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Educating the Digital Generation

Exploring Media Literacy for the 21st Century

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ENGLISH ABSTRACT

The concept of a digital generation has been dominating the public discourse on the role of digital media in young people's lives. Issues concerning a digital generation is closely linked to questions about how we develop an education system that is able to face the challenges of the 21st Century. A growing field of research, inclined to raise awareness of present and future challenges for our education system, is 'media/digital literacy'. This article examines research within 'generation studies' and public constructions of young people and digital media. Further the article presents some developments within 'new literacy studies' and different aspects of 'competencies for the 21st Century'. Next, the article reflects different approaches to studying these competencies, based on different empirical data, both from my own research and that of colleagues. Towards the end the important question of inclusion and exclusion is raised. The objective is to explore some issues of importance for future development of media literacy, the educational use of digital tools and critical considerations of a digital generation. A key part of the article is the elaboration of five dimensions representing different focus areas of research on school-based studies of media literacy.

Keywords

media/digital literacy, generation, school, inclusion, exclusion.

To what extent can we describe young people growing up today as a digital generation? The concept of a digital generation has been dominating the public discourse on the role of digital media in young people's lives (Herring 2006; Buckingham & Willett 2006). This is both seen in worries about the risks different media represent towards children and youth (Byron 2007), and in celebrations of the media culture among the young (Tapscott 2008). These overgeneralizations can easily be misleading and give the impression that all young people today are super-users and highly competent in their use of different media. A more critical stance is needed where we specify the characteristics of such a generation, and how this is articulated in different segments of young people.

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Issues concerning a digital generation are closely linked to questions about how we develop an education system that is able to face the challenges of the 21st century. According to former US Secretary of Education Richard Riley, the projected top ten in demand jobs in 2010 did not exist in 2004, indicating that not only is our labour market in transition, but also the competencies needed. Such a future-oriented perspective on education is in contrast to the dominating trend in most countries where the emphasis is on a traditional transmission model of knowledge acquisition. (See for example www.21stcenturyskills.org/.) A growing field of research, inclined to raise awareness of present and future challenges for our education system, is 'media/digital literacy' (Buckingham 2003). Primarily because this term emphasizes that 'reading' (information access) and 'writing' (producing and expressing content) change over time (Baron 2009).

After a critical investigation into the field of 'generation studies', the first part of this article will present some developments within 'new literacy studies' and different aspects of 'competencies for the 21st century'. The other part of this article will reflect different approaches to studying these competencies, based on different empirical data, both from my own research and that of colleagues. The main objective of the article is the elaboration of five dimensions representing different focus areas of research on school-based studies of media literacy.

CONCEPTUAL POSITIONING

There are different terms used in this field of research, such as media literacy, ICT literacy, digital literacy, information literacy and digital competence. The key term, and the one highlighted in this article, is media literacy. In a Scandinavian context the term competence is often used instead of literacy since the latter term does not translate to the languages in these countries. There are several problems with many of the terms linking technology and literacy, and I therefore prefer media literacy. The main three problems are:

– First, a lack of insight into the conceptual history in this field, where media literacy has been used since the beginning of the 1980s. Media literacy, as developed within media education (Buckingham 2003), includes all technologies and media forms, both analogue and digital. This work on what young people need to know across different kinds of media and curricula, that have been developed since the 1980s, is not often referred to in our present day research literature, with a few exceptions (Tyner 1998).

– Second, that there is a danger of becoming too oriented towards present day technologies, such as IT literacy, ICT literacy or computer literacy. Who knows what kinds of technologies we might have available in ten years from now? Media literacy points to some broader aspects of how we relate to different media and incorporates technological change. In curricula

– developments on media literacy, for example in the UK, some key concepts have been defined, such as production, representation and audience.

– Third, media literacy relates to broader aspects of living in a media saturated society, and not only skills in operating applications or information handling, which is the main focus of many international frameworks.

In this article I will refer to different conceptions of the interrelationship between media/technology literacy in the literature and as part of different frameworks.

