Digital media embedded in Swedish art education – A case study

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Abstract
In this case study a secondary school and its art education is studied. Pupils and the art teacher are interviewed and observations are made in school and out of school. The study is based on socio-cultural theory, media ecology and semiotics. In this school manual and digital media each share about 50 percent of the time available for art. It is shown that it is the teaching method – the change from a dialogic to a multivoiced method – that enables the embedded use of digital media. Arguments for digital media in art are that they are time-saving, promote aesthetic aspects and will put an end to the process of traditional education where the teacher is reduced to being a conveyor of information. The computer lab is no option for an embedded art education. On monitors and in exhibitions pupils are surrounded by other pupils’ works, which promotes a desire among them to improve their creativity, and a local art culture is developed in a cumulative process.

Keywords: media ecology, semiotics, screen culture, multivoicedness

Introduction

Changes in the media world
This article seeks to problematise the question of how changes in the media world are being matched by changes in education, particularly in art education in schools.

According to Kress (2003), we are living in a “new media age” where the digital display has replaced the book as the dominating means of communication. Mackey (2002:37) speaks about a “media ecology”. Pictures, music, speech and writing together occupy a prominent place in the multimedia culture (Facer et al., 2003; Kress & van Leeuwen 2001; Elmfeldt & Erixon 2007). The new media, as Manovich (2001) calls them, bridge time and space and enable cultural proximity in spite of geographical distance (Marner 2005a). Jurij Lotman calls this the semiosphere, and compares it with the biosphere of the ecological system (Lotman 1990). The contemporary so-called information society enables the greater dissemination of information; the same message can be rapidly available in more than one place. It can also be recorded and stored so that it can be identically repeated over time.
The graphics editing program Photoshop is now an indispensable tool for both amateurs and professional art vocations in the media and a typical tool (Manovich 2001) for today’s way of regarding creativity in the new media. The relationship between culture and the creator of a work is changing whereby several of the possible choices one can make as the creator of a digital work are directly available in a menu. By cutting in, copying from, quoting and recycling other works, taken from the expanding database (Manovich 2001), works may not be wholly new. Since the original and the copy have lost their meaning in many cases, digital media allow greater availability for the recipients without a corresponding loss for the senders.

Digital cameras and mobile cameras are now very common and pictures by both amateurs and professionals are spread and viewed with mobile phones, on the Internet and in social media. Yesteryear’s photo albums are now available on Facebook, Bilddagboken (Dayviews) or Flickr. This implies that parts of what was previously private and off stage have become public and on stage.

New genres are constantly being developed in variations of estrangement (making the familiar strange) and familiarisation (making the strange familiar) (Marner 1995). The circulation channels have been renewed, for example, with Facebook, YouTube and deviantART. Computers’ icons and menus (Manovich 2001) permit two-way communication, for example the opportunity to comment helps create new cultures and communities on the Internet. This means that what we call digital media are involved in complex and varying communicative and cultural relations. We cannot call it only technology or ICT since parallel to the technology there are cultures where the technology is a basis or a platform. New media can thus change ways of living (Meyrowitz 1985/1986).

My question in this article is how these changes in the media world correspond or do not correspond to changes in art education in schools, in view of the way the subject is taught in a single lower secondary school in Sweden. More specifically, the question concerns the ways in which digital media are integrated into art education in the school, with relatively limited digital resources. Another question is how art teachers and pupils talk about the subject and the teaching that is conducted.

The use of ICT in school

School subject paradigms are important with regard to the use of ICT (Goodson & Mangan 1995, Sutherland, Armstrong, Barnes, Brawn, Breeze, Gall et al. 2004). Digital media’s entry into education can be conceived as filled with tension (Hennessy, Ruthven, Brindley et al. 2005, John 2005). One reason for this may be that digital media have chiefly developed outside education, connected to popular culture and in groups of young people. A certain way of constructing a picture may lead to a particular function and distribution of that picture (Sonesson 1992). Wertsch (1998) emphasises that the tools and mediations involved were initially intended for a particular use, for example religious or military, but their areas of use have been widened later on.
However, the tool or mediation may bring with it some aspects of its primary use and origin. This may imply that pupils in a bottom-up movement introduce digital media, and along with them popular culture, into the subjects (Sutherland et al. 2004:415), which might constitute a threat to the core of a subject.

