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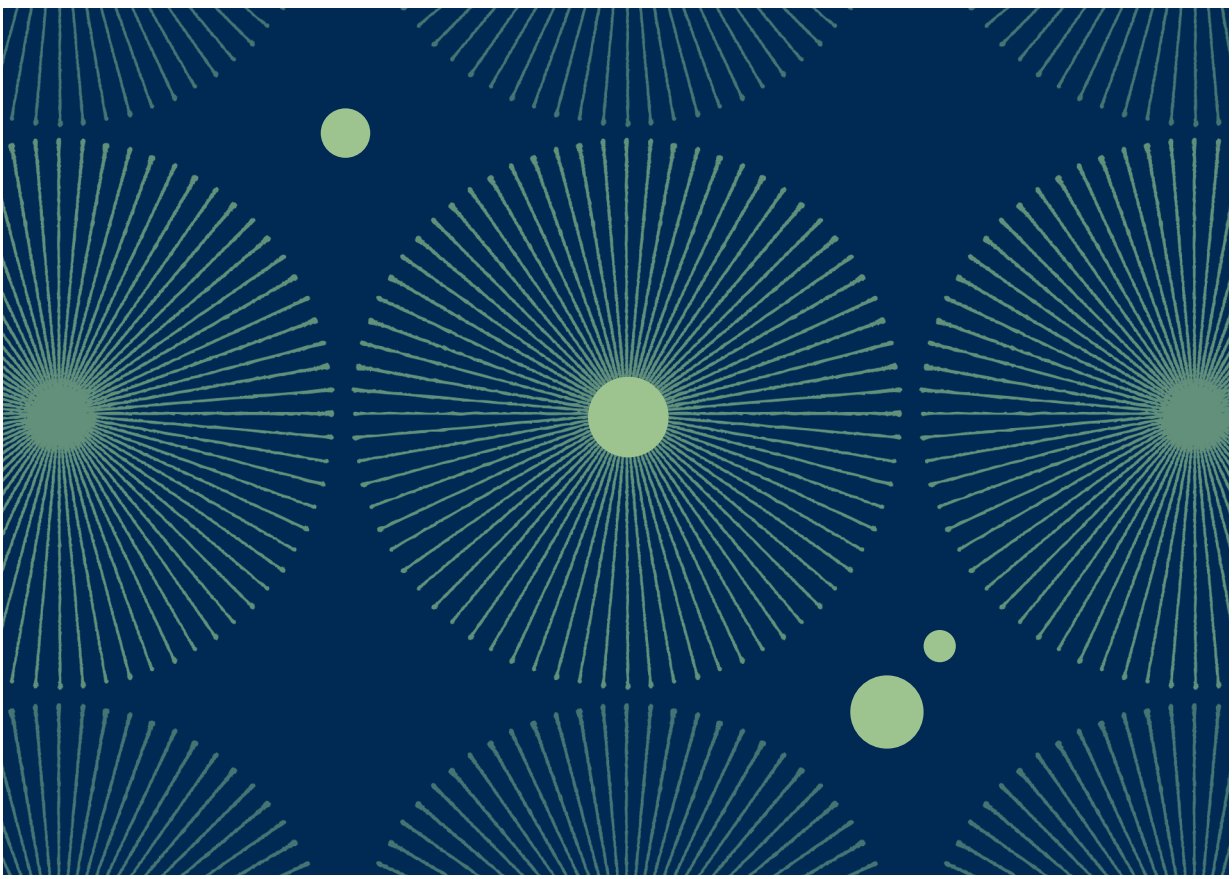
Proceedings of the 2nd Association for Visual Pedagogy Conference



EDITED BY KATHRIN OTREL-CASS

BREAKING NEW GROUND
AALBORG UNIVERSITY

Dafolo

Edited by Kathrin Otrel-Cass

Proceedings of the 2nd Association for Visual Pedagogy Conference

Kathrin Otrel-Cass (red.)
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WELCOME TO
THE ASSOCIATION OF VISUAL PEDAGOGY CONFERENCE (AVPC) 2017
AT AALBORG UNIVERSITY, DENMARK

Dear Colleagues,

Aalborg University is proud to host the second AVP Conference and we are looking forward to welcoming you in Denmark, Aalborg on **June 17-18, 2017**.