BEYOND 'NATIVES' AND 'IMMIGRANTS'

'Generation studies' as a field of research can be traced back to the German scholar Mannheim, who argues that a person's location in the socio-historical structure defines their experience. Such a generational location, that a person belongs to, points to certain definite modes of behaviour, feeling and thought, where youth is considered as the formative years (Mannheim 1952). Thus, each generation, has a distinctive 'generational consciousness', which is dependent on the pace of social change. In times of accelerated social and cultural change basic belief systems need to change more quickly than the continuous and gradual transition between generations allows (Lesko 1996; France 2007).

Individuals are further internally stratified by their geographical and cultural location and by their actual as opposed to potential participation in the social and intellectual currents of their time and place. As a result, different, or even opposing, generational strata may be developed. The notion of generational strata allows us to investigate differences, as well as similarities, that may exist within and between social groups living in similar cultures and societies.

Increasingly, media have become the defining factor dividing generations. Children born since the mid-1990s belong to the first generation growing up with digital media embedded in the media culture, not seen as something 'new'. A public discourse has been created around young people and new media conceiving them as hyper competent in using such technologies and the creators of 21st century skills.

One such influential conception was made by M. Prensky during the mid-1990s. He published several texts popularising and provoking debates on the implications of digital media, especially the penetration of the computer and the Internet. The conception was that of 'media natives' versus 'media immigrants' (Prensky 2001). The first conceives young people as media experts through their use of digital media in their everyday lives, as the 'innovators' of new practices of great importance for society at large. The second term is then directed towards the adult generation, born before the introduction of digital

media. Adults are immigrants in the land of the young, said to have problems in coping with the challenges of the digital society.

The implications of such generational divides are further popularized in D. Tapscott's book 'Growing up digital. The rise of the Net generation' (1998), and with a recent follow up called 'Grown up digital' (2008), and a similar book by J. Palfrey and U. Gasser termed 'Born digital' (2008). These books are based on empirical data consisting of interviews with a large number of young people from around the world, even though the data itself is not presented in any detail, and therefore difficult to evaluate from a methodological perspective. However, these books are highly problematic in the way they over-generalize how children and young people are competent media users in a broad set of areas. This creates a public image of youth and media that needs to be modified. From other research we know that there are huge differences both within and between different cultures and countries in how young people relate to and use digital media (Coiro, Knobel, Lankshear & Leu 2008:3).

From the point of view of media literacy, it is important to be critical of such constructions, because they blur just as much as they enlighten us about media use and its implications. One critical voice of such public constructions as mentioned above is David Buckingham. In several of his writings he has argued for a more nuanced understanding of how young people relate to different media, creating a middle ground between media pessimists and optimists based on different sets of empirical data (Buckingham 2003, 2007).

Still, studies show that many young people are engaged with digital media. In the Nordic countries access to computers, the Internet and mobile phones with Internet access among young people between 16 and 22 is more that 90% and in some areas up to 100%. So access is not an issue for most youth in these countries. In Norway, for example, the use of digital media by youth is also high, where 73% of all 8 to 18 year-olds use the Internet daily (Norwegian Media Authority 2008)[1]

At the same time the age-specific use of digital media is changing. On certain social networking sites people in their 20s and 30s are even higher consumers than youth. However, there are certain aspects in the contextual embedding that such media have for youth rather than for adults that seem different (Buckingham & Willett 2006; Drotner & Livingstone 2008). This can be seen in the 'Digital Youth' project undertaken by M. Ito and colleagues in the US (Ito et al. 2010). By drawing on different case studies from specific communities this research manages "to map the contours of the varied social, technical, and cultural contexts that structure youth media engagement" (Ito et al. 2010:31). In their findings they draw out certain genres of participation, in what they

1. See also book by Nordicom, www.nordicom.gu.se/clearinghouse.php?portal=publ&main=info_publ2.php&ex=288&me=3, Young People in the European Digital Media Landscape. A Statistical Overview with an Introduction by Sonia Livingstone and Leslie Haddon.

describe as 'friendship driven' and 'interest driven'. Further they have identified different levels of commitment and intensity in new media practices, in what they describe as 'hanging out', 'messing around' and 'geeking out'. These genres of participation are then interpreted as "intertwined with young people's practices, learning, and identity formation within these varied and dynamic media ecologies" (Ito et al. 2010:31). These studies show that there are some fundamental changes going on in the ways young people are communicating, producing texts and distributing content.

