

Bridging contexts and interpretations: Mobile blogging on art museum field trips

Palmyre Pierroux, Ingeborg Krange & Idunn Sem

MedieKultur 2011, 50, 30-47

Published by SMID | Society of Media researchers In Denmark | www.smid.dk

The online version of this text can be found open access at www.mediekultur.dk

Research indicates that young people rarely initiate visits to art museums. Field trips arranged by schools are thus an established and important means of mobilising students' interest in art. The contribution of this article is to provide an example of how upper secondary students on an art museum field trip interpret contemporary art within and across school and museum settings using social and mobile technologies, specifically blogs and mobile phones. The data were gathered from a study in which students use the Gidder platform, a web-based learning environment with a mobile blogging feature designed to support art education. Interaction analysis is used as a method to closely examine the ways in which digital tools, disciplinary aspects in art, and institutional issues structure the students' meaning making. Based on this analysis, our study contributes a deeper understanding of the ways in which mobile phones and social media may be used to bridge meaning making across school and art museum settings.

Introduction

Contemporary art has the potential to engage young people in aesthetic experiences and reflections on society and culture that are meaningful and relevant in their own lives. Yet young people in their teens rarely visit art museums of their own accord (Falk & Balling, 1979; Schwartz & Burnette, 2004; Vasström & Floris, 1999). School field trips are therefore

an established and important means of introducing youth to museum collections and exhibitions, with research suggesting that these visits can have a long-term learning impact and influence future museum experiences (Anderson, Storksdieck & Spock, 2007; Falk & Dierking, 1997; Mason & Conal, 2006). Another more recent approach used by museums to engage youth is the use of social media, mobile phones and other digital tools to reach young people 'where they live' (Pierroux, in press; Schwartz & Burnette, 2004; Kelly & Russo, 2008; Mason & Conal, 2006). In this article we present a study that combines both established and new approaches in museum education, exploring the use of social media and mobile phones on school field trips as means of engaging young people in learning about and experiencing contemporary art. The empirical material is drawn from a research project that investigates the potential of digital technologies as learning tools in connection with high school field trips to art museums, bridging contexts of formal and informal learning in today's extended classroom (Pierroux, 2005; Paulsen & Tække, 2009). The aim of the project is to foster young people's (17 to 18 years old) talk and 'explanatory engagement' with works of art during museum visits (Leinhardt & Knutson, 2004), and to support the elaboration of their talk and meaning making in post-visit writing activities in school.

From a formal learning perspective, objectives related to 'art' in the general Norwegian curriculum at the upper secondary level include the student's ability to verbally describe, analyse, evaluate and critically reflect on experiences, aesthetic means and contexts of art from different periods (*The Knowledge Promotion*, 2006). Museum visits are an important tool for schools in meeting these objectives, and education curators at museums offer a range of field trip activities and tours for this extended classroom situation. In contrast to 'free-choice' museum learning (Falk, 2009), an important aspect of meaning making on school field trips to art museums entails producing interpretations that incorporate art historical knowledge and concepts specified in the curriculum.

At the same time, teachers and education curators are sensitive to the uniqueness of the art museum setting as an informal learning space that can foster personal reflections and experiences in encounters with art. From a museum education perspective, then, school field trips supplement curricular demands, but are also essential in empowering young people to use museums independently and purposely, cultivating certain skills and competencies as a kind of 'museum literacy' (Stapp, 1984).

In this study, the significance of these institutional issues is explored empirically. The research questions focus on the ways in which mobile phones, blogging and other contextual resources – e.g., disciplinary concepts, tasks, teachers, guides, artworks, labels and physical settings – are made communicatively relevant (Linell, 2009) in students' meaning making across the different settings. We address three levels of description in our analysis of students' interactions and blogging activities. In which ways do the *digital tools* structure the students' meaning making processes? How are *disciplinary aspects* of art – contextual resources accessible in curricula and art exhibitions – made relevant in the students' meaning making processes? How do the *institutional characteristics* become apparent in the students'

meaning making processes across the museum and classroom contexts? These levels are not conceived as existing independently, but rather as potentially intersecting tensions or inter-related, reinforcing tendencies, providing a basis for understanding the complexity of new media and contextual resources that young people master in today's extended classroom.

In the following sections, we first provide an account of the theoretical framework and the pedagogical principles that are applied in the design of *Gidder* resources and overall field trip activities. Following this, we present an overview of the data corpus, and describe a typical sequence of activities based on general findings from the actual design experiment. We analyse and discuss a selection taken from the corpus of the meaning making process of two students, as their interpretations are mediated and unfold across museum and school contexts. The contribution of this study to museum field trip research is discussed in the concluding remarks.

Perspectives on learning during museum field trips

It is widely acknowledged that many aspects of personal experience and engagement in museums are not readily captured in the concept 'learning' (Vergo, 1989; Cuno, 2004; Csikszentmihalyi & Hermanson, 1995). In art museums, learning becomes intertwined with aesthetic experiences, prolonged and careful looking, personal recollections and reflections, and exploratory talk with friends and family. As understandings of what constitutes 'learning' in different museum contexts have broadened, sociocultural perspectives derived from Vygotsky (1986) have been increasingly adopted in research, emphasising the role of the museum as a social space, and investigating the ways in which semiotic resources, including artworks, narratives, conversations, labels, technologies, guides and concepts mediate 'meaning making' processes (Wertsch, 2002). The research presented in this article is theoretically anchored in sociocultural perspectives on learning as meaning making, with a focus on the role of mediating tools in the development of understanding. We adopt the analytical concepts 'mastery' and 'appropriation' developed by Wertsch (2002) to account for the situated and dialogical aspects of meaning making. In sociocultural research, mastery may be understood as being 'able to use' concepts and knowledge in a disciplinary manner, while appropriation describes a sense of 'owning' the knowledge and meaning that is produced. In his study of the mediating role of narrative in visitors' meaning making, Wertsch (2002) describes tensions between mastering and appropriating authoritative versions of historical narratives in Soviet museums. In the context of meaning making during art museum field trips, this means that we analytically distinguish between 'mastering' authoritative interpretations of art, and 'appropriating' interpretations of artworks in a more personal sense (Pierroux, 2005).