ICT in education has met with “resistance” (Finlayson & Perry 1995, Erixon 2010). Yet ICT can improve efficiency (McCormick, Scrimshaw 2001:45) or be “added” to other features of a subject as an “extension” (McCormick & Scrimshaw 2001:45). Moreover, digital media can be “embedded” in a deeper way in different parts and contents of the subject, which may also imply that the fundamental nature of the subject will change (Sutherland et al. 2004).

Certain subjects like art, language and music may however be seen as media-specific and be defined by the medium they use as their home medium (Marner 2006). According to McCormick & Scrimshaw (2001:47), new technology can here completely transform the nature of the subject.

Theoretical framework

The present article is included in a research project called Skolämnesparadigm och undervisningspraktik i skärmkulturen – bild, musik och svenska [“School subject paradigms and teaching practice in the screen culture – art, music and Swedish”].

The theoretical perspective used is media-ecological and semiotic. The media-ecological concept builds on the idea that we are situated within the structures of media that we use for communicative purposes. Media are not neutral, transparent and value-free “information superhighways” since they are also part of the content (Meyrowitz 1985/1986, Manovich 2001, Strate 2011). This holds certain consequences for education and teaching with digital media. McLuhan (2003:12) writes about the importance of new media and technologies: “any technology gradually creates a totally new human environment. Environments are not passive wrappings but active processes”. He coined the phrase “the medium is the message” for this phenomenon. In media-ecology terms, a school forms a coherent media environment where changes in the use of media may change the social order (Meyrowitz 1985/1986).

By means of the concept of “mediation”, taken from the semiotician C. S. Peirce and from Lev Vygotskij, art education may be seen as part of the numerous mediating processes that occur in education, from the use of pencils and paintbrushes to computers as everyday tools. The mediations’ different forms, potentials, obstacles and relations in education are also illustrated by Vygotskij’s and James V. Wertsch’s sociocultural theory and by semiotics (Jurij Lotman, Göran Sonesson, Gunter Kress).

It has been argued (Kress 2000, 2001, Marner and Örtegren 2003, Marner 2005b) that education still focuses on the dominance of written language among the mediations and applies a narrow text concept. There are, however, many indications that a widened text concept (Skolverket 2000:10, 98) and a horizontal mediation concept (Marner and Örtegren 2003, Marner 2005b) may make education more interesting
and engaging. Kress (2000, 2001) talks about multimodality when pointing out the broadened use of different mediations in society and education. Multiliteracies (Cazden et al. 1996) have also been discussed as broader competencies than literacy.

In the research on reading and writing, concepts such as “monologic”, “dialogic” and “multivoicedness” (Dysthe 1995, Skolverket 1998) are used, as taken from Michail Bakhtin’s speech act theory. By adding the concept of “multimodality” (Kress 2000, 2001) to Bakhtin’s speech act theory aesthetic subjects and learning processes may also be seen as part of the general dialogicity of education. Communication can take place in more media than language. According to Skolverket 1998, following Bakhtin, a monologic learning environment may be a mode of teaching where the teacher decides what should be done and how it should be done without the pupils being given any real opportunity to express their points of view. A dialogic learning environment implies that the teacher has a great influence on what should be done, but the pupils are allowed to take part themselves in deciding how it should be done. In a multivoiced learning environment, the pupils often experience that they themselves have a great influence on the choice of what should be done and how it should be done, in consultation with both other pupils and the teacher. Swedish art education in secondary education is characterised by dialogicity (Marner, Örtegren & Segerholm 2005:89).

**Methodological approach**

The present article is a case study of a specific municipal Swedish school in a middle-sized town in Norrland and its art education in forms 7–9. The study focuses on the implementation of digital media in the subject of art. The teaching aids that are used and the role of project assignments at the school are related to digital media. Both creation in art education and presentation and the analysis of art in relation to digital media are dealt with in the article. The choice of the school’s teaching as the study object was based on a notion that particularly interesting teaching of art was being carried out at the school.

In 2007 I decided to write an article on art education in the school and conducted three interviews lasting three hours each with the art teacher who works at the school in question. I followed this up in 2011 with two interviews with the teacher, one hour each, and with focus interviews with pupils at the school in the 8th and 9th forms. The pupils were divided into boy and girl groups of 3–6 pupils and each focus interview took about 30 minutes. Four groups of pupils came from an art and handicraft profile and two groups had an ordinary art education. However, the ordinary art education and the art and handicraft profiles had the same type of art education, except that the profile had more hours on the timetable than ordinary art education. In total, six groups were interviewed. The interviews were digitally recorded, but not transcribed into written form. For several years I have as an art educator also made observations in the art room of the school and on exhibitions. The teacher is about 60 years old.
and has worked at the school for more than 30 years. I also talked to and had email contacts with some other teachers and school heads at the school.