So, more correctly than as a specific digital generation, these developments can best be described as a transitional phase where digital media are still in transition and where young people today are experiencing a dual culture, between the old and the new, what S. Herring (2008) calls 'a transitional generation'. Young people are of course of special interest because some of them are among the first to explore these new technological territories.

Such a discussion about what we mean by a digital generation is therefore important, not only to move beyond simple statements of 'natives' and 'immigrants' towards a more nuanced understanding of what characterizes such a generation, but also what impact such technologies have on specific social practices that young people are involved in.

LEARNING AND LITERACY WITH DIGITAL MEDIA

The key issues in trying to understand the implications of new digital technologies for children and young people are learning and literacy, or literacies in plural. This is because learning and literacy is all about the ways we make meaning of information from resources in our environment, and how we communicate by using different means, not only understood as 'reading' and 'writing' written text. In this way literacy is something that changes over time due to changes in the cultural tools we have available (Wertsch 2008).

This conception of literacy is building on the research tradition defining literacy as embedded in specific social practices (Scribner & Cole 1981; Heath 1984; Street 1984; Barton 1994). A definition of literacy made by Lankshear and Knobel (2006), encompasses these social practices that change over time. They define literacy as: "*Socially recognized ways of generating, communicating and negotiating meaningful content through the medium of encoded texts within contexts of participation in Discourses (or, as members of Discourses).*" This definition is not bound by certain technologies. It proposes to study literacies in practice (what people do with technologies and digital texts), and not as something predescribed, indicating that we need to understand what people are already practicing concerning media literacies in plural and what the role of education should be in employing such literacies for knowledge development. The important message is that media literacy among young people today is of

direct relevance to discussions about learning in schools, and it seriously confronts earlier conceptions of literacy and learning.

An important cultural development in recent years has been the processes of convergence (Jenkins 2006). This relates to how technologies merge, how the production of content changes, how new text formats are developed and how the users relate to information as part of communication networks in different ways. Parallel to such convergence processes some literacy theorists have sought to hold together the many new literacies under some umbrella concepts stressing the plurality of literacies, such as 'multiliteracies' (Cope & Kalantzis 2000, Snyder 2002) and 'metamedia literacy' (Lemke 1998). According to Kellner (2002: 163), "The term 'multiple literacies' points to the many different kinds of literacies needed to access, interpret, criticise, and participate in the emergent new forms of culture and society." Kress (2003) however argues against the multiplicity of literacies, suggesting that it leads to serious conceptual confusion. He believes that instead of taking this path, it is necessary to develop a new theoretical framework for literacy which can use a single set of concepts to address the various aspects of literacy.

This implies that we constantly have to ask the more general question of what it means to 'read' and 'write' in a culture, and thereby how we learn (Pahl & Rowsell 2005). In the '*Handbook of Literacy and Technology'*, with the subtitle '*Transformations in a Post-Typographic World'*, D. Reinking et al. (1998) present several perspectives on how the development of digital technologies changes conceptions of text, of readers and writers and ultimately of literacy itself. This implies that media literacy relates to changes in traditional cultural techniques like reading and writing, and yet meanwhile opening up new dimensions to what it means to be a competent reader and writer in our culture.

Four areas where we see digital media having an impact on media use and literacy practices by young people are;

– *A participatory culture:* This term from H. Jenkins (2006) relates to ways of participating and sharing with others. In later years this has become more apparent through social networking sites as an interconnection between online and offline participation patterns.