On school field trips to museums, specific kinds of resources may be used to frame young people's experiences, including worksheets, tasks, and lectures before, during and after a visit (DeWitt & Storcksdieck, 2008; McManus, 1985; Mortensen & Smart, 2007). Research on field trips shows that schoolwork that prepares students for what they will

encounter on a museum visit can create greater engagement and provide a stronger basis for learning (DeWitt & Storksdieck, 2008; Tallon & Walker, 2008; Vavoula, Meek, Sharples, Lonsdale & Rudman, 2006). Therefore, teachers are generally encouraged to conduct pre-visit and post-visit classroom activities using materials provided in advance by the museum.

There are, nonetheless, problems in field trip practices and the bridging of pre-visit, museum visit and post-visit activities. First, many teachers simply do not take time to prepare either themselves or their students for museum visits, relying instead on the expertise and activities provided by education curators at the site (Simon, 2010; Vavoula, Sharples, Rudman, Meek & Lonsdale, 2009). Second, studies show that highly structured experiences like guided tours and worksheets oriented mainly to school curricula “can increase cognitive learning but may dampen interest overall or result in less positive attitudes” (DeWitt & Storksdieck, 2008, p. 185). In other words, students experience the field trip as too ‘school-like’, diminishing engagement in the museum context (Xanthoudaki, 1998). This is important because the museum experience itself plays a significant role in what students remember and understand, with long-term recollections of subject matter embedded within descriptions of the physical and social contexts of the field trip and the visitor’s personal feelings or attitudes connected with the visit (Anderson & Shimizu, 2007; Falk & Dierking, 1997; Hubard, 2006; Medved & Oatley, 2000; Rowe & Wertsch, 2002).

A general way of summarising these and other findings from over twenty-five years of museum field trip research is to conclude that it is the intrusiveness and type of structure of resources that matters and not whether learning tools are used or not (Mortensen & Smart, 2007). In other words, from a learning perspective, the design of tasks and tools for field trip activities is not trivial. In the *Gidder* project, the design of field trip tools and activities is based on research that points to the need to combine moderate structure and free exploration (McManus, 1985). This requires instructional design that supports both procedural and conceptual engagement (Krange, 2007; Krange & Ludvigsen, 2008), takes into account institutional practices that shape the activity as a whole (Falk & Balling, 1979; Pierroux, 2005), and is sensitive to the appropriate timing and level of interventions by teachers, curators and more knowledgeable peers (Rasmussen, 2005; Furberg & Arnseth, 2009).

Design of the *Gidder* platform and field trip activities

The design of tools and activities was informed by ethnographic studies of field trip practices and interactions, and analyses of the kinds of media and technologies frequently used by young people in school and museum settings (Pierroux, 2009). The design process involved collaboration with a museum curator at the Astrup Fearnley Museum of Modern Art, and the participation of teachers and students from an upper secondary school at key stages of development. From the museum’s perspective, the design experiment intervened in two existing educational practices to explore innovative alternatives. First, the research explored an alternative to the museum’s traditional and monological model of ‘guided tours’ for

school classes, and encouraged dialogue with a staff of museum hosts. Second, the research explored alternatives to an existing 'call' system that allowed visitors to use their mobile phones to access audio information about artworks (Ueland, 2006).

Mobile phones have been explored as a means of augmenting art museum experiences for more than a decade, as tools to deliver additional information about artworks in the museum, but also to capture visitors' impressions and reflections for sharing outside of the museum (Arvanitis, 2005; Hawkey, 2004; Semper & Spasojevic, 2002; Tallon & Walker, 2008; Vavoula et al., 2006). Social media platforms like blogs and wikis are increasingly used by museums for such online sharing purposes (Kelly, 2010). Blogs are incorporated into schoolwork as well, to support young people's literacy in effective and powerful writing for different contexts, and to foster their reflections on writing processes as temporal, socially shared, and expressing a personal point of view (Kerawalla et al., 2008; Pierroux et al., 2008; Simon, 2010; Walker, 2005). For these reasons, a mobile blogging feature was incorporated into the design of the *Gidder* platform, a web-based learning environment that includes space for the teacher and disciplinary resources from the curator about the exhibit – e.g., images and texts about the artist, artworks and art historical concepts.

The tools and trajectory of activities are designed to encourage students to become familiar with the featured artist and exhibition prior to the visit, to engage freely and critically with artworks at the museum, and to pick up and elaborate on the conversation where it left off when they return to the classroom. In this way, website and blog become knowledge resources and an arena for students' reflections and interpretations that have authentic art encounters as points of departure. The trajectory of pre-visit, museum visit and post-visit activities and the main website and blog features are shown in Figure 1a-f.

Description of the data and collection methods

Three teachers from different upper secondary schools and several of their classes were recruited to participate in the *Gidder* project. They were culled from the curator's database of teachers who frequently used the museum for field trips. The researcher provided instructions and information about the sequence of activities to these teachers by either email or phone. Five classes were followed during a five-week period, varying in size from twelve to twenty-five students and totalling approximately one hundred participants. The teachers viewed the field trip as relevant for students' courses in media and communication and for general curriculum requirements related to art.