**Results**

**Digital resources**

In the art department of this school there are now eight computers, which is probably a large number for an art department in forms 7–9 in a Swedish primary and lower secondary school. Four computers for girls and four for boys are available. The eight computers were purchased partly by the school and partly with money from projects in which the pupils took part. The art department’s computers have since been successively upgraded in order to enable work with different types of image treatment. A laser colour printer, a scanner, digital cameras and a digital projector have also been bought. If resources are left over from an implemented project or a fiscal year, this money can finance new purchases of digital equipment. As a consequence of frequent co-operation with departments, administrations and industry and trade, the teacher has established both formal and informal contacts that are important for the activities. A relative who worked in a company that the teacher had contacts with gave two computers as gifts to the working team, according to the teacher. The art education also received a scanner in this way.

The teacher states that the computer rooms do not function very well since teaching in them can only take place during a very small part of the semester as many classes need to use the computer room. Being able to use digital equipment in connection with the art room enables a more informal and, according to the teacher, a more “natural” integration of digital media into the art education than if the teaching in digital media could only be conducted in an external computer room. The teacher argues that “a computer should be like a piece of chalk, a pencil, something that one uses every day, not for two hours in a school year”. On the contrary, a computer room is an unnatural place for conducting art education. In the computer room the computers as such are focused on, not what they should be used for, according to the teacher.

**The working method: The teaching aid and the exhibition**

Eight computers is a relatively large number of computers for a Swedish art department in a secondary school. In spite of this, it is a small number considering that the teacher is supposed to conduct teaching in digital media with 25 pupils. How does the teacher resolve this problem?

The teacher has resolved the problem by creating more flexible teaching by means of a teaching aid that allows the pupils to work with various items of “image laboratory work”, which they themselves select from all the different suggestions of the teaching aid. At any time the pupils can thus work in different areas. Some pupils need to use the computer, but not all. Below I describe the teaching aid and its function in the didactic context.
The illustrated teaching aid, which the teacher himself has constructed, functions as a backbone for the teaching. It is not a manual giving instructions on how materials and techniques are used. The laboratory work is instead organised according to semiotic concepts. Some examples may be given: estrangement and metaphor are mentioned as concepts, image functions such as advertisements, art and propaganda are dealt with. The teaching aid is digitally available in the art room’s computers, but there is also a printed set for the class.

At the start of the semester the pupils study the teaching aid and plan their own upcoming teaching during the semester by selecting three pieces of laboratory work to implement. According to the teacher, the purpose of the planning is that the pupils will be guaranteed that they already have items of laboratory work and projects to work with so that they will not be forced to start from scratch when attending a lesson. It provides the work with continuity. The planning also enables them to work simultaneously with several projects and items of laboratory work.

This working method also includes an annual exhibition. For the teacher, the presentation of art works is equally important as creating them. The exhibition comprises all works by the pupils during the year, digital pictures, digital photographs, mobile pictures and manually produced pictures as well as co-operation projects with other subjects and departments and completed projects. Up to 2005 the exhibition took place at the end of the school year, but for pedagogic reasons it is now held in autumn, at the beginning of the school year, during the first two weeks of August.

The teacher says:

It was a pupil who said a musician must listen to a lot of music, his dad was a musician, in order to make good music. A writer must read many books in order to write well. And a picture maker must look at many pictures in order to make good pictures. And then I thought: Oh God, how stupid to have the exhibition at the end of the spring semester. Because then those in the 7th form, the upcoming pupils, will have no opportunity to see it. It is an educational advantage to hold it in autumn. Because then they are educated into seeing what is being done.

By taking place in autumn, the exhibition is not only summative, a summary of the work of the school year, but also formative, i.e. for the new pupils. Each class studies the exhibition as an element at the start of the art education semester. During this period the art education takes place in the exhibition. In this phase, the pupils thus work with the exhibition, the teaching aid and their individual planning. They can also visit the exhibition during breaks and in their leisure time. In addition, the art teacher arranges shows in the evenings for parents and other interested persons.

The pupils work with the teaching aid for a total of three years and thereby manage in this period to implement a large number of items of laboratory work in the subject. The preliminary planning based on the teaching aid is, however, flexible. If
a project is offered by another subject or by a department outside the school, a pupil or a whole group or class can break the planning if they wish, and hence postpone the projected laboratory work.