– *Information access:* Since the introduction of the World Wide Web, one of the most obvious advantages of digital media is access to information. The possibilities are endless and mark a significant difference from the book age is the easy access to information provided by the Internet. In addition it has created possibilities for everyone to provide and share information online. One example is Wikipedia as a net-based lexicon where everybody can contribute. This, of course, demands more of the user to evaluate the information provided and responsibility in creating content.

– *Communication possibilities*: The development of e-mail, chat, sms and online communities has created new conditions for communication and communicative competence as a skill for the 21 century.

– *Content production:* An important change in literacy practices is that everybody potentially can be producers of content that can be shared with large numbers of other users on sites like MySpace and YouTube. Text-production has increased a lot in our culture, and software tools make it easy to edit films, music and so forth, something that has been termed as remixing (Erstad 2008).

The key questions then become; what are the key literacies and competencies for the 21st century, and how can we develop an education system that is adjusted to face these challenges of literacy development in the future? And what do young people really know about media, and what implications does this have for learning in educational settings? Technology serves both as a driver and a lever for these transformations.

MEDIA LITERACY FOR THE 21ST CENTURY

Some of the definitions and frameworks on media literacy that have been developed are conceiving this in a narrow sense as skills that can be broken down to certain operations. One example is the book 'Media literacy' (2001) by W.J. Potter, where specific skills and cognitive abilities in analysing content in the media are highlighted. However, other definitions and frameworks are conceiving media literacy more broadly. This is expressed in books by D. Buckingham (20 03, 2007), where media literacy is building on a cultural studies tradition of how young people are engaged in using media in different ways and as a critique of the marketing of educational technology as a salvation for school learning. With reference to the Swedish literature theorist J. Thavenius (1995) we might also see this broader conception of media literacy as being related to the German term 'bildung', which is similar to 'to be literate' in English.

During the last decade several initiatives have been taken for developing typologies and frameworks for what has been called digital literacies (Lankshear & Knobel 2008). The different definitions and conceptions of digital literacy have often been related to certain frameworks and the development of standards for educational practices. In January 2001, the Educational Testing Service (ETS), in the U.S., assembled a panel to develop a workable framework for what they called ICT Literacy. The outcome was the report *Digital Transformation. A Framework for ICT Literacy* (ETS 2002).

From my own research on the educational use of digital technologies I have suggested a few categories, elaborated from the ETS framework, to specify some aspects of media literacy in school practices using digital tools (Erstad 2005). This is thought of as different aspects of how we understand young peo-

ple's use of digital technologies in learning activities at school, and as a tool for assessing what they can and cannot do with digital media. These are:

TABLE 1: DIFFERENT ASPECTS AND CATEGORIES OF MEDIA LITERACY.

Basic skills	Be able to open software, sort out and save information on the computer, and other simple skills in using the computer and software.
Download	Be able to download different information types from the Internet.
Search	Know about and how to get access to information.
Navigate	Be able to orient oneself in digital networks, learning strategies in using the Internet.
Classify	Be able to organize information according to a certain classification scheme or genre.
Integrate	Be able to compare and put together different types of information related to multimodal texts.
Evaluate	Be able to check and evaluate the information one seeks to get from searching the Internet. Be able to judge the quality, relevance, objectivity and usefulness of the information one has found. Critical evaluation of sources.
Communicate	Be able to communicate information and express oneself through different mediational means.
Cooperate	Be able to take part in net-based interactions of learning, and take advantage of digital technology to cooperate and take part in networks.
Create	Be able to produce and create different forms of information as multimodal texts, make web pages, and so forth. Be able to develop something new by using specific tools and software. Remixing different existing texts into something new.

This list is one step in the direction towards an operational definition of what we mean by media literacy in school practices. The categories consist of general competencies that are not connected to specific subjects in school or specific technologies. They can be taught and are not only related to what is learned in school settings, but also to situations outside the school.