With a focus on visuality we welcome all who take an interest in discussing and exploring:

- Video/visuals in research
- Video/visuals for education
- Video/visuals and the analysis of complex and multimodal interaction
- Video/visual and the handling of complex data

The topics of the conference aim to be of relevance to researchers and practitioners working with video and visual media with an overall aim to reflect on different approaches to working with visual material in teaching and research and provide a forum to explore the perspectives on context, design, methods and analysis.

The AVP conference has been kindly supported by:

- Association of Visual Pedagogy
- DIGHUMLAB
- Det Obelske Familiefond
- The Department of Learning and Philosophy, Aalborg University

We are looking forward to meeting with you in June 2017.

Kathrin Otrel-Cass
AVPC 2017 Conference Coordinator

The Scientific Committee
Kathrin Otrel-Cass – Aalborg University, Denmark
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Anna Major
Justus Brodersen
Jesper Baand

Welcome Reception and Closing Ceremonies
The Welcome Reception is held at Aalborg University, city campus, in Rendsburgsgade 14, on Friday from 6.00-17.00 and will be hosted by the Dean of the Faculty of Humanities, Henrik Halkier.

The Closing Ceremony will be held at Aalborg University, main campus, in Kroghstræde 3.

Conference Dinner
The Conference Dinner will be held at the Restaurant Prinses Juliana, in Vestre Havnepromenade 2, in central Aalborg, on Saturday at 18.00.

Venues and Transport
The venue on Saturday is the city campus Aalborg in Rendsburgsgade 14, in very close walking distance to most city hotels.

The venue on Sunday is on the main campus in Kroghstræde 3. City busses with the number 2 direction Aalborg Universitet, Gistrup Skole or AAU Busterminal will take you there.

Keynote speakers

Saturday

Research and Education to Benefit the Quality of Social Life

Kenneth Tobin, The Graduate Center of CUNY, USA

Although methodology and substantive focus are central constituents of authentic inquiry, beneficence to all participants is an overarching priority that we adopt in our ongoing research on learning, emotion, and wellness. My address will present tenets and central rationale for authentic inquiry within a framework of research that is multilogical, multilevel, and multimethod.

Consistent with the stance that theory as a way to illuminate experience and thereby forge the direction of emergent and contingent research, I will present an evolving narrative that began with research in science education in inner-city urban schools in Philadelphia and continues in explorations of health and well-being of faculty and students in graduate level university classes. Also, we are presently studying adult citizens' uses of complementary medical knowledge systems to better understand living with Diabetes mellitus and expanding hope for effective treatment.

In the presentation I will address multilevel studies that span micro, meso, and macro levels of social life, using digitized video images, associated digital audio files, and physiological data derived interpretively from these analyses, augmented by synchronize data from finger pulse oximeters (e.g., pulse rate, blood oxygenation, plethysmography) and other physiological measures (e.g., blood sugar, blood pressure). As an illustration of ways in which new theoretical frameworks expand opportunities to learn and benefit from research I will illustrate how Stephen Porges' Polyvagal Theory and Lisa Feldman Barrett's *The Secret Life of the Brain* are used in ongoing research on wellness, teaching, and learning in classrooms, and design of interventions.

Specific foci for the presentation will include: breathing patterns during verbal interaction; prosody, emotions, and wellness; mindfully speaking and listening; and self-help as a mantra for improving and sustaining well-being. A theoretical thread that weaves through the entire presentation is that sustainability of life is threatened by frameworks that elevate the importance of living over nonliving; human life over nonhuman life; and self over non-self. I will present an approach that values the ecosystem as the basic unit for analysis in research that advocates for transformation (to benefit all) and sustainability.