The blog entries, stamped and ordered according to time and author, are the main empirical material, allowing analyses of the content of students' interpretations and enabling us to sequentially reconstruct dialogical processes and the students' 'linguaging' (Linell, 2009). Data were also collected during the different activity contexts to supplement our understanding of the emergent character of the students' interpretations across museum and classroom settings. In addition to the blog entries, the corpus comprises the following data:

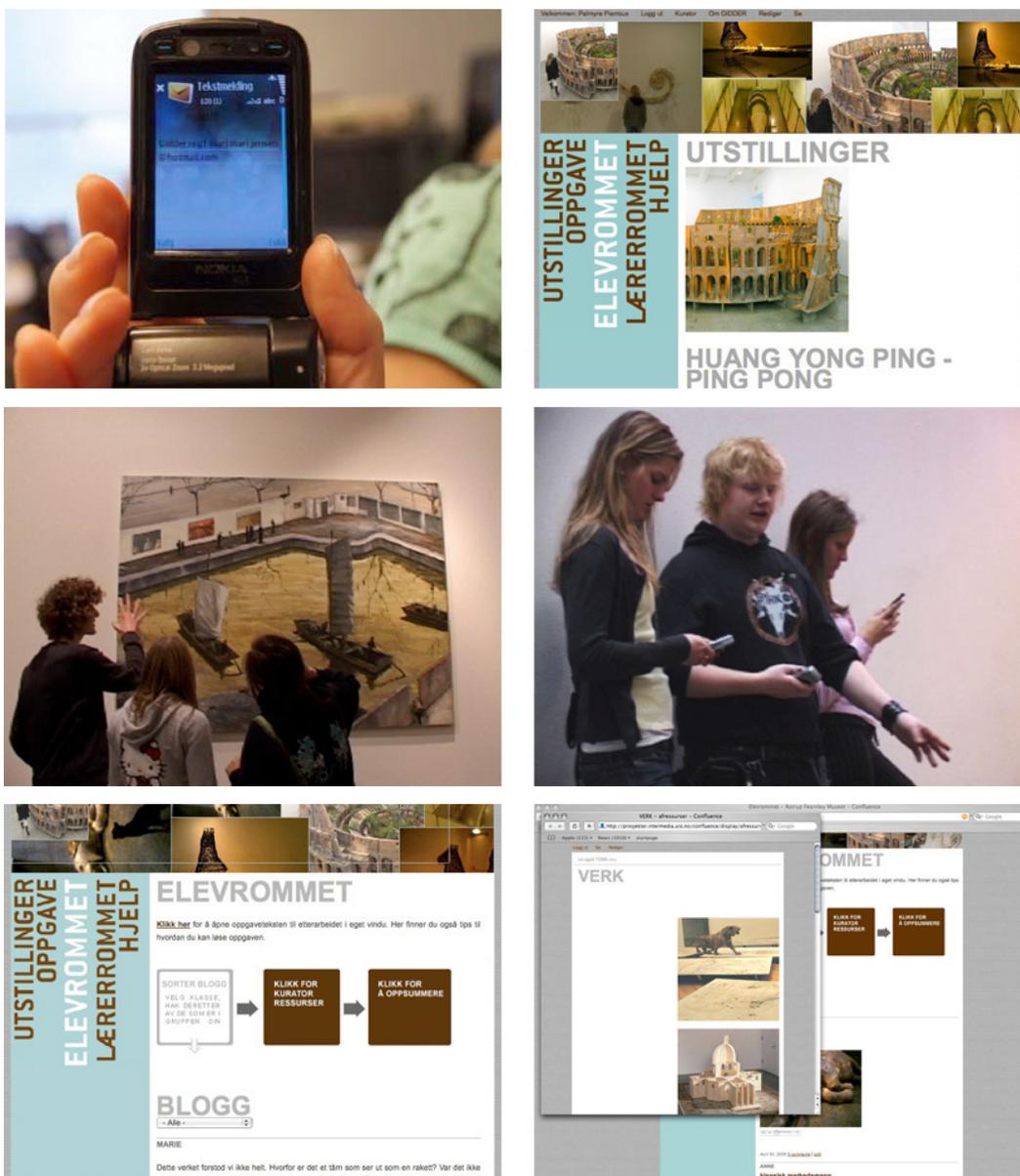


Figure 1a-f. Sequence of field trip activities and Gidder features

- Pre-visit activities. Semi-formal interviews with two of the five teachers.
- Museum visit activities. Observations and field notes of groups' movements and interactions, noting in particular students' use of mobile phones, engagement with works of art and discussions with museum hosts. Museum phones were available for students unable or unwilling to use their own phones for any reason, and students were informed that the content on these phones would be downloaded and stored as empirical material after use. Six students borrowed museum phones during the course of the project.

– Post-visit activities. Observations, field notes and video recordings (2 hours) of activities in two of the five participating classes. Teachers' instructions and approaches to framing the relevance of the classroom task in relation to the museum visit and other course work were particularly observed, as were students' interactions as they collaborated on writing and editing blog texts. Semi-formal interviews with the teachers and some of the students were also conducted.

Typical activity sequence

As background for the analysis of selected data presented below, we first describe a prototypical sequence of meaning making activities based on the identification and analysis of typical instances of actions in the data (Derry et al., 2010). Prior to the field trip, students are instructed by teachers in the classroom to activate the blogging application for their mobile phones (Pierroux, 2009), and to access the *Gidder* website to familiarise themselves with the task, browse images and read texts provided by the curator about the artist and art. The task is described on the website:

Choose 2 works of art from the exhibition. The first choice should be a work you think is interesting and easy to relate to. The second work should be something you think is harder to understand or want to know more about. Working in groups of 2 or 3, describe, analyse and interpret the selected works. Use your mobile phones to send the texts and images to the blog. The group's blog entries are the response to this task.