Other frameworks have used 'digital competence' as an overall term. One example is the working group on "key competences" of the European Commission and their report 'Key Competences for Lifelong Learning: a European Reference Framework'. This framework identifies digital competence as one of the eight domains of key competences, defining it as "the confident and critical use of Information Society Technologies for work, leisure and communication. These competences are related to logical and critical thinking, to high-level information management skills and to well-developed communication skills. At the most basic level, ICT skills comprise the use of multi-media technology to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in networks via the Internet." (European Commission 2006: 14). Digital competence in this framework encompasses knowledge, skills and attitudes related to such technologies.

Of special importance in an educational conception of media literacy are the possibilities the development of digital media, such as the Internet (Web 2.0) and editing software, have provided for user-generated content creation. Con-

tent can be downloaded from the Internet, remixed (Lessig 2008) and put together in new ways, and then uploaded on the Internet for others to use further in a potentially endless production process. This way of working with content fundamentally changes the traditional way of creating content, known through the book. This 'production mode' and the new competencies of remixing (Erstad 2008) have also raised issues about students' active roles in knowledge practices.

The critical point now is to bring the policy-agenda and the more normative research arguing for the necessity of media literacy more in touch with studying knowledge practices, and how digital media create conditions for change and transition within such practices. As shown in this section, there are different frameworks to relate to in our understanding of media literacy. However, the key challenge is to go deeper into the implications of the increased use of new technologies in educational practices.

MEDIA LITERACIES IN PRACTICE

In this section, different aspects of media literacies using digital tools as part of school practices will be highlighted. In addition we need to be informed about the media practices of young people outside schools. The objective here is not to elaborate on all the different details of media literacy mentioned above, but rather to show different approaches to studying media literacies in school practices. In the last part of this section I will propose a way of understanding different dimensions of media literacies in educational settings.

Testing media literacy

Some countries, like Australia, the USA, Norway and Hong Kong, have developed specific tests to measure students' media literacy focusing on certain aspects of digital media. The first attempt was made by the ISTE in the USA (see www.iste.org/, NETS standards), where students, teachers and administrators can click on different online assignments and get a profile of their digital literacy skills.

In Norway, testing of digital competence was introduced in the ITU Monitor 2009 study (Hatlevik, Ottestad, Skaug, Kløvstad & Berge 2009). The results show a strong relationship between students' digital competence and their general school performance and the educational background of the parents. The strength of this study is how it studies digital competence as interconnected with issues of access, school leadership, teacher competence and school development.

A more elaborate test, in the sense that it is using more simulation tools and not so related to specific school subjects, has been developed in Australia. This test is also more based on performance assessment in solving problems than just skills in operating the technology. In their report from the first phase Ainley, Fraillon and Freeman (2007) present the results from a study con-

ducted in 2005 involving approximately 7400 students from Years 6 and 10 in around 520 schools across Australia. By having two year-groups it also traces progressions in what they call ICT Literacy.

The items distributed across the ICT literacy scale were used to develop a progress map that could be interpreted in terms of the skills and understanding demonstrated by students in their responses to the items. In this case six proficiency levels were defined and descriptions were developed to characterize typical student performance at each level. The levels and the percentage on each level are used to summarize the performance of students overall, and to compare performances across subgroups of students.