It is always optional for the students to participate in a presented project. The projects are frequently digitally produced, for instance when the 8th form pupils produced the stage design for a theatre production with professional actors and musicians, including four large backgrounds, digital textile prints of four times six metres, and two rotating roll-ups. The pictures were digitally produced with financial support from a local advertising agency. In order to ensure enough resolution of the large 4 x 6 metre pictures, the pupils were able to use pictures from a digital image archive the advertising agency had access to.

According to the teacher, the introduction of the teaching aid resulted in a more flexible resource use of digital equipment, which increased the opportunities to use digital media in different parts of the teaching. In the following I describe the working method used in the school as regards digital images.

**Digital images**

In comparison with other subjects, art education is the subject in the school where digital media are most frequently used, according to both the teacher and the interviewed pupils. The computers in the art room are used daily in most image productions. One girl claims that the computers enter into “everything”. The group gives examples: to look for information and pictures, to edit pictures to “sort of make them cool in the computer” or “to print pictures that you will use for a picture drawn by hand”. Texts in different typefaces can be printed out from the Publisher program. Another girl points out the manifold ways in which one can work with digital media; one can remake pictures, make one’s own pictures, find inspiration for one’s own pictures, edit films and photographs. Another pupil states:

> We can work without the computer, but it is a very great aid, and we get, as I said, a little more freedom with the computer too, for the Internet and electronics and such things give great opportunities to create things, with machines.

The pupils do not always choose to work either digitally or manually but like to combine the two methods. Combinations of digital and manual work are the most common working method. With regard to digital image creation, one girl thinks, “The teacher encourages it, but he does not say that we should do so”. Another girl in the same groups adds, “No, it depends a lot on what you want to do”.

Searching for and studying pictures on the Internet do not always result in a digital composition but instead in a manual picture. Of all the work done in art education, the art teacher judges that about 40 per cent is digital. The mix of digital and manual is about 50-50 according to a group of pupils, who add, “It’s nice to be able to choose” and “It varies”. One boy thinks that “in the future too it will be 50-50, made both
manually and by machine” in the art education. A pupil describes how he and another pupil combined an installation with a montage of printed pictures from the Internet:

I and Liza, a girl in the class, we made a kind of board, /.../, then we used the computer too, we printed pictures of imperilled children in their homes. And then we made a kind of children's party, with like bloody napkins. And like liquor bottles instead of like Winnie-the-Pooh mugs. And then the message was sort of there, that children can grow up fast now...

Another pupil describes a montage made entirely digitally:

There was a picture that a mate and I had made long ago. /.../ It was The Last Supper, the painting with Jesus. But we had replaced it with junk food. The last supper symbolises that if you eat unhealthy food, it can make you feel bad.

One boy thinks, “I prefer doing it on the computer”, while another says, “I prefer doing it manually...because it’s easier to visualise what it’s going to be...” and adds that he uses the computer mostly to search for pictures in order to mount them in a manual picture: “It is if I’m going to take out a picture that I use it”. While one of the pupils uses digital pictures in a ratio of 70 percent digital to 30 percent manual, the ratio is the opposite for the other pupil.

The pupils thus choose themselves whether they want to work digitally or manually and have their own preferences. Taken together, it seems that digital and manual work are done roughly to the same extent in this school.

One pupil uses the efficiency argument about his digital art work. He often makes montages with Photoshop and chooses to search for pictures on Google rather than photographing the pictures he will work with, since “I have so little time”. The ideas are important to him, and he has to work fairly quickly in order to realise them. One pupil emphasises the simplicity of searching for pictures; “It’s very easy, if you want to do a job about something like children’s work (in sweatshops), for example, it’s very easy to find pictures”.

One girl puts the focus on the simplicity and hence the efficiency in relation to aesthetics: “I think it’s much easier to do something nice on the computer” and confirms the efficiency of being able to rapidly search for pictures to use: “It saves time, you know, if you want a picture. You don’t have to take photos of all those fruits if you can just print them”.

The teacher also argues for digital pictures in relation to efficiency. He says, “It’s one thing to make a painting in oil, and another thing to work with a computer. It always saves time, which is very welcome in a subject with such a limited time allowance”. He also thinks:

These media, the computers and laser printers that we have, are terribly important because they save an enormous amount of time for us. From working chirographically [by hand] to working mechanographically [with a machine]. But it’s not only that. That is the physical production. When they fetch material: everything is on the Net. It saves me time.
One girl states that digital pictures “are more fun” and another one uses aesthetic attitudes to explain the differences in the pupils’ interests: “It also depends on which aesthetics you’ve got, whether you think that digital pictures are finer or drawn pictures, those you have sort of drawn yourself”.