The exhibition on view at the museum features the work of Huang Yong Ping, an established Chinese contemporary artist on the international art scene. Good quality images of all of the artwork on exhibit are included on the website and may be easily linked to the blog entries, making it unnecessary for students to spend time taking scores of pictures in the museum (Gammon & Burch, 2008; vom Lehn & Heath, 2003). Most likely because there were no assessment criteria linked to this pre-visit activity, teachers generally did not follow up on students' use of the website in the classroom.

At the museum, the curator and researcher team greet the teacher and students. The students are instructed to organise themselves to work in groups of two or three on the task, which is explained once again. Museum 'hosts' are part of the education programme at the Astrup Fearnley Museum of Modern Art, and students are encouraged to talk with them about works that interest them. The hosts are trained to interact with museum visitors when approached and are either artists or art historians with knowledge about the exhibition.

Students spend about one hour in the exhibition, standing and sitting near the art, discussing and taking pictures, making video recordings, and often moving as a group to a quiet place to discuss and formulate their mobile blog entries at the end of their visit. One

person in the group typically assumes responsibility for writing and sending this information as an SMS or MMS to the blog from his or her mobile phone. The texts range from brief, personal impressions about the works to fairly descriptive accounts of the work and its meaning, and a picture is often attached.

Back in the classroom, teachers at the respective schools instruct students to use information on the website to edit their museum blog entries and to write a new group entry 'summarising' their reflections on the two works. In some cases, teachers refer students to concepts from other school subjects and disciplines, including 'art', 'culture studies', and 'media and communication', to support their interpretive work.

The blog now contains video and audio recordings, text entries, drawings and photos produced by the classes at the museum. Editing existing blog entries is possible by clicking 'edit', and it is also possible to 'add comment' to blog texts. Students both collaborate and work independently on the assignment, with discussions in groups and with the teacher. Resources from the website are used to revise and supplement original interpretations and blog entries, and students also elaborate on their own 'personal' reflections on the work's meaning.

In addition to editing and commenting on entries from the museum, students are prompted by the task and the procedural interaction design features of the blog to write a new 'summary' blog entry (Figure 1e). Specifically, the student groups are asked to summarise why they chose these two works, to summarise their interpretations, and to reflect on their interpretation process. However, this summarising activity is often not completed, and we reflect on the implications of this finding in the conclusion. In the following sections, we describe the analytical approach and then analyse a selected sequence to better understand the ways in which the digital tools, the disciplinary domain and the institutional features are made relevant in the students' meaning making

Analytical approach

The interventionist approach adopted in the *Gidder* project is often linked with design experiments or design-based research (Barab & Squire, 2004), with an instrumental focus on describing in detail what 'works' or does not work, the conditions associated with why it does or does not work, and identifying some possible implications for pedagogical design. This kind of research is usually conducted in a cyclical process, where analysis of the interplay between the learning design and 'users' feeds back into re-design (Brown, 1992; Collins, 1992). In this analysis, however, we do not focus on implications for the re-design of the digital tools. Rather, we place design issues in the background to investigate the ways in which writing, sending and editing blog entries bridges interpretive work across the school and art museum settings.

The blog entries were first sorted from the five-week period by class and group. The entries were further sorted by time and the settings in which they were written and edited

by the students, and sequences of blog entries were translated into English from the Norwegian by the first author for analysis. As mentioned above, the blog data were supplemented by video recordings and observations collected from the museum and the post-visit classroom activities, and by semi-formal interviews of teachers and students. Methods from interaction analysis (Derry et al., 2010; Jordan & Henderson, 1995) were used to analyse the students' interactions and dialogue as they unfolded in the museum and classroom. Interaction analysis is an established method within sociocultural research, and is well suited to study details in interactions and meaning making in and between settings. Moreover, it is particularly useful for studying interactions between students and digital tools, disciplinary knowledge, and the institutional characteristics that come into play in different ways, by paying close attention to what they say, do and write. Interaction analysis is useful in this study for analysing the students' meaning making in the art museum, in the classroom as they elaborate on the blog entries sent from the museum, and the ways in which meaning making is translated from one the setting to another. Methods from multimodal analysis, which build on established methods in textual analysis, were used in combination with the analysis of interactional data to take into account the significance of digital media's multiple modalities in the students' production and interpretation of content – e.g., audio, imagery, film and interaction design features (Jewitt, 2008; Morrison, 2010).

The excerpt was selected to illustrate the extended nature of students' exchanges and utterances, and to better understand the development of the students' moment-to-moment art interpretations across contexts and at different levels of description, i.e., digital tool use, the use of disciplinary resources, and the institutional characteristics of museum and school. Moreover, the students in this sequence were chosen because they focused intently on one artwork, wrote different interpretations and argued for their respective viewpoints. This made the short sequence particularly useful as an illustration of how upper secondary school students on art museum field trips are able to make meaning of contemporary art in and across school and museum settings using blogs and mobile phones.

Interpreting contemporary art

We enter the data after 'Anna' and 'Clara' teamed up at the museum, where Anna had sent a blog text discussing their selection of the work titled *Huit chevaux de Léonard Vinci déchirant un porte-avion* (Leonardo de Vinci's Eight Horses Tearing Apart a Hangar Ship). Subsequent exchanges are sequentially posted after this blog entry (utterance 1), which consists of text and picture and sent from her mobile phone.

Utterance 1. Anna.

I think it was exciting to try to interpret the horses and boat because you could find so many different meanings. Everything from war industry to torture.

Figure 2. *Huit chevaux de Léonard Vinci déchirant un porte-avion (2007), Huang Yong Ping*



2a. Image of artwork taken by student mobile phone at exhibition



2b. Image of artwork supplied by curator on Gidder website

Seated in immediate proximity in the classroom the next day, Anna and Clara pick up on their face-to-face discussion from the museum about this work of art by writing blog texts using their respective laptop computers. Rather than editing Anna's blog entry from the museum (utterance 1), Clara begins by making a new 'summary' blog text, which becomes the site and forum for the ensuing discussion. The girls initially attempted to comment on each other's entries, but the 'add comment' function was not working. The girls improvise by clicking on the blog entry, choosing 'edit', writing 'comment' as a heading, and then adding new text.