TABLE 2: ICT LITERACY PROFILES FOR YEAR 6 AND YEAR 10, AINLEY ET AL. 2007:X

Year 6		Year 10
0%	*Level 6* Students working at level 6 create information products that show evidence of technical proficiency, and careful planning and review. They use software features to organize information and to synthesise and represent data as integrated complete information products. They design information products consistent with the conventions of specific communication modes and audiences and use available software features to enhance the communicative effect of their work.	0.4%
0.1%	*Level 5* Students working at level 5 evaluate the credibility of information from electronic sources and select the most relevant information to use for a specific communicative purpose. They create information products that show evidence of planning and technical competence. They use software features to reshape and present information graphically consistent with presentation conventions. They design information products that combine different elements and accurately represent their source data. They use available software features to enhance the appearance of their information products.	11.9%
7.7%	*Level 4* Students working at level 4 generate well targeted searches for electronic information sources and select relevant information from within sources to meet a specific purpose. They create information products with simple linear structures and use software commands to edit and reformat information products in ways that demonstrate some consideration of audience and communicative purpose. They recognise situations in which ICT misuse may occur and explain how specific protocols can prevent this.	48.9%
40.8%	*Level 3* Students working at level 3 generate simple general search questions and select the best information source to meet a specific purpose. They retrieve information from given electronic sources to answer specific, concrete questions. They assemble information in a provided simple linear order to create information products. They use conventionally recognised software commands to edit and reformat information products. They recognise common examples in which ICT misuse may occur and suggest ways of avoiding them.	32.0%
38.8%	*Level 2* Students working at level 2 locate simple, explicit information from within a given electronic source. They add content to and make simple changes to existing information products when instructed. They edit information products to create products that show limited consistency of design and information management. They recognise and identify basic ICT electronic security and health and safety usage issues and practices.	6.4%
12.6%	*Level 1* Students working at level 1 perform basic tasks using computers and software. They implement the most commonly used file management and software commands when instructed. They recognise the most commonly used ICT terminology and functions.	0.4%

Only eight per cent of Year 6 students performed at level 4 or above compared to 61 per cent of Year 10 students. In contrast 51 per cent of Year 6 students performed at level 2 or below compared to 7 per cent of Year 10 students.

ICT literacy was strongly associated with socioeconomic background. Approximately two thirds (68%) of Year 6 students whose parents were "senior managers and professionals" attained the proficient standard compared to approximately one third (32%) of students whose parents were in "unskilled manual, office and sales" occupations. Three quarters (75%) of Year 10 students whose parents were "senior managers and professionals" attained the proficient standard compared to just less than half (49%) of students whose parents were in "unskilled manual, office and sales" occupations.

There were no statistically significant gender differences in the percentage attaining the proficient standard at either Year 6 or Year 10. There was no difference in ICT literacy associated with language background. They conclude that:

> One should not assume that students are uniformly becoming adept because they use ICT so widely in their daily lives. The results of the assessment survey suggest that students use ICT in a relatively limited way and this is reflected in the overall level of ICT literacy. Communication with peers and using the Internet to look up information are frequent applications but there is much less frequent use of applications that involve creating, analyzing or transforming information. There are substantial differences between Year 6 and Year 10 suggesting that considerable growth in ICT proficiency takes place over these four years. Within each Year level there are differences associated with socioeconomic background, indigenous status and remote geographic locations (compared to metropolitan locations). (Ainley et al. 2007:xiv).

This assessment approach to media literacy is still in an initial phase, and several initiatives in different countries are now also being taken with the new IEA study called 'International Computer and Information Literacy Study' (ICILS). The important message from the Australian study is that this should not only be seen as a summative score of certain skills, but to a larger extent as an orientation towards formative assessment where students, both individually and collaboratively, perform certain tasks of problem solving.

Project-based activities in schools

My own research has shown that digital media are used most extensively and also in the most integrated educational ways as part of project work in schools (Erstad 2005; Erstad et al. 2005). Below is a description from one project.

This project took place between two lower secondary schools, one in the Eastern part of Oslo and one in the Western suburbs. At each school a group of stu-

dents (about 20 in the East, 13–14 year olds, and about 40 in the West, 14–15 year olds) took part in the project during a two-week period. The school in the Western suburbs had students from families with a high socio-economic status with only one student who was non-white. At the school in the Eastern inner city part of Oslo the students came from many different cultural backgrounds with about 65% of the students with minority speaking families and with low socio-economic status. The teachers decided that the collaborative project between the students at the two schools should be on prejudices about living in the East and the West of Oslo, and that they should use digital technology as a central part of the collaborative work.

In the project the students used different digital tools to collaborate and create an online newspaper, one for each school, which consisted of reports about the students at the other school and their community, as well as their own. The project was triggered by several news reports in a national paper at the same time, showing that the average life expectancy between the two neighbourhoods differed by eight years, lower in the East than in the West of Oslo. This shocked the students and motivated them to find out more about this.

