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This is the published version of a paper published in *Education Inquiry*.

Citation for the original published paper (version of record):

Erixon, P. (2014)

School subjects in the screen culture.

*Education Inquiry*, 5(2): 167-170

Access to the published version may require subscription.

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<http://urn.kb.se/resolve?urn=urn:nbn:se:umu:diva-89524>

## School subjects in the screen culture

*Per-Olof Erixon\**

This thematic section of *Education Inquiry* deals with how schools relate to new technology and, more specifically, how three school subjects, i.e. Art, Music and Mother tongue (Swedish) relate to new technology. The articles were written as part of the research project “Skolämnesparadigm och undervisningspraktik i skärmkulturen – bild, musik och svenska under påverkan” [“School subject paradigms and teaching practice in the screen culture – art, music and Swedish under the influence”], funded by the Swedish Research Council 2010–2012.

The rhetoric about education and new technology has long concerned the need for new technology in order to develop teaching and learning, but also about how education offers resistance. Like other countries, Sweden has invested large resources in new technology and new media, hereafter called digital media, becoming a natural and important part of school teaching. The developed use of digital media has been and still is assumed to lead to educational change and hence better teaching (SOU 1994:118; Prop. 1995/96:125). Although significant resources have been invested in new digital technology becoming a natural and important part of school teaching, related developments have been slow. It seems as if schools’ ideational basis rests on practical handicraft and older technologies (Erixon, 2010a). For this reason, schools function in some respects as an arena for the polarisation of technologies. The market-oriented Organisation for Economic Co-operation and Development (OECD) emphasises that the use of digital media has been developed in an educational culture outside schools and contends that, for this reason, there is an inherent tension between teaching based on digital media on one hand, and traditional ways of judging and examining works in schools on the other (OECD, 2001).

The project’s point of departure is that various school subjects have different relationships with (new) technology and that it is therefore not possible to talk generally about the relationship of education with (new) technology. The incorporation of digital media varies in different school subjects (Hennessy, 2005) since school subjects have their own different structures or cultures (McEachron, 2003). Technology also has a relationship with teaching practice, i.e. the methods and ways

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©Authors. ISSN 2000-4508, pp. 167–170

of arranging teaching. With this reasoning as a starting point, pencil, paper and books have been the technologies that have not only been prevalent in education since its beginning but also the preconditions for activities in schools, not least in the subject of Swedish (Johansson, 1977; Tyner 1998). Technology is an active factor and, according to e.g. Dahllöf (1971), it may be regarded as a frame factor. Technologies are examples of mediating tools we use in order to co-act with the surrounding world (Wertsch, 1991), e.g. when a teacher teaches a school subject. However, in educational science research technologies are something invisible and neutral, a blind spot (Erixon, 2010a; 2012a, b; Elmfeldt & Erixon, 2007).

Digital technology is now entering the world of education on a wide front. If ten years ago it was politicians and opinion makers who were trying to push its development forward, the pressure now seems to be coming from below, i.e. from pupils and teachers. This is clearly evident in our study. The development is very different in the three subjects, as well as in different municipalities, but also among schools within the same municipality. The ambitions to incorporate new technology in the teaching nevertheless seem to have a clear direction, i.e. the ambition for each pupil to have a computer. On the whole, the teachers have a positive attitude to introducing new technology in their teaching, even if the supply of in-service training and machines is limited. But there is a widespread opinion among both pupils and teachers that educational activities which have traditionally been conducted will continue in roughly the same way, although now with the aid of modern digital technology. This is a foolish idea that may create great problems since different technologies provide different preconditions in an educational context.

In line with Kuhn's (1962) concept of 'paradigm', we imagine a school subject in a relatively stable state where certain content and certain methods and technologies are given precedence. Via new information and communication technology (ICT), political ambitions and the new media that children and young people grow up with, the subjects are exposed to pressure. An excess of teaching material, content shifts and conflicts is emerging, which Kuhn calls "anomalies", which can lead to "paradigmatic" changes.

Further, we take our point of departure in a media ecological perspective. Media ecology is based on the idea that communication media are not neutral, transparent or value-free channels for transporting information from one place to another. Instead, it is contended that the inherent physical structures and symbolic form of media play a decisive role in the design of what information is coded and how it is transferred and hence also how it is decoded. It is the medium's structure that determines the information's content and character. Media ecology is based on the idea that every medium's unique set of physical and symbolic characteristics carries a set of systematic and ideological biases. The different inherent physical and symbolic forms in various media presuppose correspondingly different biases. Hence, different media promote varying physical or perceptual, social, economic,

political and cultural effects that can be related to media's inherent biases (Strate, 2010; 2011). Media allow and encourage some actions and forms of knowledge and learning, and discourage and sometimes prevent others. New media create new relations not only between the senses and media but also between people. Applying a media ecological perspective, Meyrowitz (1985) develops general theoretical principles as regards the relationships among different types of media, situations, behaviours and social roles with a special focus on the shift from what he calls "print situations" to "electronic situations". Media function as both walls and windows.

Methodologically, the project has an ethnographic approach (Hammersley & Atkinson, 1995) and is based on observations (Delamont & Hamilton, 1986) and interviews with subject teachers and pupils in the ninth form of lower secondary schools. In total, nine schools from all over Sweden are included in the investigation as a whole. Material from all of these schools, which in de-identified form have been given names of different kinds of trees, is included in these articles. The total empirical material collected for each school subject, i.e. art, music and Swedish, is based on focus interviews with about 50 teachers and 100 pupils. The material was collected in its natural context and the research process was as open as possible. Interviews were conducted both individually and in so-called focus groups, which is a well tried out qualitative investigation method, among other things, for studying conceptions and evaluations of, and attitudes to e.g. different aspects of teaching (Wibeck, 2000; 2002).

In conclusion, although our study is limited we claim that there are clear signs that digital media have started to influence both the teaching content and working methods in the three school subjects. The developments may vary and have reached different stages, but in a slow but clearly visible process the Art, Music and Swedish subjects are all facing a paradigm shift, which entails a development of the teaching.

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