, media production or media reception. In recent years, however, a range of material perspectives on media have emerged, such as the growing field of critical media infrastructure studies. Media infrastructures are defined by Lisa Parks and Nicole Starosielski (2015, p. 4) as “situated sociotechnical systems that are designed and configured to support the distribution of audiovisual signal traffic”, in other words, the technologies, systems, practices and standards that underpin our contemporary media society. The term “sociotechnical” stress that infrastructures are relational rather than “a thing stripped of use” (Star & Ruhleder, 1996, p. 113), drawing on

Susan Leigh Star's and Karen Ruhleder's (ibid.) often cited description of infrastructures as:

- built on old structures and systems
- linked to certain practices and something you learn as member of a community
- invisible when established and working, but visible when first introduced or in case of malfunction

Following the above characteristics shows that educational technologies are something more profound than just a set of tools. They build on established systems and standards such as grades and subjects. They also draw on metaphors from older systems, visible in terms such as “the digital classroom” or “e-books”. Further, these systems are something you learn through professional practice, and that becomes part of what it means to be a teacher or a student in the digitalized school. When first introduced, digital systems might cause some resistance but after a while they seem to sink into the background like all other practices that we take for granted, such as browsing through the news or looking up the nearest restaurant on our smartphones. This taken-for-grantedness is exposed only when the systems cease to work, such as when the internet connection fails or during a power break.

Sweden is currently undergoing a process of school digitalization, most notably through the revision of the national curricula to promote digital competence of teachers and pupils, performed by the Swedish National Agency for Education, on behalf of the Swedish government.¹

The invisibility of well-functioning or established infrastructures is one of the most recurring and discussed topics in infrastructure studies. As put by Bowker and Star (1999, p. 33): “Information infrastructure is a tricky thing to analyse. Good, usable systems disappear almost by definition. The easier they are to use, the harder they are to see.” But when media infrastructures become such an embedded part of our lived environments that they fade into the

background, they also become harder to critique. The strive to conceal infrastructures, even for aesthetic reasons or convenience, is thus not an innocent practice as described by Lisa Parks (2010 np.) in an article about the practice of disguising cell towers as trees:

By disguising infrastructure as part of the natural environment, concealment strategies keep citizens naive and uninformed about the network technologies they subsidize and use each day. We describe ourselves as a “networked society” and yet most members of the public know very little about the infrastructures that support such a designation /.../ This issue of *infrastructure literacy* [emphasis added] becomes more prescient as we enter an era of ubiquitous computing in which many different kinds of objects and surfaces will be used either as relay towers and/or web interfaces.

Infrastructure literacy is thus about visualizing infrastructures in order to facilitate civic participation in debates about network ownership, development, and access. But it might also mean actual infrastructuring, as suggested by Shannon Mattern (2016, p. 6) who means that through understanding how media infrastructures organizes out thinking and acting, initiatives to create juster and more democratic “pedagogical infrastructures” will emerge.

The issue of infrastructure literacy also becomes crucial in relation to another feature often discussed in relation to infrastructures, namely that investments and development of infrastructures always depart from a more or less articulated vision of a desired future (Edwards, 2003; Jasanoff, 2015). Roads are built to manage more traffic, thus supporting a future of more commuting, trade and cargo transport. In the same way, schools are equipped with certain infrastructures to create certain subjects with skills and competences enabling a certain future. In order to see the affordances built into educational technology and what kind of future society they prioritize, teachers and students need to develop different “literacy about infrastructures and the

relations that take shape through and around them” (Parks, 2010 n.p.).

What does the future look like in Swedish educational policy?

Sweden is currently undergoing a process of school digitalization, most notably through the revision of the national curricula to promote digital competence of teachers and pupils, performed by the Swedish National Agency for Education, on behalf of the Swedish government.¹ So, what kind of future is this new infrastructure supporting, and is it visible for those involved in it?

The studied documents follows the tendency described by Friesen and Hug (2009) to treat media as something separate from the school milieu in general, as either media literacy education, dealing with popular culture and “mass media” outside school, or as educational technology. In other words, media is understood either as content or as tools used for learning or producing own content, never as “ the ‘water’ in which teachers and students would figuratively ‘swim’ (ibid, p. 73).

Whereas the critical skills to access and analyse media content is associated with media literacy education, the use of digital media tools demand what is known as *digital competence*, a “more or less a political concept, reflecting beliefs and even wishes about future needs” (Ilomäki, Kantosalo, & Lakkala, 2011, p. 1). However, in the analysed policies these two interests seem to merge and the concept digital competence is used to both describe critical skills traditionally associated with media literacy, and claims about digital technology as increasing efficiency in schools. Similarly, approaches like creativity, interdisciplinary and innovation are highlighted not only as important for well-being, but also as skills important for economic growth.