The teacher also uses aesthetic arguments based on the finish that may be attained with digital media:

> If the pupils work manually, you notice that they are 13–15-year-olds. But if pupils work mechanographically, digitally, via computers, it’s sometimes impossible to determine whether it is an adult, a professional, a designer, an artist or a child who has made it.

One boy points to a negative consequence that may arise if one chooses to work with digital media; one does not train one’s ability to draw and paint. Another boys says, “In the future /.../ computers will be an important part of working life, but I think you should still be able to write with a pen or pencil”.

Overall, the arguments put forward for digital pictures in art education are that they increase the efficiency, simplicity and speed in different parts of the process. In addition, aesthetic arguments are offered concerning preferences, finish and attained skills in image treatment. Some people think that manual skills may be lost in digital image work.

Many pupils have greater skills than the art teacher in digital image treatment, but he has successively learnt from the pupils. The pupils give him tips, for example, on web pages with easy guides in Photoshop or other interesting materials on the Internet. The teacher has completed PIM up to and including step three. PIM (Practical IT and Media Competence) is a national project managed by the National Agency for Education (previously by the Authority for School Improvement). But the teacher confirms the need for further education in digital image treatment.

In the teaching situation the art teacher does not have time to instruct all pupils in image treatment. Since different pupils have different digital competencies, they often teach each other. The pupils give advice and guidance and learn from each other as regards image treatment and other uses of digital media. They intervene in each other’s works. At the computers the pupils can support each other in their respective laboratory work and projects that are going on simultaneously. The art teacher provides an example:

> A pupil who is working analoguely needs a heading or a picture and shouts to a pupil who is working with one of the eight computers, “Can you take out a picture of Hitler? I’m doing a co-operative job between art and social studies about the Second World War”.
Concerning the computers’ role in the school, the teacher states:

It was said earlier /.../ that computers would put an end to the teaching profession. But it is exactly the other way round. Computers and the Internet will put an end to and finish the process of traditional education where the teacher is reduced to being a conveyor of information. Today the teacher is needed more than ever; I experience in every lesson that we must problematise that information.

Asking the teacher seems to be more expected in the school situation but not always to find out things for oneself, according to the teacher. He encourages pupils to independently search for information and describes a typical situation:

The pupils are so programmed to regard education as a traditional institution that even in the art room my art pupils will say, “I’m checking up on Picasso, do you know anything about him?” I’m forced to say, “Imagine that you are at home”. “Exactly”, they say and go to the computer and to Google. “Education is old-fashioned for them, isn’t it?”

He further clarifies his views, “I mean, it’s stupid now that I should start talking about Picasso. Instead, I can let them fetch that material and then problematise it together with them, via dialogue education”.

According to Sutherland et al. (2004:417), teachers quite often look upon ICT as a threat in such a way that they think that individual work on the computer may replace the teacher in the teaching situation. But this teacher does not think so. He instead wants to encourage the pupils to retrieve information themselves via the Internet and then link it to a critical examination and problematisation in the teaching situation.

**Digital media in relation to the working method**

“It is individualised teaching that is the prerequisite for using new technology in art education”, according to the teacher. For financial reasons they have not yet been able to purchase 30 computers, 30 video cameras, 30 still cameras, i.e. class sets of electronic equipment for the art education. Not all pupils can thus work with the equipment at the same time. If the embedding of digital media in teaching is to be implemented at this school, a prerequisite is that the teaching will have to be individualised, i.e. that the pupils conduct different types of laboratory work and projects at different times and in different orders.

An individualised working method implies that pupils in a class work with different things simultaneously, and start their different items of laboratory work at different times in the semester. My observation here is that with this working method the pupils become curious about each other’s works and show them to each other. There are often spontaneous discussions among the pupils during the working periods. Experience shows that a good idea in a piece of work may lead to refined ideas among other pupils. One girl says, “If you hit on an idea, you might hear someone else talking, or you ask /the teacher/ about something, it just gets bigger and bigger, you can make a lot out of a small thing”. Another person in the group adds, “We all help each other” and “We
Intertextuality thus arises between the pupils’ pictures. If all pupils in a class in the art room implemented the same task simultaneously, for example, by working with digital images at the same time, the school would be unable to embed digital media in the art education so powerfully because the number of computers is too small. Individual planning via the teaching aid implies in practice that, while some pupils work manually, others work on the computers. As mentioned earlier, Swedish art education in 7th to 9th forms is instead characterised by dialogicity (Marner, Örtegren, Segerholm 2005:89) where the teacher states the area of study and the pupil performs the task in the area in her/his own way.