Utterance 2. Clara.

Violence Begets Violence

"Leonardo de Vinci's eight horses tearing apart a hangar ship' is on the description of the work, but I completely disagree with this. The hangar ship is obviously not destroyed, broken or damaged in any way. Instead, it seems to us that it is being held up by the horses. It hangs in the air because the horses are pulling from all sides. So we would interpret it as the violence the horses are applying does not ruin the hangar ship, it becomes in a way stronger from it. It is held up because of the violence. It is like when a child hits another child. Some hit to teach that it is wrong to hit, but it ends with the child becoming more violent.

Utterance 3. Anna.

Comment:

But they [horses] are wearing armour, so I am convinced that this has something to do with maintaining the war industry. War is never going to end, because there will always be different things within the industry that keep it going. I think the things underneath are very interesting

too [the pipes holding the horses up and apart from each other]. Because they must have a meaning!!! Or they would not have been so prominent.

Utterance 4. Clara.

No. No!! I believe that the things under the horses don't have anything to do with the artwork at all. I think that Mr. Ping [artist] just chose this method of setting them up because the work would have to be moved and mounted and demounted a lot, and so it is much simpler to set it up with the pipes and the system than to have to drill holes in the floor or ... yeah ... hm!

Utterance 5. Anna.

What....! It is possible to make a setup for the armour without necessarily having to do it this way. There's something about the fasten-thing right under the boat too. This is where the boat would be hit if it did actually loosen from the cables that hold it up/destroy it. Maybe it has something to do with belonging? That it's the same colour as the horses, makes the horses belong together, even though they are each pulling a different way.

At this point, two other students in the classroom who had apparently read this exchange, click to edit the blog, add their names at the top of a new comment, and write the final entry in this sequence.

Utterance 6. Ella and Hannah.

Your so-called 'pipes' are actually an ancient Chinese tool of torture, which gives the artwork a larger and totally different meaning than what you are saying. So the title of the work is right for interpreting the art. The horses are pulling the hangar ship apart with the torture tools.

The final entry is made by Anna, who returns to her original museum blog text, clicks 'edit', and adds one sentence referring readers to the discussion above: *"More discussion is on Clara's 'Violence Begets Violence.'"*

Anna and Clara do exactly as instructed in the task that was presented at both school and the museum. At the museum, Anna and Clara work as a pair and blog texts and images of two works using their mobile phones: one work that they did not understand very well, and the work described above that they found "exciting" to interpret because of the different meanings it held for them. The latter blog entry contained an image of the work and a preliminary interpretation, referring to the war industry and torture (utterance 1). These actions show that: the students mastered the field trip task; the art, mobile phones and the artwork 'label' are relevant disciplinary resources at the museum; the digital tools mediate their interpretive work; and the art exhibition, as institutional feature, supports a meaningful and exploratory encounter with art.

Back in the classroom, Clara's writing and the subsequent discussion suggest that the digital tools and the experience of the artwork in the museum are bridging meaning making activity in a different institutional setting. However, rather than editing the first blog entry, or writing a new 'summary' text as instructed by the task, Clara chooses to write a new entry. In this new blog entry (utterance 2), Clara ignores their reference to war industry and torture from their initial museum blog (utterance 1). Instead, she offers a new interpretation that disagrees with the artist's title of the work, arguing that there is nothing indicating that the hangar ship is being or will become destroyed by the cables connecting it with the horses. Clara interprets the tension in the cables linking horses and hangar ship as symbolising violence, and the violence applied by the horses reinforces the potential for violence represented by the ship. Clara seemingly draws on everyday concepts and knowledge to construct an interpretation, summarised by the adage in the blog title 'Violence begets violence.' Her new interpretation is prompted by perceptual attention to the image of the artwork and by the descriptive title of the artwork, a not uncommon interpretation strategy in contemporary art, where meaning and an artist's intentions are often obscure or open.

The students' discussions and texts generated at the museum, and continued engagement in the post-visit classroom activity, illustrate critical thinking in the discipline of art and a productive use of mobile and social media for bridging contexts and interpretations. Although these students are not majoring in art, they clearly master general skills in the curriculum related to art, namely competence in describing, analysing, evaluating and critically reflecting on experiences, aesthetic means and contexts of art. At the same time, it is apparent that Clara has not appropriated the meaning she interprets from the title of the work as her own.

Anna and Clara demonstrate their literacy with the digital tools in developing an alternative way of handling the blog when the comment function did not work. The fact that they added comments but did not edit each other's texts indicates that they are literate in 'blogging' as a genre of writing, constructing through turn-taking an argument that includes different interpretations of the artwork and the artist's intentions. Their 'edit and comment' solution structures discussion in the same sequential mode as typical blog entries, and the purpose of the blog is both understood and made relevant in this activity.

In her comment to Clara's new blog entry, and perhaps referring to their initial blog entry written at the museum, Anna protests (utterance 3) that it is the mutual relationship between war and industry that is important, and she brings new, aesthetic aspects of the work – the horses are "wearing armour" – into an argument that situates violence in a cultural-historical perspective. It is evident that Anna is critically reflecting on the previous utterance when pointing to the relevance of the aesthetic means, and through careful observation she shifts the interpretation to a different level of abstraction. Although neither student acknowledges the reference in the title of the work to Leonardo da Vinci, who designed the armour for a time when battles were fought on horseback and face to face, the linking of industry with war and human acts of violence across generations is in line

with the curator's perspective on the meaning of the work, which points to the enduring practice of war and terror throughout human history even as technologies change. Almost as an aside, Anna concludes this entry by pointing to the visual prominence of the 'pipes' at the base of the sculpture, and wonders about their meaning.

