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Manfred Scheid

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Music education – privately, personally and professionally The school subject of Music, digital media and tools

*Manfred Scheid**

Abstract

This article is about the way in which and to what extent digital media and tools are used in the teaching of music in Sweden. Through interviews and observations, teachers' and pupils' experiences and expectations of digital media and tools are presented. The investigation considers eight municipal schools with pupils in the ninth form. The article adopts a media ecological perspective, which implies that media create new social and communicative structures for constructions of knowledge and identity. The results show that music is expanding both quantitatively as the supply increases, and qualitatively since it is being integrated with mobile images to a great extent. Teachers choose material from the Internet and create their own digital teaching materials. Pupils choose music and artists based on personal preferences. Stage performances are important and are imitating those of professionals to an increasing degree. Use of the Internet broadens and deepens music abilities and knowledge, but the focus is still on playing in rock and pop ensembles.

Keywords: music pedagogy, teaching music, digital media, digital tools, performativity

Introduction

Digital development in the field of music is extensive and includes the development of instruments, e.g. synthesisers and sound processors as well as the recording, processing and distribution of music, e.g. GarageBand and YouTube. This article is about the way in which and to what extent digital media and tools are used in the teaching of music in Sweden. Through interviews and observations, teachers' and pupils' experiences and expectations of how digital music technology is used are presented.

In curricula for the compulsory school system in Sweden from 1994 onwards there has been an intention to increase the use of information technology (IT) as a tool for seeking information, learning and communication (Lpo 94 1994). In the revised syllabus, Kp 2000, one objective of the subject of Music was that the pupils should develop IT as a tool in their own creation of music (Skolverket, 2000). This ambition is further elucidated in the latest curriculum, Lgr 11 (Skolverket 2011a). Lgr 11 states that

*Lektor Pedagogiskt arbete, Inst. Estetiska ämnen, Musik, Umeå universitet, 901 87 Umeå, Sweden. Email: manfred.scheid@umu.se

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pupils in primary and lower secondary schools should be given opportunities to develop knowledge by using digital tools in various different musical forms and contexts. These demands comprise digital tools for creating sounds and music by means of voices, chords, tunes and rhythm instruments, from the fourth to sixth forms (10- to 12-year-olds). In the 7th to 9th forms, pupils should also use digital media to create and arrange musical material, which includes combining music with forms of expression such as video (Skolverket 2011a, 109).

Concepts such as ‘computers’ and ‘information technology’ are generally used to indicate that information is digitised. In this article, I will also use the concepts of ‘digital media’ and ‘digital tools’. I relate *digital media* to the communication of digital information, e.g. the Internet, while *digital tools* are the machines and applications used to process the information, e.g. mobile phones and recording programmes for music and video. Many digital media and tools are controlled via interactive screens, which is a reason for calling the digital evolution “the screen culture” (Erixon et al. 2012; Scheid and Strandberg 2012a, 2012b). The screen culture alludes to the use of efficient, affordable and user-friendly interactive digital media and tools.

The aim of this article is to develop knowledge of the ways in which digital media and tools are used in the subject of Music in Sweden. The questions are: 1) how are digital media and tools used in the teaching of Music?; and 2) in which ways does it affect teachers and students?

Research overview

Currently, there is a multi-faceted research on the effects of digital media and tools on school subjects. Within the subject of Music in Sweden, in 1982 Anita Kugg began to become interested in and use the computer in music education (1992). In the early 1990s, she became coordinator of the project “Datorn i Musikundervisningen: DIMU project” [“Computers in the teaching of music: The DIMU project”] that involved a dozen schools in Sweden. Interestingly, in 1989/1990 Kugg already designed pedagogical materials so that students themselves could start up equipment (computers, software and computer peripherals), and that this was used in the optional subject Word – Image – Music for creating musicals and videos. Hugardt (1992) found that the pupils’ self-confidence, motivation, interest and working capacity seemed to be stimulated and strengthened by means of computer support. This was noticeable among low-achieving pupils and pupils with no previous knowledge of playing an instrument. In addition, their interest in singing increased. Berglund (1992) asserts that the visualisation of music enabled by computers is bringing a positive change to the teaching of music. The visual aspect of being able to focus clearly on varying sections of a musical process is also emphasised by Becker (1993). Rosén (in Berglund, 1992) found that computer support stimulates song writing via an ear for music and visualisation.