The teacher at this school has in this way introduced multivoiced learning in art education. Pupils teach other pupils, including the teacher, and the sender and recipient relationship is constantly changing in character and position in the teaching. The teacher thinks, “There are no teachers and pupils here. We are a group, with minimal hierarchies, that makes things”.

**Intertextuality**

The multivoiced education results in the pupils supervising each other, which implies intertextuality. The teacher also plays a supervisory role. More profound intertextuality also arises since the teacher photographs and stores all of the pupils’ pictures and works and uses them in his teaching. Without digital media it is impossible to store the pupils’ works in a good way. Manually produced works are also photographed by the teacher. The teacher points to a monitor in the art room and says, “That TV is often on, showing pictures in lessons, so that the pupils can see all the time what other pupils have done and what other pupils are doing”. He adds that in the corridor of the school there is also a monitor that often shows the pupils’ works. One pupil confirms the teacher’s statement: “He shows pictures that are finished, what they have done well”. Another pupil adds, “And you can get ideas from this, what others have done” and thinks that the teaching “is not based so much on other artists, but on other pupils, and on the Internet”.

Another aspect of intertextuality is the recycling of material. In the art department a lot of material and older works are stored. These works can be reused in new contexts. In addition, image searches on the Internet, with the subsequent mounting of the pictures in new contexts, result in the reuse of pictures from an expanding database, in line with Manovich’s (2001) idea.
The teacher shows some signs in the art room and points out that the pupils also make teaching aids for other pupils. The signs are digitally manufactured in large sizes in collaboration with a local advertising agency. He also shows some files and says, “These are some girls who made a large number of illustrations of the concepts. /…/ It’s a teaching aid, you see. So that other pupils will understand better when doing this”. He adds, “It was they who thought of it, in order to help those in 7th form”. That pupils produce teaching aids for other pupils contributes to continuity and intertextuality.

If we add to this the teacher’s teaching aid and the formative exhibition, we may claim that intertextuality is omnipresent in the art education of this particular school. Above all, this applies to other pupils’ pictures and works. Since the pupils often see former pupils’ ideas and works and can use them as their starting point and relate to them, a cumulative effect arises.

In the pupils’ art work the focus is however on the ideas, not on studying other pupils’ image ideas and reproducing them. One girl seems to think that the ideas grow out of one’s own choices made in the teaching aid. She says, “You hit on ideas yourself, you have a plan that you follow”. She further clarifies that one has to develop and improve one’s art work and thinks, “You can get a starting point and then make more out of it, build on it”. Another girl in the group adds, “A little more, a little better”. A girl in another group focuses on the relationship between studies of other pupils’ pictures and her own picture. She thinks that it is important to “… try to develop the idea, and make it one’s own”. Another girl adds, “When all of us do different things, they are never the same things”. One girl compares the teaching in different subjects and thinks that in social studies “you mostly cram facts, but in art you create and develop logical and illogical thinking, and then you become more creative”. “It makes us think and rethink”, says a girl when describing the subject in this school.

The teacher argues that the pupils do not look for ideas on the Internet; instead, they already have an idea that they have to give shape to. He says, “It’s always like that. The idea comes first, and then they try to find forms of expression in order to give the idea a physical representation…” and, “they always start with an idea. When they are planning I always tell them that they must have ideas that differ from each other”. It seems thus that inventiveness precedes manual skill in the prioritisation and that manual skill grows out of inventiveness, which gives motivation and commitment to further work. One boy says, “I don’t think it’s art education now but I think it’s sort of a bit more; in my head I think now it’s a creativity lesson. Because we learn to use what we’ve already got in our heads…”.

This indicates that the pupils are aware of the difference between what Wertsch (1998) calls mastery (learning to master the medium on the medium’s terms) and appropriation (mastering the medium on one’s own terms). The pupils have a striving for appropriation, for being allowed to implement their own ideas. There also seems to be a relation between on one hand mastery and an aesthetic-practical subject conception that is aimed at training one’s skills in drawing and painting and, on the
other hand, appropriation and how digital media can facilitate the implementation of an idea in art, through simplicity and efficiency. The implementation of the idea that creativity and inventiveness are central in the subject has been successful, according to the teacher. He says, “Therefore I now have no parents who phone me and ask ‘why did my daughter who is so good at drawing horses get a Pass in art’”.