This latter comment steers the discussion in a new direction, as Clara disagrees that the pipes have special meaning and argues that their purpose is structural and functional rather than intended by the artist to be understood as part of the work (utterance 4). This spurs a response in which Anna (utterance 5) elaborates her view, pointing to the seemingly intentional use of colour and materials to create visual coherence between the elements, and that the hangar ship – which occupies a central and prominent place in the sculpture – would be destroyed by the 'fasten-thing' below if the cables loosened. Anna's explanatory engagement references formal elements and the use of materials, an approach in keeping with analytical methods in the discipline of art history. However, these visual clues are insufficient for interpreting an important layer of cultural meaning in the artwork, namely the artist's intended connotations with an ancient torture method. It is evident that the readily available curatorial resources or other student blog entries that reference this point are not made relevant in Anna and Clara's discussion. The historical connection between changing war technologies and human violence – disciplinary knowledge valued by the curator – is not included in the students' writings or discussions.

The final utterance in the exchange illustrates the open and social features of blogs as a digital tool, as two students from another group intervene to add a comment to the ongoing discussion (utterance 6). Ella and Hannah use information on the website about the ancient torture method to point out that the "right interpretation" is indeed given in the title of the work, namely that "the horses are ripping apart the hangar ship with torture tools." They use this information to propose a literal understanding of the title of the work, correcting Anna and Clara's 'misconceptions' by wielding a seemingly authoritative and normative interpretation. This move effectively closes down the meaning making process.

Interestingly, the argument that a work's title is both a literal and 'correct' interpretation was not used by Anna. Instead she draws on visual clues to explore and reflect on symbolism and the artist's intentions, maintaining through her utterances a dialogical stance. Meaning develops as joint collaborative activity through observation, description, analysis, and the process of clarifying and extending previous utterances. This dialogical space is created in tensions between an authoritative interpretation, i.e., the label and title of the artwork, that is mastered but not appropriated, illustrating both the open character of contemporary art and the emergent process of meaning making.

Discussion and concluding remarks

The art museum field trip is an activity that aims to bridge formal and informal learning settings (Pierroux, 2005). This means that the types of resources and degree of structure

for students' activities vary in the respective institutional contexts of museum and school (DeWitt & Storksdieck, 2008). As previous research and this study illustrate, a degree of procedural structure is required to support learning, in terms of instructional design and the introduction of specific types of disciplinary resources, but a degree of openness is also needed to encourage exploratory talk, critical thinking, and aesthetic encounters with authentic works of art (Mortensen & Smart, 2007). In the museum setting, students had time to freely explore, experience and discuss, with 'learning' activities that were moderately structured. The visual and aesthetic qualities of artworks, labels and conversations with others are important contextual resources in this setting, evidenced in the students' appropriation of meaning. In applying methods from interaction and multimodal analysis (Derry et al., 2010; Jewitt, 2008) to data collected in both school and museum settings, this study contributes a better understanding of the specific ways in which structural features of these two different institutional contexts come into play in meaning making on field trips.

In terms of disciplinary resources, studies show that art concepts and curatorial information are not easily made relevant as resources in students' meaning making on field trips (Hubard, 2006; Xanthoudaki, 1998). This is also seen in the illustration above. Students mastered the task and many of the skills required by the curriculum, selecting artworks and drafting different interpretations through careful observation and critical reflection. This discursive and observational competence is valued in art as a discipline (Cuno, 2004). However, we also see that the conceptual content of meanings produced is related to the very specific ways in which peers, curator, teacher or tools do – or do not – introduce disciplinary resources into the activity (Furberg & Arnseth, 2009). This is a typical finding across domains in educational research; students have problems applying disciplinary knowledge in their conceptual thinking (Krange, 2007). Through close examination of students' interactions and writings as they unfold across school and museum settings, this study identifies and explores a procedural problem that deserves greater attention in museum field trip research.

At the same time, based on post-visit interviews and analysis of the blog texts, we found that young people viewed their blog entries about artworks at the museum as what genuinely 'counted' as meaning making *for them* (Pierroux, in press). The activity of editing and writing a new summary text back in the classroom was generally considered redundant 'schoolwork', although in many cases the revised interpretations incorporated disciplinary resources and reflected deeper conceptual understanding. These findings provide a deeper understanding of distinctions and relations between mastery and appropriation in formal and informal learning contexts (Wertsch, 2002), and what counts as meaning making in the respective settings.

The potential of social media and mobile phones as 'learning tools' in museums and on field trips is an increasingly relevant area of research (Gammon & Burch, 2008; Kelly & Russo, 2008; Simon, 2010). In this study, we found that genres of writing for blogs and mobile phone messages structured the content and reading of the multimodal texts, first

as brief reflections collaboratively formulated in SMS or MMS format using mobile phones, then as sequentially ordered blog entries accessible to everyone in the class, and finally as interpretations that have peers as well as teachers as an implied audience of 'receivers' and 'commenters'. The social, fragmented and abbreviated format of text messaging and blogging invited students to later clarify their interpretations, and to build on previous utterances in a dialogical manner (Pierroux, in press). It is clear that mobile blogging was a familiar and effective means for young people in a school setting to build on their museum field trip experiences when developing and sharing interpretations. The malleable and social features of mobile phones and blogs allow for designs that are sensitive to aspects of meaning making that research has shown are key when school and museum activities are combined: personal engagement through open exploration, varying degrees of structure, and a sensitivity to the introduction of different types of contextual resources.