Folkestad (1996) let young people compose/create music with the aid of computers. He found that young people accustomed to playing an instrument chose to arrange an already finished piece of music that they could play on their instrument – a horizontal strategy. Young people unaccustomed to playing an instrument used the computer's software to create clusters of music, several parts in some bars, which they copied – a vertical strategy. "I can always make another one" is the descriptive title of an article by Nilsson (2003). The title includes precisely the maxim that, if I am not satisfied with my musical work, I can create a new one, something the digital evolution has facilitated. In his thesis, Gullö (2008, 2010) argues that in the future demands will be made on music teachers' competence in information and communication technology. "Thereby music educators will face new educational challenges in the future" (ibid., 195).

When Gall (2005) studied the use of computers in the teaching of Music, she took a multimodal perspective, including linguistics, images, gestures and space. Pupils working with Cubase VST focused together on the composition on the screen and understood the structure of the music on the basis of its visual representation. This made it easy to work together and the technology allowed pupils to create music that was interesting and relevant to them. From a teachers' perspective, Gall and Breeze (2007) also point out the lack of equipment, support and time to learn programmes. According to Burnard (2007), research shows that *when time, space/room and interactivity* are linked to teachers' expertise then creativity and technology can be embedded in the teaching. Namely, time to be creative; room for creativity to develop, among other things through cooperation; and interactivity for interaction and exhibitionism. In Italy, Biasutti (2011, 2009), among others, studies the use of computer support in piano teaching. A more explorative approach to the interface technology for the teaching of music is taken by Nijs (2012a, 2012b), who has constructed "The Music Paint Machine". It is about a music system where a musician can create digital paintings by playing an acoustic instrument and moving her/his body. A further example is Heijnen (2013) who in the project "Remix! Hybrid Arts Education Practices" lets young people explore music in digital multimedia environments. The digitalisation of music, the fact that the information consists of bits that can be manipulated, is the starting point for Väkevä (2010) when he asks whether teaching in the future will be based on "Garage Band" pedagogy, the use of rock instruments, or the GarageBand software. Partii (2012) emphasises the networking and boundary crossing work of music and musicians. She thinks that through active participation in these networks identities are created through musical narratives, i.e. meaning and values are created in the digital music culture.

Dyndahl (2004b) problematises the relationship between digital technology and music pedagogy from epistemological and philosophical aspects. He (2004a) claims that the disciplinary identity of music pedagogy will change through the influence

of digital technology. He sketches five possible aims and directions for the subject of Music:

- The creative subject of music – more weight attached to composing
- The accompanying subject of music – simulations of instruments and musical backgrounds
- The knowledge subject of music – self-instructing and close analysis of music
- The media subject of music – first and foremost a reflection on musical processes
- The network subject of music – problem-based, cooperative and constructivist work – and forms of communication in the sphere of music

A similar point of view is held by Sakai (2013) who argues that a mediated sociocultural world may be described to an increasing degree with post-modern characteristics. He advocates the use of computers in the teaching of music on the basis of democratic principles, principles, allowing a possibility to reflect on our contemporaries. Erstad (2010) argues that digital technology is related to the German concept of 'Bildung' which he associates with the English concept of 'to be literate'. He summarises this by equating 'Digital Bildung' and 'Cultural competence'. Dyndal and Ellefsen (2009) also stress the importance of placing the subject of Music in a cultural context in order to capture the identity of the subject of Music, its content and form.

Theoretical references

From a media ecological perspective, media form environments in which we are situated within media structures that we participate in for communicative purposes. Media create preconditions for communication, knowledge and identity constructions, i.e. conditions for our social life, where new media technology influences and changes our conditions and ways of life (Meyrowitz 1985; Strate 2011). Marshall McLuhan's (1999) famous statement "the medium is the message" from 1964 must be understood in this context, i.e. that the content and form of media cannot be separated. Content and form constitute a whole where the whole is larger than the sum of the individual parts. In this article, it relates to how digitally mediated music in various forms affects learning environments.