In each group they divided themselves into an editorial board with responsibilities for different sections of the paper; on culture, religion and ethics, sport, statistics about their communities and interviews with inhabitants. They created and sent questions to each other, using a collaborative online platform and msn. Halfway through the project a group of students from each school travelled, without the teachers, to visit the students at the other school using public transportation. None of the students had ever been in the area of the other school. To document this visit each group made a video film to use in their own production.

Throughout the project the students worked with different modalities and information sources in the making of the online newspapers. They shifted on working individually on different computers looking for images, statistical data, graphs, illustrations, written texts, or editing audio interviews with players from the local soccer team, editing the video films to put on the web, and then got together to negotiate how to integrate and remix the different content sources into something new in their online newspaper. The two online papers turned out very different: the one from the school in the West possessed different visual effects, with a high quantity of images on the front page and with links to other sections of the paper consisting of more text and images. The online paper from the Eastern school was simpler in the aesthetics on the front page, with more video material, for example, video interviews with students at their own school and interviews with students from the other school recorded during their visit.

Their media literacy is expressed as part of their searches for information and sending content between the two schools. The students combined the different content they found on the Internet with their own work, either collaboratively

written texts or audio and video tapes. The editorial group at each school had the last word concerning how things should be presented in their online newspaper. Video observations of the two groups showed a very intense and creative process among the students working with different materials and sending them between the two schools. As shown above, the students involved in this project were engaged on a personal level, drawing on experiences from outside the school, yet reworking such experiences within a school context. In negotiating meaning making about differences and similarities between the two communities in Oslo the students started reflecting on their own lives, which was shown in the chapters they wrote in the online newspapers.

Of special importance in this project was the question of whether the students could trust the information they gained access to, which was stressed by the teachers throughout the project. For example, in one incident during the school visit by students from the West to the school in the East, the visiting students were given a lot of false information by the students in the East, about growing up in the East, about drugs, violence and other things, that the students from the West published in their online paper when they returned. When the teachers discovered this it created a lot of discussion about information sources and responsibilities when publishing something on the Internet for others to read.

DISCUSSION

So what can we draw from the different sections above, that in different ways raise issues about educating the digital generation. These sections show different approaches and aspects of the educational implications of young peoples' use of digital media, especially linked to digital literacy. The first section is more specific about elements of media literacy, which can be measured through tests, and as an expression of how we can find out more about what students do and do not know about the way they use digital media. In the second section one example of how this might be expressed as part of project work is mentioned. Project work provides some other possibilities apart from ordinary classroom teaching in the way students are engaged in problem solving, which is a key competency for the 21st century (see www.atc21s.org). Digital media are here both a resource for these students' learning, but also something they reflect on; concerning information sources, how they collaborate, both within and between schools, and about content creation.

Based on these two sections five dimensions can be elaborated, which highlight different aspects of how we understand media literacies as part of school-based learning.

Dimension 1: Basic skills

This has traditionally been expressed as certification of skills for teachers and students. It is a profile of how good you are at performing certain tasks in oper-

ating the computer, the Internet or software. The problem with this approach is that the technology changes all the time, and it is difficult to develop standardizations that will last over time. And, as expressed by the young people in the sections above, handling the technology is something you explore and learn when needed. Still, not all students have the same skills in operating the technology, and teachers should track the levels of their students and use this as a starting point for how technology is used in learning activities.

Dimension 2: Media as an object of analysis

One aspect of media literacy in schools is the importance media and technology have as a knowledge domain in itself. During the last 40 years, media culture has become more and more evident in all levels of society. In this sense it has become a knowledge domain of importance for students to know about. This has traditionally been part of media education in school, but since the impact of digital media it has become an important part of many subjects in school. Based on what has been discussed above, the technology itself is something young people relate to, but do not have any understating of. In this sense issues like media history, media genres and media and power become important parts of media literacy.

Dimension 3: Knowledge building in subject domains

This relates to how new technologies change fundamental issues within established school subjects. We have seen this before when the calculator was introduced in mathematics, and the disputes this created about how mathematics as a subject changed because of this. The same can be said about different digital media and software packages that are introduced in different subjects. How does it change the knowledge structures within the subject itself, what are considered core knowledge elements, and how do students build knowledge and approach these knowledge structures?