References

- Anderson, D. & Shimizu, H. (2007). Recollections of Expo 70: Visitors' Experiences and the Retention of Vivid Long-Term Memories. *Curator*, 50(4), 435-454.
- Anderson, D., Storksdieck, M., & Spock, M. (2007). The Long-Term Impacts of Museum Experiences. In J. Falk, L. Dierking & S. Foutz (Eds.), *In Principle, In Practice – New Perspectives on Museums as Learning Institutions* (pp. 197-215). Walnut Creek: Alta Mira Press.
- Arvanitis, K. (2005). Museums Outside Walls: Mobile Phones and the Museum in the Everyday. *IADIS International Conference Mobile Learning*. Lisbon, Portugal.
- Aure, V., Illeris, H. & Ôrtregren, H. (Eds.). (2009). *Konsten som läranderesurs*. Skärhamn: Nordiska Akvarellmuseet.
- Barab, S.A. & Squire, K. (2004). Design-Based Research: Putting a Stake in the Ground. *The Journal of the Learning Sciences*, 13(1), 1-14.
- Brown, A.L. (1992). Design Experiments: Theoretical and Methodological Challenges in Creating Complex Interventions in Classroom Settings. *The Journal of the Learning Sciences*, 2(2), 141-178.
- Collins, A. (1992). Towards a Design Science of Education. In E. Scanlon & T.O. O'Shea (Eds.), *New Directions in Educational Technology* (pp. 15-22). New York: Springer-Verlag.
- Csikszentmihalyi, M., & Hermanson, K. (1995). Intrinsic Motivation in Museums: Why does one want to learn? In J. Falk & L.D. Dierking (Eds.), *Public institutions for personal learning: Establishing a research agenda*. (pp. 67-77). Washington, DC: American Associations of Museums.
- Cuno, J. (Ed.). (2004). *Whose Muse? Art Museums and the Public Trust*. Princeton: Princeton University Press.
- Derry, S.J., Pea, R.D., Barron, B., Engle, R., Erickson, F., Goldman, R., et al. (2010). Conducting Video Research in the Learning Sciences: Guidance on Selection, Analysis, Technology, and Ethics. *Journal of the Learning Sciences*, 19(1), 3-53.
- DeWitt, J. & Storksdieck, M. (2008). A Short Review of School Field Trips: Key Findings from the Past and Implications for the Future. *Visitor Studies*, 11(2), 181-197.

- Falk, J. & Balling, J.D. (1979). The Field Trip Milieu: Learning and Behavior as a Function of Contextual Events. *Journal of Educational Research*, 76(1), 22-28.
- Falk, J. & Dierking, L.D. (1992). *The Museum Experience*. Washington, D. C.: Whalesback Books.
- Falk, J. & Dierking, L.D. (1997). School Field Trips: Assessing Their Long-Term Impact. *Curator*, 40(3), 2111-2217.
- Falk, J. (2009). The Learning Tourist: The Role of Identity-Related Visit Motivations. *CMT2009, the 6th International Congress on Coastal and Marine Tourism*. June 23-26, Nelson Mandela Bay, South Africa.
- Furberg, A. & Arnseth, H.C. (2009). Reconsidering conceptual change from a socio-cultural perspective: analyzing students' meaning making in genetics in collaborative learning activities. *Cultural Studies of Science Education*, 4, 157-191.
- Gammon, B., & Burch, A. (2008). Designing Mobile Digital Technology for Museum Visitors. In L. Tallon & K. Walker (Eds.), *Digital Dialogues: Personal Technologies and the Museum*. Lanham, MD: Alta Mira Press.
- Hawkey, R. (2004). *Report 9: Learning with Digital Technologies in Museums, Science Centres and Galleries*.
- Hubard, O.M. (2006). 'We've Already Done that One': Adolescents' Repeated Encounters with the Same Artwork. *The International Journal of Art & Design Education*, 25(2), 164-174.
- Huseth, R. (2002). *Elevene - kunsten - formidlingen : posisjoner i kunstpedagogikken og kunstformidling i praksis : en studie av to formidlingsprosjekter i grunnskolen*. Bergen: University of Bergen.
- Jewitt, C. (2008). Multimodality and Literacy in the Classroom. In G. Kelly, J., A. Luke & J. Green (Eds.), *Review of Research in Education*, Vol. 32, pp. 241-267: AERA.
- Jordan, B. & Henderson, A. (1995). Interaction Analysis. *The Journal of the Learning Sciences*, 4(1), 39-103.
- Kelly, L., & Russo, A. (2008). From Ladders Of Participation To Networks Of Participation: Social Media And Museum Audiencesin (J. Trant & D. Bearman, Eds.) *2008 Proceedings Museums and the Web*, Toronto: Archives & Museum Informatics.
- Kelly, L. (2010). How Web 2.0 is Changing the Nature of Museum Work. *Curator: The Museum Journal*, 53(4), 405-410.
- Kelly, U. (1997). *Schooling desire: literacy, cultural politics, and pedagogy*. London: Routledge.
- The Knowledge Promotion* (2006). Ministry of Education and Research, Norway.
- Kerawalla, L., Minocha, S., Kirkup, G. & Conoe, G. (2008). An Empirically Grounded Framework to Guide Blogging in Higher Education. *Journal of Computer Assisted Learning*, 25(1), 31-42.
- Krange, I. (2007). Students' Conceptual Practices. Productive Disciplinary Interactions in a Participation Trajectory. *Cultural Studies of Science Education*(2), 171-2003.
- Krange, I. & Ludvigsen, S., A. (2008). What does it mean? Students' procedural and conceptual problem solving in a CSCL environment designed within the field of science education. *Journal of Computer Assisted Learning*, 3, 25-52.
- Lankshear, C., & Knobel, M. (2006). *New Literacies. Everyday Practices and Classroom Learning*. Maidenhead: Open University Press.
- Leinhardt, G. & Knutson, K. (2004). *Listening in on Museum Conversations*. Walnut Creek: Altamira Press.
- Linell, P. (2009). *Rethinking Language, Mind, and World Dialogically*. Charlotte: Information Age Publishing.
- Mason, D.D.M., & Conal, M. (2006). 'The Feeling of Exclusion': Young Peoples' Perceptions of Art Galleries. *Museum Management and Curatorship*, 21, 20-31.
- McManus, P. (1985). Worksheet-Induced Behaviour in the British Museum (Natural History). *Journal of Biological Education*, 19(3), 237-242.
- Medved, M.I. & Oatley, K. (2000). Memories and scientific literacy: remembering exhibits from a science centre. *International Journal of Science Education*, 22(10), 1117-1132.
- Morrison, A. (Ed.). (2010). *Inside Multimodal Composition*. Cresskill, NJ: Hampton Press.