Young people are influenced culturally both from above by institutions in society and from below through conditions and experiences from their childhood and adolescence. These experiences create new mental maps for young people to navigate by (Ziehe 1994). Drotner (1996) states that we live in a multimedia culture where different media interact and strengthen our sense impressions. This implies that our opportunities for experiences, knowledge and constructing identity find new expressions. Digital technology facilitates our possibilities of constantly creating, reshaping, editing, aestheticising and distributing multimedia products. Drotner (2004) also

argues that, through experimenting with aesthetic activities, young people test and explore their identity on three levels: firstly on an individual level between “I and me”, secondly on a social level between “I and you” and thirdly on a cultural level between “I and the world”.

In a mediated society, aestheticisation is a prerequisite for being visible, which may lead to what is desirable, namely recognition (Lundberg, Malm and Ronström 2000). Recognition must be created or earned and be formed by means of aesthetic expressions. With the concept of ‘Egologo’ Scheid means that young people combine psychological, technical and aesthetic considerations when marketing their identity, where music constitutes a symbolic boosted raw material (Scheid 2009, 2011). Digital media have made music a material that is easy to get hold of, edit, distribute, create and fill with symbols and feelings of identity. Music is symbols in action.

Access to the Internet may be said to constitute a prerequisite for an almost endless and always available musical repertoire. On the Internet there are different websites, one of which is the often visited YouTube. Marketing itself with the slogan “Broadcast Yourself”, YouTube is a website that provides both a supply of global music and access to other people’s videos. Every minute, about 30 hours of video material are uploaded on YouTube, i.e. more than 43,000 hours a day, which is more than 300,000 hours per week (Kvarnhall 2011). YouTube may be described as a social arena where different actors, private persons, groups, international enterprises and companies act. Even if videos from traditional media enterprises, e.g. official music videos, are the most watched ones, it is user-created music videos that are among those most commented on (Burgess and Green 2009 in Gorgii-Hemming and Kvarnhall 2011).

Method

This study is based on observations and interviews with 12 teachers of Music and 37 pupils in the ninth form (15- to 16-year-olds) in eight municipal lower secondary schools from different places in Sweden. The schools were chosen from participants in a teacher-training course and on colleagues’ proposals. Two of the schools were part of a previous study. Participation was voluntary and the pupils interviewed had written confirmations from their parents to participate. Confidentiality was guaranteed (Vetenskapsrådet, 2014-02-13). All of the schools are anonymous and will be named after various tree species.

The study takes a qualitative approach where as a researcher I try to understand phenomena and their causes on the basis of those who are observed and interviewed (Mac an Ghail 1989). Observations were made in schools during the informants’ ordinary Music lessons before the interviews took place. The observations thereby constituted a shared experience in the interview since I had already met the informants and hence could relate to shared experiences and situations. During the observations I walked around the classroom, asked questions and mingled with and joined in the pupils’ musical activities. The focus was on the teachers’ and pupils’ roles,

musical activities and the use of music equipment, including digital tools. After the lessons, my experiences were compiled in the form of notes.

In a qualitative research interview, the purpose is to examine how the interviewee describes and understands central themes of their life-world (Kvale 1997). The interview is seen as a meaningful conversation, which is an act between (at least) two people where a story is created (Holstein and Gubrium 2006). In this perspective, an interview is an opportunity to construct knowledge and not just a way to gather information. The interviews took place mostly individually with teachers, and in focus groups with pupils, and lasted 45–60 minutes. The interviews were recorded, transcribed and subsequently categorised into different themes.

In the interviews I tested a partly new method called ‘mind map interview’.

The concept of mind map was introduced by Tony Buzan (1994). A mind map can be described as a graphical technique where both text and images are combined multimodally.

Wheeldon and Faubert (2009) and Whiting and Sines (2012) say that within qualitative research mind maps help students frame their experiences and collect empirical data. A graphical representation is a way to personally design their experiences to avoid embedded linguistic assumptions (Korzybski in Wheeldon and Fraser, 2011).