Knowledge is thereby seen as interconnected with the cultural tools we have available, and that this changes over time.

Dimension 4: Learning strategies

This dimension extends across different subject areas, and is more about the ways students approach information and knowledge. This has been important before in the way students might have problems in developing good strategies for how they learn, and their self-regulated learning. Related to digital media, this dimension has become even more important. The development of information sources on the Internet has created greater challenges in respect of student competency when searching for information, evaluating such sources and using information to build knowledge. In addition, students need to develop good strategies for how they can use information to learn more; that is to learn how to learn.

Dimension 5: Digital Bildung/Cultural competence

This last dimension points towards broader issues about learning in our culture. Issues relating to what is called 'digital bildung', or cultural competence, are more concerned with the overall challenges of being part of a digital culture. It is about functioning optimally in a media culture and a knowledge society, and to be able to be informed to make decisions of importance for oneself as a citizen and for society as a whole, for example when elections become digitalized and political debates takes place online. It is also about how learning is connected to identity and what I have described above as students' learning lives across different contexts and our communicative competence in using the different cultural tools available to us. This approach to learning and literacy is more holistic and integrated about educating the digital generation.

Inclusion or exclusion?

The argument in this article has been to develop a more cohesive approach to our conceptualizations of a new digital generation. It is rather, still, a generation that uses many different media, both analogue and digital, in the everyday lives of those concerned. At the same time it is clear that young people growing up today are experiencing important aspects of the implications of digital media on our culture. New conceptions of literacy exemplify many of the challenges of educating the digital generation.

However, there is one question that is of key importance for the educational prospects for a digital generation, and that is; to what extent will we see new divisions in our societies, locally, nationally and globally, about who will become included or excluded (Warschauer 2004)? The digital divide has mainly been discussed as an issue related to access and gender differences. It is more important today to see this as an issue of competence and literacy, or more generally as Bildung for a digital age. This would imply knowing how to navigate in the information jungle on the Internet, to create, to communicate and so forth. This is where issues of media literacy and empowerment come in.

In her book '*Literacy for sustainable development in the age of information'* (1999) Naz Rassool argues that research perspectives on technology and literacy need to re-conceptualise power structures within the information society, with an emphasis on 'communicative competence' in relation to democratic citizenship. Digital technologies create new possibilities for how people relate to each other, how knowledge is defined in negotiations between those involved and how it changes our conception of learning environments in which the participants make meaning. Empowerment is related to the active use of different tools, which must be based on the prerequisite that those involved have the competence and critical perspective for how to use them for learning. Literacy, seen in this way, implies processes of inclusion and exclusion. Some have the skills and know-how to use them for personal development, others do not. Schooling is meant to counteract such cultural processes of exclusion.

There is great variation in how digitally competent and technologically interested young people are. Sonia Livingstone's (2009) studies of the bedroom cultures of young people using digital media in the UK is an example of studies that raise critical questions about what we mean by 'digital youth' and the role of media in young people's everyday lives. Such studies show that not all young people are as technology savvy as the public image might imply.

The importance of educating the digital generation is not so much about being able to use digital media in and out of school, than it is about creating a space for reflection and the building of knowledge that will help all students participate as citizens in a digital culture. In this sense we have to re-evaluate our socio-cultural constructions of the school-aged learner, to prevent new marginalizing mechanisms from developing.

What will life be like for citizens in societies that are becoming increasingly more dependent on digital media in every part of their social lives? How should we, in our research efforts, try to grasp those aspects of skills, competencies and literacies that are important for being a citizen with the necessary knowledge base to take part in our society? This of course also raises some basic questions about the role of schools in our societies. Schools would then still be important social institutions as a learning space for all young people growing up, but just one of several learning spaces that children and youth relate to in their daily lives. In the next few years it will be critical to debate and research these issues and to move towards a better understanding of what 21st century competencies really are.

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