- Mortensen, M.F. & Smart, K. (2007). Free-choice worksheets increase students' exposure to curriculum during museum visits. *Journal of Research in Science Teaching*, 44(9), 1389-1414.
- Paulsen, M., & Tække, J. (2009). Om den uformelle (mis)brug af medier i det formelle uddannelsessystem. *Mediekultur*, 46, 56-72.
- Pierroux, P. (2005). Dispensing with Formalities in Art Education Research. *Nordisk Museologi*, 2, 76-88.
- Pierroux, P., Rasmussen, I., Lund, A., Smørdal, O., Stahl, G., Larusson, J.A., et al. (2008). *Supporting and Tracking Collective Cognition in Wikis*. ICLS 2008 Conference, New Brunswick, NJ. Retrieved from <http://www.isls.org/icls2008/>
- Pierroux, P. (2009). Newbies and Design Research: Approaches to Designing a Learning Environment using Mobile and Social Technologies. In G. Vavoula, A. Kukulska-Hulme & N. Pachler (Eds.), *Researching Mobile Learning: Frameworks, Methods and Research Designs* (pp. 289-316). Bern: Peter Lang.
- Pierroux, P. (2010). Guiding Meaning on Guided Tours. Narratives of Art and Learning in Museums In A. Morrison (Ed.), *Inside Multimodal Composition*. Cresskill: Hampton Press.
- Rasmussen, I. (2005). *Project Work and ICT: Studying Learning as Participation Trajectories*. Oslo: University of Oslo.
- Rowe, S. & Wertsch, J. (2002). Linking Little Narratives to Big Ones: Narrative and Public Memory in History Museums. *Culture & Psychology*, 8(1), 96-112.
- Schwartz, D., & Burnette, A. (2004). *Making Web Sites for Young Audiences*. Paper presented at the Museums on the Web, Arlington, VA.
- Semper, R. & Spasojevic, M. (2002) The Electronic Guidebook: Using Portable Devices and a Wireless Web-based Network to Extend the Museum Experience. *2002 Proceedings Museums and the Web*, Toronto: Archives and Museum Informatics. http://www.archimuse.com/mw2002/abstracts/prg_165000783.html
- Simon, N. (2010). *The Participatory Museum* Available from <http://www.participatorymuseum.org/>
- Stapp, C.B. (1984). *Defining Museum Literacy*. Roundtable Reports, 9/1, Winter, 3-4.
- Tallon, L. & Walker, K. (Eds.). (2008). *Digital Technologies and the Museum Experience: Handheld Guides and Other Media*. Lanham, MD: Alta Mira Press.
- Ueland, H.B. (2006). How to Use Mobile Telephones in an Art Museum, *Nodem Conference*, Oslo, Norway.
- Vasström, A., & Floris, L. (1999). *På museum. Mellem oplevelse og oplysning*. Roskilde: Roskilde universitetsforlag.
- Vergo, P. (1989). *The New Museology*. London: Reaktion Books.
- Vavoula, G., Meek, J., Sharples, M., Lonsdale, P., & Rudman, P. (2006). A lifecycle approach to evaluating MyArtSpace. In S. Hsi, C. Kinshuk, T. & D. Sampson (Eds.), *Proceedings of the 4th International Workshop of Wireless, Mobile and Ubiquitous Technologies in Education (WMUTE 2006)*, Nov 16-17. (pp. 18-22). Athens, Greece: IEEE Computer Society.
- Vavoula, G., Sharples, M., Rudman, P., Meek, J., & Lonsdale, P. (2009). Myartspace: Design and evaluation of support for learning with multimedia phones between classrooms and museums. *Computers & Education*, 53(2), 286-299.
- vom Lehn, D., & Heath, C. (2003). Displacing the Object: Mobile Technologies and Interpretive Resources, *Proceedings of ICHIM 2003*, Paris, France.
- Vygotsky, L.S. (1986). *Thought and Language*. Cambridge: MIT Press.
- Walker, J. (2005). Weblogs: Learning in Public. *On the Horizon*, 13(2), 112-118.
- Wertsch, J. (2002). *Voices of Collective Remembering*. Cambridge: Cambridge University Press.
- Xanthoudaki, M. (1998). Is It Always Worth the Trip? The contribution of museum and gallery programmes to classroom art education. *Cambridge Journal of Education*, 28(2), 181-195.

Acknowledgements

We would like to thank Astrup Fearnley Museum of Modern Art, and the teachers and students who participated in the *Gidder* project. We also thank Nils Otto Steen, Sten Ludvigsen, and the research group at InterMedia, University of Oslo for comments.

*Palmyre Pierroux, PhD
Associate Professor
InterMedia
University of Oslo, Norway
palmyre@intermedia.uio.no*

*Ingeborg Krange, PhD
Associate Professor
InterMedia
University of Oslo, Norway
ingeborg.krange@intermedia.uio.no*

*Idunn Sem, M.A.
Media Developer
InterMedia
University of Oslo, Norway
idunn.sem@intermedia.uio.no*