The approach emphasises that the interviewees initially create a visualisation of the area being examined, a mind map. The method was used in both the individual interviews and focus groups. As the mind map lay on the table the informants could distance themselves from the subject and reflect on options. The mind map can also be used as a reminder of aspects not already discussed in the interview, or relationships between different themes. In this project, the mind map was a technique for the interviewees to frame their experiences and for me to investigate and challenge aspects in different themes, a multimodal technique for a meaningful conversation.

Results

The result of the interviews and observations presents five aspects of how digital media and tools are used and affect the subject of Music, as well as teachers and students. The five aspects are: *Access to music, videos, lyrics and chords; Performativity; Multimedia; Regardless of time and space* and *Apprehensions about digital technology*.

Access to music, music videos, lyrics and chords

In the classroom both pupils and teachers use and listen to music via the Internet. YouTube or Spotify is used to determine what should be played and Google to find chord names, lyrics and tablature. This immediate access to music and music information has changed Music as a school subject. Teachers use the Internet and projectors to present music, videos, lyrics, chords etc., and the pupils use mobile

phones as a digital source to obtain music from during the lessons. This access to music facilitates choices made on the basis of personal preferences. A female teacher at Ash School says:

There was a boy who had looked at YouTube to find out how to play on the piano, how to play the chords, he surprised me in the first playing session./.../ He comes and plays after he has watched the film. It turned out that that he didn't know which chords he was playing, he just played. It can also be negative, of course. Then you feel that it influences everything. And they have telephones, so they sit watching films.

The investigation shows that all of the teachers are positive regarding use of the Internet in the teaching of Music. Use of the Internet, and the material that is made available, may in fact be described as a prerequisite for the teaching of Music. Both the teachers and the pupils share this view. What is also evident is that it is the Music teacher's personal interest in digital media and tools that creates the teaching context. As regards e.g. Spotify, it is the individual Music teachers who have personal accounts. The same is true of the pupils. It is the Music teacher who has private, or has personally invested in, editor programmes that are used for the planning, processing and designing of teaching materials in the subject of Music. There are few computers in the music rooms and even fewer computers with programmes intended for work involving recording and editing music and videos. At some schools, the teachers use their own personal computers in the teaching. On the whole, the empirical findings indicate there is a lack of both hardware and software in the music rooms, which affects the use of digital media and tools in the teaching. The great exception is the pupils' mobile phones which may be said to be included in and partly presuppose the current teaching of Music.

Performativity

In this text the concept of 'performativity' is related to being visible. It is about showing oneself as an individual and as a group, showing how and what one can play, showing the musical activities at the school. This also includes pedagogical aspects such as recording performances as a basis for constructive criticism and development, developing the playing via (instruction) videos and webpages.

In many schools, pupils' music performances are recorded to be discussed later on in order to develop musical and stage realisations. This may be described as a pedagogical incentive that often has popular cultural frames of reference taken from the Internet. In this way, pupils can find inspiration as well as broaden and deepen their musical knowledge and skills. This process takes place through learning from and comparing with others. These other people are thus role models and comprise idols and artistes as well as private persons. One of the female teachers at Osier School says:

What I think about media is that you can derive a lot of advantage from the new media technology, for example when we have our performances in spring. We very seldom work with existing musicals, but we often put together pieces from performances of different musicals and make our own manuscript, and then we can tell our pupils to visit YouTube and listen to this tune and these lyrics and watch how it's done. Don't come here unprepared but go out and look and then we'll rehearse here. Look at how the song is sung, what kind of scenic expressions are used. Pupils can prepare themselves in a different way than they could before, and I think that's very good.

Several pupils say that they put videos on the Internet to promote the ensembles they play in. Via the Internet they distribute recordings, receive comments and hopefully opportunities for live recordings. The pupils describe the Internet as an opportunity but are aware that the competition is tough. A girl at Osier School says:

Girl: I put a lot on the Internet myself, and in the band we have Myspace where we have our tunes. And we have two tunes on Spotify. Then we have videos from our gigs.

Interviewer: So you have a homepage then?