“The modernization of Sweden starts in school”

In the studied documents, there is also a clear tendency to describe the future as already predetermined. The objectives for including digital competence in the curricula includes “preparing for an increasingly technology oriented work life and society” (Utbildningsdepartementet, 2015, p. 2) and being “able to

orient oneself in a complex reality with a vast flow of information, increased digitalization and rapid changes” (Skolverket, 2017, p. 3). These statements expose the assumption that society will continue to develop in the same direction as in the last thirty years, with increased digitalization and a precarious labour market. The idea that schools have to adjust to this development follows the common imaginary of the information society “in which technological innovations are regarded as accidental outcomes or shocks that disrupts society and to which society must adjust” (Mansell, 2012, p. 50).

At the same time, there are passages suggesting the opposite, that processes of societal change must begin in school, and that the competences and knowledg-

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es obtained through education will shape our future societies. Hence, the very first headline of the Swedish national digitalization strategy (Utbildningsdepartementet, 2017, p. 3) is “The modernization of Sweden starts in school”. The idea that what we do in school is crucial for how societies, economy and national identity will develop is paradoxical in relation to statements suggesting a future predetermined by technology. However, this figure of an already determined future can be understood as a way to motivate investment and policy changes in a certain direction, such as highlighting entrepreneurship and flexibility as important future skills, associated with digital competence.

In addition to imaginaries about societal and individual transformation, there are a number of sections discussing educational technology as transforming schools and learning a such. It is an undisputed assumption throughout the material, that digital tools “contribute to better results and efficiency” (Skolverket, 2015, p. 4) and is “effective to follow up the individual knowledge acquisition in children and pupils” (Utbildningsdepartementet, 2017, p. 12). Indeed, as shown by Neil Selwyn (2014) and Ben Williamson (2016), education of tomorrow seems to be character-

ized by efficiency and goal fulfillment. New technologies are assumed to improve the quality and speed of learning as well as the assessment of knowledge at the same time as the digitization of learning content will make it more accessible and flexible.

But although digital technology has all these gains, there is no discussion about how the mediation of communication or content prioritizes certain kinds of knowledge, or what the environmental effects of mass-digitalization will be. Instead, the argument seems to be that teachers and students might think less about material conditions, such as accessing books, or orienting in digital systems, because developers (while having received their basic skills, or technical interest in the general school) think more about it. School digitalization and media education policy in Sweden thus build on a separation between developers and users.

The invisibility of user-friendly technology

It is clear that whereas critical skills are emphasized when it comes to media content outside the school context, they are to a large degree missing when it comes to the tools, technologies and systems used in schools. Accordingly, in the Swedish digitalization policy (2015, p. 25) we can read that:

Technology mustn't hinder school work, and technological support must be made available to secure uninterrupted connection, functioning stationary equipment such as projectors, and replace malfunctioning equipment in order for teaching to go on without technology related disturbance.

In other words, as also stated in an appendix to the same policy (2015, p. 86) the goal is to “make technology as invisible as possible”. What we recognize here is the kind of “concealment strategy” that Parks (2010) discusses, motivated with user friendliness and to ease the workload for teachers. Without suggesting that poor digital systems or support would be an appropriate way to enhance teacher’s infrastructure literacy, the strive for invisibility is potentially dangerous because what is concealed is not only bugs and messiness, but also the choices and priorities built into digital systems. If these assumptions about what education is supposed to do and what society it is supposed

to shape, are not made visible, teachers and students have no possibility to renegotiate this imagined future.

However, if the MIL strand present in the documents were expanded to include also infrastructure literacy, these technological affordances might be up for debate instead of concealed, and more democratic pedagogical infrastructures can be developed, in dialogue with teachers and students, instead of from the outside where teachers and students are positioned as users. By admitting the structuring qualities of media technologies, as well as how different kinds of infrastructures are entangled with institutions, history, geography, economy and cultural practice, taken for granted ideas about individualism and the necessity of economic growth that to some degree underpins the current problems with news resistance and mistrust in authorities can be addressed, as well as questions on sustainable development.

How can an infrastructural perspective contribute to MIL?

Despite statements of life quality and citizenship, teachers and learners in Swedish digitalization policy and K-12 curricula are mainly positioned as users, with the right to user-friendly systems and technological support. This concealing of infrastructures, and separation between user and developer makes the affordances of digital systems as well as the assumptions about a desired future, harder to see and critique. In order for schools to become places where we renegotiate future imaginaries and formulates questions around what kind of society we want to live in, the media infrastructures used in education and daily life must be made visible. The argument brought forth in this text has therefore been to include material perspectives on media that expands the current understand of media as either content or tools, in order to make the critical claim of MIL truly functional in the complex media landscape of today. This kind of infrastructure literacy might also take in consideration the environmental concerns related to digital media, and expand what we recognize as valid knowledge, in formal as well informal education. Eventually, such an approach should also lead to the formation of more democratic and transparent infrastructures for education and knowledge production. ❖

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FOOTNOTE

- ¹ The documents analysed in this paper are all related to this process, and include the commission from the Ministry of Education to propose national IT strategies for the school system (2015), the commission report from the Swedish National Agency for Education (2015) and the resulting documents from this report, namely the revised *Swedish National Curriculum for the Compulsory School (2017)* and a *National Digitalization Strategy for the School System (2017)*.