Wood (2004) confirms the above observations and refers to informants who think that the execution and technical aspects have become so easy with digital media that the focus has shifted to the message and the ideas. It is also thought that digital art rewards a new type of pupils other than those who used to get good marks, which is also hinted at by both the pupils and the teacher in this study.

Intertextuality creates a coherent art culture at the school, a local media ecology. It is often characterised by rhetorical devices. In the teaching aid there is a focus on rhetorical devices that can be used in art education. Together with the pupils’ inventiveness, this creates a high level of image creation. The teacher argues:

The pupils are completely rhetorical, in the non-conventional sense; they mix digital, that is, mechanographic, with chirographical and all sorts of techniques, three-dimensional, two-dimensional. /.../ They are not only rhetorical products; they are so qualitatively advanced.

As regards the content of the works, some girls believe that “you show what you think” and that “it is about important things /.../ it’s a lot about racism, inequality and such things” and “if there’s inequality that doesn’t work, then you show it in different ways that you had perhaps not thought of earlier, so you always have some kind of message”. The works often relate to justice and social issues that are important to young people. A critically examining perspective is thus added to the message and the ideas that are represented.

An individual pupil’s own creative thinking can also develop, as the following two pupils’ quotations show: “You think of more ideas now than you did in the beginning” and “If you just see something outdoors, you think, ‘I can do something out of this’”.

This all means that the embedding of digital media in art together with a multivoiced working method, with many learning pupils and pupil relations, can contribute to a favourable learning climate. This seems to be the case at this school.

Leisure and school

Sutherland et al. (2004:415) point out that the use of ICT in education is influenced by learning outside school, that pupils build further on the knowledge they already have, and that technological tools carry with them some of the culture in which they were developed.

Most of the pupils I interviewed work with pictures in some way in their leisure time. This is true of both the Bis classes, which are profile classes in art and handicrafts, and the class that has ordinary art education. It may involve anything from drawing, painting and three-dimensional work to photography, image treatment and filming.
The pictures may stay on the drawing-block or the computer or end up in a drawer, but they may also be publicly shown. In some groups, all the interviewed girls have blogs of their own where pictures and texts are published. Drawings and paintings can also be scanned and published.

Some pupils point out that at home they can sit and draw without any precise aim, which they would have had done if it had been art education. One boy says, “There aren’t any concrete pictures, you just sit sketching, one figure here, one figure there.” Another one “draws mostly for the sake of drawing” and yet another one states, “When you sit at home it has no aim, it’s just to wile away some time, like”.

One boy says, “I usually put some on a homepage called deviantART”. “It’s most often people I don’t know” who make comments, according to the pupil, and the comments are usually positive. Another one says:

I usually make a lot of films and things like that. Sometimes I edit pictures. /.../ It’s not a lot of painting, actually. /.../ Sometimes it’s been documentaries, as if you had sort of got an assignment from the school to make something for example about thematic days or an open house or something of the sort. At other times, one may write a manuscript and make a horror movie or something like a drama or anything.

The films are subsequently put on YouTube. One boy says that he builds three-dimensional environments for Warhammer figures and radio-controlled models of his own design. He has participated in competitions that he has won and is also interested in building in the art education. One boy says about the relationship between leisure and school: “It was like I wanted to choose art because I can do things that I also do in my leisure time. You have the same freedom, and that was one of the reasons I chose it”.

One boy often paints, draws and photographs landscapes and urban environments in his leisure time. In response to the question of what he did with the pictures, he answered, “They are never published, for some reason”. “I lie low. I’m not a person who publishes my work a lot” and adds “I feel sure about what I do, but you know ... the Internet is a little too open. It is a terribly good invention, but it is too open. And that’s a disadvantage. But there are advantages too”. The same boy says, “I use the semiotic concepts almost every day when I think. I have started thinking in terms of estrangement, metaphors and caricaturing. It really triggers inspiration too. I also use them practically at home”. Another boy in the group confirms that it works like that for him as well.

The art teacher encourages the pupils to do art work at home. He supervises pupils who also work with art from home. Many pupils have access to digital cameras or camera mobiles that can be used for this purpose. In the school they can also borrow a digital camera and take it home, photograph the work and send pictures for supervision to the teacher, who is either at home or between lessons at school and can supervise via e-mail or SMS/MMS. Teachers in the working team of which the teacher is a member also use digital media daily in order to communicate efficiently with each other.
To judge from the answers, many pupils are not only Internet surfers but also use their leisure time actively to put out their own material. Among the pupils there is an influx of the image use of their leisure time into the school and its art education. But there is also an outflow from the art education to their leisure time, for example in concept formation, creating films on commission from the school and the publication of pupils’ own works produced at school. However, some of the pupils regarded leisure activities in art and art education as two different areas that do not influence each other very much.