Girl: No, we have it on YouTube, but we have a homepage on Myspace where we link it in. There's a lot of activity there.

Besides artistes' official music videos, there are cuts from their concert performances and private persons who present their own interpretations of artistes' music performances. This diversity makes it possible to be inspired by and imitate artistes and music performances. Digital media provide access to a diversity and abundance of variation with differing qualities, which both the pupils and teachers mention. This is obvious when the interviews deal with pupils' stage performances. With regard to the stage performances, both teachers and pupils mention that they are inspired by music videos and TV programmes. When I asked a teacher from Beech School he mentioned:

Interviewer: Do you think that programmes like Idol are important, are they role models for the pupils?

Teacher: Yes, they are. /.../ I noticed last year that the singing became much better because a former pupil took part. He stayed on until the very last elimination and his audition was fantastic.

A further aspect of performativity consists of the competition among schools and the school voucher that every pupil has. In this competition it is important to be visible in order to attract pupils. As part of this marketing, the subject of music can constitute an important element in the school's profile. When I study the schools' homepages it is notable that there are often photos of musical activities in the school. Schools with a music profile also have sound recordings and music videos on their homepage. The music teacher at Bird Cherry School says:

Let's put it like this, quite simply. The more marketing, the larger the audience at the shows, and the more sponsor money for the music activities. Quite simply. So yes, marketing is important.

Multimedia

Music, learning music and processing music, which largely used to be auditory and text-based, are now often combined with visual impressions. Music, mobile images and text are combined via the Internet, which relates to what Drotner (1996) calls the multimedia culture. What is above all described as new, in relation to earlier technologies, is the combination of sound and mobile images. The interviews indicate that the pupils distinguish between referring to a piece of music as a music video and as music without mobile images. They feel that these are two different experiences where music without mobile images makes more personal associations possible, while music videos create a greater whole. In addition, in this context there are aspects of authenticity that briefly imply that a live performance is described as more authentic than recorded music on the basis that in recordings the music is edited and processed afterwards. A live performance is described as the moment when the artiste displays her/his musical skills, without being able to 'cheat' too much. One boy at Pine School stated:

Boy: I think it's up to yourself, because you can record as you did before. You don't have to edit and use these digital media. So for the most part I think it's better. But sometimes it is as if it's not as authentic in some way.

Interviewer: It's not as authentic.

Boy: No, the sound is flat.

Interviewer: When is it more authentic?

Boy: Live.

It is precisely the combination of seeing and hearing that is described as the strong aspect and as a reason why pupils visit Internet sites to develop their playing. In the interviews, pupils state that they have visited such sites several times to develop their playing. The teachers think it is important to investigate/check these sites since inaccuracies occur and they regard it as their duty to "teach correctly". A teacher at Pine School comments:

Precisely on YouTube, all the tunes are there. People sit filming themselves. Lessons, actually, and that's very good, I think, that you can check that they show things in the right way.

The teachers also see advantages of videos and of how they can be used in the teaching. A pedagogical aspect is that pupils themselves critically examine analyses of lyrics and chords or a video showing how to play a solo. The teachers think that this entails an examination of sources and is something that pupils should learn. Another

way of handling inaccuracies is that the teachers themselves record. It certainly takes time to record instruction videos, but over time it is possible to build up digital archives which are available to pupils both inside and outside the school.

Music videos are used in the teaching in order to place music in a context. It may be a matter of both learning a tune and watching an artiste's stage performance or of how images and music interact in a music video. Features typical of a genre such as style, sound and symbols are thereby illustrated. The Internet is also used when planning sections of music history. There are e.g. information and videos showing how various and less common instruments sound and look like. It is also possible to deepen one's knowledge of well-known composers' and artistes' lives and musical works, which a female teacher at Larch School did.

How nice! I found a cut on YouTube about baroque music. Some kind person who had made snatches of different pieces of music and texts about the composers. There was nothing about the period but it was very fine and just long enough.