ABOUT KENNETH TOBIN

Kenneth Tobin came to the Urban Education doctoral program at the Graduate Center of CUNY in the fall semester of 2003. Presently he is coordinator of the Learning Sciences strand. Prior to his position at the Graduate Center Tobin had positions as tenured full professor at Florida State University (1987 to 1997) and the University of Pennsylvania (1997 to 2003). Also, he held university appointments at the Western Australian Institute of Technology (now Curtin University), Mount Lawley College and Graylands College (now Edith Cowan University). Before Tobin became a university science educator in Australia in 1974, he taught high school physics, chemistry, biology general science, and mathematics for 10 years. He began a program of research in 1973 that continues to the present day – teaching and learning of science and learning to teach science.

Sunday

Multimodal (inter)action analysis and its relevance for visual pedagogy

Sigrid Norris, Auckland University of Technology, New Zealand

When studying interactions in pedagogic settings, we want to gain an in-depth understanding of the micro actions. But we also want to understand how the micro actions connect to practices, and how they link to larger discourses.

Multimodal (inter)action analysis is a framework that brings together detailed analysis of micro actions with analysis of practices and discourses that participants draw on as they perform the actions and interactions.

With examples from family video conferences, an elementary school classroom, and an art school, I demonstrate what can be learned when using this multimodal framework for the analysis of interactions in pedagogic situations.

ABOUT SIGRID NORRIS

Sigrid Norris is Professor of Multimodal (Inter)action and director of the Multimodal Research Centre at Auckland University of Technology, New Zealand. She is author of Analysing Multimodal Interaction: A Methodological Framework (Routledge 2004), Identity in (Inter)action: Introducing Multimodal (Inter)action Analysis (de Gruyter 2011), co-editor of Discourse in Action: Introducing Mediated Discourse Analysis (Routledge 2005) and Interactions, Images and Texts: A Reader in Multimodality (de Gruyter 2014); sole editor of Multimodality in Practice: Investigating Theory-in-practice through-methodology (Routledge 2012) and Multimodality: Critical Concepts in Linguistics (4 Volumes) (Routledge 2015); and is editor-in-chief of the international journal Multimodal Communication (de Gruyter).

Conference Proceedings

Pedagogical shifts and uncertainty: Challenging attitudes to children's visual 'writings'

Sonja Arndt, University of Waikato, New Zealand
Marek Tesar, University of Auckland, New Zealand

Abstract

This paper reconceptualises attitudes towards young children's visual art. What are children doing when they create visual images? What might they be thinking, intending or representing? Faced in the early years sector with increasing and imminent local and global threats of further evidence-based measurement of children's achievements, we unsettle some of the now taken for granted 'uses' of the 'evidence' in children's visual art. We argue for positioning children's visual art as a self narrative through which they make meaning of and construct their own forming selves. Kristeva (2000) conceptualises narrative as an art, of re-membering diverse ways of knowing and being. Methodologically such an 'art' allows us to posit children's visual narratives as self care, a writing of the self (Galea, 2014; Richardson & St. Pierre, 2008), and of children's physicalities, materialities and temporalities (Ulmer, 2016). We challenge views on children's visual art as representational, useful, or understandable, to create conceptual and visual spaces as *a part of and inseparable from* children's fluid, non-static process of being and becoming selves. What are seen as visual images then are integrally entwined with children's evolving identities, constantly in construction, unknowable, unplannable pedagogical occurrences.