**Conclusion**

A look at the school studied here shows that the art teacher consciously works to integrate digital media into the subject’s different phases, in image studies and image searches on the Internet before creation, in image treatment in the representation work itself, in external and internal communication, in supervision via the Internet and SMS/MMS, in original production for printing, in digital photography and mobile pictures, for presentations (during lessons, in annual exhibitions and project exhibitions, on the subject’s and the school’s homepages and in social media) and in the storing and presentation of pupils’ pictures. The opportunities these media provide are utilised in the different phases of image communication and art education. It may therefore be argued that digital media are embedded in the subject in a deeper way than if they had merely been added to other manually based teaching as a new and exclusive element. They have become an everyday and natural feature in day-to-day work in the art room. The creation, communication, presentation and analysis of pictures have become parts of the subject’s striving for complete communicative processes. Creation is important but it is always followed by analysis and presentation.

The dichotomy between digital media- and manually-based art has been abolished. Combinations of manual and digital art work are the most common at this school. The national evaluation (Marner, Örtegren, Segerholm 2005) showed that in Swedish art education manual creation was the most common teaching. A technological development has taken place at the studied school.

Large classes creating logistical obstacles to using technological equipment might be a partial explanation of the fact that, according to the national evaluation of art education NU-03 (Marner, Örtegren, Segerholm 2005), computers are generally used to such a limited extent in the subject. One problem might be that all art pupils work simultaneously in the same area. According to the national evaluation of art education (Marner, Örtegren, Segerholm 2005), dialogic teaching is the most common working method in the subject. If all pupils in a class are expected to work in the same area initiated by the teacher, such as digital image treatment, it is impossible to introduce resource-demanding media and other new technology if the school does not have financial resources to introduce this technology in the form of class sets of digital
cameras, computers etc. This implies that traditional dialogic ways of conducting teaching, whereby all pupils work in the same area, can counteract the development of digital elements in art education. Viewed from this perspective, this means that the introduction of digital media in art education requires more flexible ways of teaching. It will be interesting to follow further digital developments in this school since all pupils are about to be equipped with their own lap-tops.

However, in the school studied here the working method is multivoiced. Pupils learn from other pupils. The pupils are in different phases of their respective works. The individualisation of the teaching, where the pupils’ different items of laboratory work and projects are simultaneously implemented by means of the teaching aid, makes it possible to integrate digital media into the art education with the existing equipment. It thus follows that there is a relationship between the use of digital media and the pupil-active working method that is in place. The individualisation of the learning is based on the pupils’ different choices of laboratory work, which creates the multivoiced education.

This study demonstrates the advantages of placing computers in the art room if one strives to embed such media in everyday work in art education. It is then that digital media can function on the subject’s conditions. The art pupils do not, for example, have to book a specific time and spend time going to the computer room to conduct a simple search. The computers in the art room are in use all the time. A further aspect of such embedding is that digital media are central to image creation, not only the retrieval of material before the production of an image. At the same time, the image production is included in a wider context of communication.

The fact that digital art education takes place within the framework of compulsory art education may also be seen as a dimension of the embedding. This implies that it follows a national curriculum, that the pupils are given marks in the subject, including the digital features. This makes the teaching in digital media stronger, if one thinks that the compulsory subjects of education constitute its core. Via the annual exhibition in August and other project exhibitions, it has been possible to present the project to new pupils, creating intertextuality, continuity and a high level of the work, which has resulted in the development of a local art culture.

On one hand, the art teacher describes the individualised teaching as the prerequisite for using digital media in art education. On the other, he emphasises digital media’s role in making it possible to implement pupils’ participation in the teaching (cf. Meyrowitz 1986/1987). This shows how intimately digital media interact with the working method, regardless of whether it applies to art laboratory work or project teaching. In Marx’s words, one might talk about the relationship between productive forces and the relations of production, but one might also argue that digital art as a new medium is being integrated into the school subject of art education as part of a union in which both parties may gain advantages, and greater convergence (John 2005) between the sacred and the profane can be attained. Digital media will no
longer be simply a technology and art education will acquire powerful tools for the production, presentation and communication of art.

Believing that ICT in education will result in new ways of teaching has been called utopian by teachers who have studied ICT elements in education (Sutherland et al. 2004:413). Yet this seems more reasonable after studies of the development of teaching digital art media in this school.

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