When it is a matter of e.g. learning to play instruments via the Internet, visualisation is an important factor that is mentioned. It is not only about instruments but also about learning e.g. recording and editing programmes. Learning via the Internet is a matter of first, and directly, showing and then imitating. Often, if not always, one can also directly hear the changes that one can see being implemented. The learning is, to use a musical term, "ear-based", i.e. see – listen – and imitate. Some teachers and pupils say they have deepened their knowledge in this way. A boy at Juniper School says:

When I started, I didn't know at all what to do. I only knew how to record and I have experimented and been at it for a very long time. I've learned something new every day, nobody teaches me, so I learn by myself. I watch a lot of tutorials on YouTube and experiment with sound.

In conversations with the pupils during my observations I learned that, after an introduction by the teacher, the pupils start recording and creating music with the computers. There may initially be some resistance to working with computers, but it disappears when the pupils begin to create and hear the music they create. When it comes to the creation, the visualisation in the computer programme facilitates the composing. The visualisation entails different parts of e.g. verses, refrains, solos and fill-ins being symbolised by coloured rectangles that can be moved and copied. The piece of music thus becomes visual on an interactive screen on which it is possible both to see and to hear changes that are made. In my observations, the pupils sat in pairs discussing the composition on the basis of the digital representation on the computer screen.

During my visits I found one school in particular where the teacher had integrated digital media and tools in his teaching. The teacher himself has recorded and edited

pedagogical instruction videos, examples of music, videos and images and links to homepages related to music. These are used actively during lessons and are available on a homepage. Some of the teaching is based on continuously showing different performances by pupils, a possibility enabled by digital multimedia. A teacher at Bird Cherry School can imagine the following development:

Well, that's what is also a little fun. I don't know. I can guess of course, but I'm often totally wrong. What I might see is that there is a virtual meeting place, a video camera. That people can be at home, playing live, that exists already, but more developed. That I can be at home playing together with Tom, who is in the next town, and perhaps together with a bass player down in Barcelona. Seeing each other, directly, playing together. That would be cool.

Over time, traditional music literature has been phased out. Teachers in the study create their own digital material which they individually adapt to their teaching of music. It is about changing keys, layouts on stencils, providing lyrics with guitar and piano chords, tablature etc. The digital variants are easy to process and bring up to date. A lot of music material that is used is taken from the Internet, e.g. videos and Internet links. Even if the music material used in schools is taken from the global Internet, it is reshaped and selected on the basis of a local school context. In some schools, teaching material is put on the school's homepage and is available to pupils outside the school. Pupils can thus choose from an all-embracing global material as well as material from their own school. A female teacher at Osier School says:

We use the Internet to record various harmony vocals and put them on our homepage so that they [the pupils] can go and listen and download mp3 files.

Regardless of time and place

The Internet provides access to an almost endless multitude of music, music information, music videos, and instruction videos used by the teachers. This expands the school's pedagogy in a multimodal way independent of time and space. Access to the Internet makes it easy to not only listen to and watch music videos; it also makes it possible to learn to play. There are instructions both for beginners and advanced musicians. In an instruction video music is combined with actions and gestures, and it may be partly compared to a private teacher showing how to play as often as one likes. On the other hand, there is no interactivity, which makes it even more important that what is shown is correct, according to the teachers. The Internet is always accessible regardless of place and time, at both school and home.

The interviews reveal that several teachers put teaching materials on the school's homepage. In this way, pupils are given opportunities both to practise further at home e.g. the tunes of the day and prepare themselves for future musical activities. It may be a matter of placing choir parts or lyrics and chords. In a couple of schools, teachers provide further links to useful and cost-free Internet sites related to the teaching

of music, where the pupils can develop their abilities and talents. In all the interviews teachers state that they think the use of digital media in the teaching of Music is advantageous. They have plans for how to develop their activities, to build up banks with digital material and create their own teaching materials. It may thus be said that the schools' teaching of Music is expanding in time and space. A teacher at Pine School states:

But if you plan to make films, you film lessons that are put on the school's homepage at the same time so that as a pupil you can go back to the lesson.

Apprehensions about digital technology

At one school they had previously invested in music and computers. There were a number of computers with music-specific programmes and they had established international contacts. When the municipality then said it would invest in computers, all of the computers and music programmes were confiscated and replaced with laptops without music-specific programmes. They cannot be used in the teaching. At the same time, the service and maintenance of computers were centralised, resulting in long waiting periods. Earlier on, such servicing was locally available at the school and errors were quickly corrected and the computers could be used in the teaching. This is especially important in subjects such as Music which require special programmes for their activities. In this way, the teachers can lose control of the subject of Music.

A further aspect of losing control of the subject of Music and time for music lessons is that digitalisation has resulted in greater demand for documentation. In addition to documentation, a lot of time is spent on updating homepages. At Osier School a teacher says:

Yes, planning of lessons too. All objectives are connected to those of the Agency for Education; everything has to be completely linked together. A parent is supposed to be able to see her/his child's development in every subject week by week, what goal do we have this week. Also to manage to read through everything before a discussion on progress and be able to write down that this is something I want to talk about now and then. Will it work completely; I don't even think we have time to do it, for it doesn't really work.

The core of the subject of Music is ensemble playing, as described above. What will happen then if every pupil e.g. has a portable computer? Both the teachers and pupils fear that too much use of computers in the subject of Music may result in ensemble playing disappearing, the unique situation where they sit together playing in the here and now, In Real Life (IRL). The digital tools make it possible to work from different physical places and times. A Music teacher at Elm School expresses a fear that the digital development will reduce opportunities for physical human meetings and skills for handling such situations.

So that is what is dangerous about the digital development, that we will not meet people, that we will say we'll meet in three weeks.

The teacher later continues.

We have pupils who are very much used to deciding themselves; at home they have a computer that they control, and here they can't even use a computer if they want to. There is a dilemma with those pupils who are individually oriented and then come here and are supposed to do something together. So I think we have to challenge the group when we play.

Another problem with using digital tools in the subject of Music relates to the theme "authentic". The interviews reveal a tension between using electro-instruments and digital tools as instruments. In that discussion, the use of electro-acoustic instruments in music is attributed a high degree of authenticity, and digital tools a lower degree. All the interviewees are aware that music is recorded and processed digitally, but the issue of authenticity is about the moment when music is created, not processed. If music is not a thing but is created in social fellowship, as Small (1998) argues, and music is connected to identity and feelings (e.g. Scheid 2009), then how do we then handle the reduction of music to ones and zeroes? I leave this question for further discussions. When I asked pupils at Beech School how they think the subject of music will develop in the future, they answered:

Boy 1: Hopefully not so much on computers. Now it's quite OK, there might be a bit more, but there must not only be computers.

Interviewer: What will happen then?

Boy 1: It will just be fake.

Boy 2: You must be able to create, creating is not fake either.

Boy 1: You must be able to create the music on an instrument instead of only doing things digitally, I think.

Boy 2: You must be able to play the thing live, that's important.

Discussion

As described earlier, a lot of the teaching materials in the subject of music consist of digital models available on the Internet. This may be described as a change from music- and lyrics-based to music- and (mobile) image-based materials. This change is based on the supply of music videos, both of music performances and of a tutorial nature.

The multimedia characteristics are mentioned already from the early research with computers in music lessons (Berglund 1992; Folkestad 1996; Kugg 1990). Being able to both hear and see is described by both teachers and pupils as an advantage, as well as being able to play over again and repeat. It is certainly one-way communication, but in the school the teacher can provide further explanations.

The access to both visual models and instructions for how to play is changing both the quality and genre breadth in the teaching of Music. One example mentioned above is the importance of high quality light and sound in stage performances.

In addition to stage performances at school, several schools have public performances outside the school (Lundberg et al. 2000). This trend may be described as the increasing professionalisation of the subject of Music. Stage performances inspire and are compared to professional performances. Demands are placed on Music teachers to handle and make this possible. The importance of fusing content and form (McLuhan 1999) is growing.

In several schools pupils' performances are filmed and recorded as a basis for their musical development. This triggers discussions between teachers and pupils on how improvements can be made. In these discussions, both the teacher's and pupils' knowledge and experiences can be taken into consideration.

All of the interviews with the Music teachers, both women and men, indicate that they use digital media and tools in their teaching of Music. Unfortunately, there is a lack of hardware and software in the schools' music rooms, which also was found by Gall and Breeze (2007). The teachers are connected to the Internet and have music-specific programmes at home which they use to produce teaching materials. It is precisely the production of their own, locally established, current and changeable teaching materials that is a new phenomenon. New demands will be placed on Music teachers in the future (Gullö 2008, 2010).

The Internet offers a broad supply of music genres, music videos and instructions on how to play and improve different musical skills (Gorgii-Hemming and Kvarnhall 2011). This knowledge and these skills are used in the school subject of Music. It implies that feelings, activities and symbols connected to different genres and songs from the pupils' leisure time are activated at school (also see Berkaak and Ruud 1994; Drotner 2004; Fornäs 1996; Lilliestam 2006; Ziehe 1994) and the subject of Music in schools is becoming an additional arena to act within (Scheid 2009).

Digital media and tools have facilitated the recording, editing and distributing of music produced by oneself. The musical performance is described as important, including good quality sound and light, with influences from music videos and artistes' stage shows. In the interviews, pupils describe public music performances as important and as a reason they put their own music videos on the Internet. Their public arena is thereby widening (cf. Lundberg et al. 2000).

The material from the Internet is processed and used for playing the existing instruments: acoustic and electric instruments, guitars, keyboards, drums, bass, and microphones. My conclusion is that access to the Internet and digital tools has broadened and deepened the pupils' musical abilities and knowledge; namely, that the old technology, electro-acoustic instruments, is being integrated with digital technology, digital media and tools. On the other hand, there is a lack of hip-hop music and related instruments.

Moreover, the lack of digital hard and software related to creating music and using digital tools is sparse. It seems in this study that school is a place where 'traditional rock instruments' are used and provides access to instruments, knowledge

and opportunities to play and perform together. Schools are perhaps becoming ever more important as places where people play together and perform for each other, i.e. display the musical abilities they have acquired, at school, in their leisure time and via the Internet.

Music is expanding in its mediating form by being visualised to an even greater extent. On this basis, I think it is reasonable to draw the conclusion that music is expanding in terms of two aspects, both quantitatively as the amount of available music increases, and qualitatively since music is being visualised to a bigger extent. Another dimension is that music in the screen culture is to a high degree aural. To read different types of sheet music includes the transfer of silent music symbols from paper to creating music on instruments. Via the Internet and with digital tools one can directly see and hear (Gall 2005; Folkestad 1996) what is happening and how it should be done.

The Internet provides access to digital media, including a large variety of music, music videos and music instructions that are easy to use and share with others. Digital tools make it easy to record, edit and distribute music and music videos via the Internet and mobile phones (Partii 2012; Väkävä 2010). Taken together, these media and tools enable both teachers and pupils to choose music and videos based on their personal preferences and for different contexts. Music teachers' professionalisation includes designing music lessons personally, in keeping with local conditions. Pupils learn from professional artistes via the Internet and aim to develop a personal music style. This has also been done before, but digital media and tools have changed the accessibility, production, distribution and use of music both quantitatively and qualitatively. The new media technologies are influencing how pupils and teachers conceive music and what the school subject of music can be composed of and how it can be designed; new ways of thinking are formed (Ziehe 1994).

The result indicates a lack of digital hard- and software resources in the school subject of Music. This naturally affects the ability to create and experiment in digital music environments (compare Heijnen 2013; Nijs 2012a, Nijs 2012b). Despite this, the teachers have a positive attitude and see opportunities to embed the digital technology into their teaching (Burnard, 2007). I believe that we are in a paradigm shift where digitalisation is transforming both our social life and educational situations (Meyrowitz 1985; Strate 2011). This will shape new learning environments where Dyndahls' (2004) five points, Sakai (2013) and Erstads' (2010) philosophical thoughts provide interesting starting points. One conclusion from this study is that digital media and tools have increasingly shaped music lessons based on personal preferences and professional (role)models.

Manfred Scheid is a senior lecturer in the Department of Creative Studies, Umeå University, Sweden. His research interest are in music, youth culture and the use of media. Manfred's current research focuses on the impact of digital media on the content and form of the school subject music.

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