In this paper we use philosophy and metaphor to disrupt the adult-driven need to know children's visual art to create spaces for elevating children's ways of being and knowing. Kristeva's (1991) philosophical conceptions of the foreigner help to position children as unknown, and unknowable even to themselves, as subjects in process, in which the visual narratives they create act. Further, the openings, opportunities, and pedagogical unknown are explored through indigenous methodological constructs. We draw on the Aotearoa New

Zealand Māori metaphor of braided rivers, and the Australian aboriginal notion of Ganma, to rethink the children's visual 'writings' – through photographs, video, drawing or painting. That their expressive art belongs to the children themselves, of course, is not new – but a timely reminder, we argue, of its potentialities, is both critical and urgent.

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Colors and teacher grading

Milan Bajic, Zagreb University of Applied Sciences, Croatia
Monika Bajic, Bible institute, Center for biblical research (CBI), Croatia

Abstract

Colors represent reflections of light in the visible wavelength spectrum. At a more non-technical level, human level colors represent person's emotions, moods, attitudes and value systems. Colors also represent one's political opinion in a publicly declaring, very expressive way. Could we use colors in measuring a teachers quality of work, if yes, how? In the Western world, a part of Universities Quality assurance procedure gives students a questionnaire to grade the teacher's knowledge on the topic taught; how well the teachers did their work of knowledge transfer and other issues.

Some questions are in the author's opinion at least questionable, for example how could student grade teacher's knowledge of the topic taught? On the other hand, if students are asked grade their teachers knowledge, why cannot they express their emotional response together with their overall satisfaction by giving a color as a grade that would best represent their opinion? Based on theoretical background of psychology of colors and Quality Assurance measuring on higher education institutions, a small-scale experiment was done. Students were asked to express their satisfaction by color-grading the course they are studying (design of visual communications on 3rd year), so it is reasonable to expect that they understand the meaning of colors on some level.

This paper will propose the relationship between students expressing their opinions on the course of TV and Video Recording on Zagreb University of Applied Sciences in color and their numerical grading of teachers' performances at the end of the semester.

The group dynamics in collaborative and mobile learning in elementary education

Mia Čarapina, Zagreb University of Applies Sciences, Croatia

Abstract

Through the two-year period, from September 2014 to November 2016 a number of experiments were conducted in one primary school in Croatia in order to observe students' collaborative working patterns and analyse social nature of their interactions. The participants included into experiments were 1st, 2nd, 3rd and 4th grade students, aged 6 to 9. During the interventions the students were assigned to work collaboratively on tablet computers which were distributed in 1:1 ratio (one tablet per student) and 1:m ratio (one tablet per many students, mostly two). The goal of the research was to observe group dynamics and social interactions of young learners while working with mobile technology and, on the basis of the gathered research data, to propose a model for adaptive and collaborative learning which would enhance the learning process. Since one experimental intervention included a large group of primary school children, usually one classroom with up to 25 students, a visual research was adopted as a qualitative method for observational data collection. This paper presents a series of related experiments conducted in March 2016 and points out the importance of visual research in collaborative and mobile learning due to the complex spatial and social dynamics of the group work. Moreover, the paper discusses observations regarding collaboration dynamics based on the analyzed photo and video data and proposes guidelines for technology enhancement of learning in groups where peers are young learners.

Overcoming the fear of the presented self

Andrew Cass & Mariia Kravchenko, University College of North Jutland, Denmark

Abstract

Using an agency theory approach, the article reflects on the forces acting on the teacher as a lesson is created for the e-learning space. Brownlee (2015) describes that there are two sides to the presented self; the presenter and audience, and that both mediate a story. The point of departure for this approach is that the presenter and the audience is the same, however mediated by external actors and agents such as the video. The teacher's preconceptions to the presented self are fundamentally negative and the researcher's interventions in the video recording process describe a process of altering the agency of actors on the presented self. The preconceptions of the presented self are based on a very real fear of loss. Marris parallels this with a bereavement when there is a realisation that things that were once known are shown to be wrong (1978). This leads the researchers to hypothesise that the fear of the presented self cannot be shown to be wrong, however that a process of self-discovery mediated through technology can lead to discovering new knowledge to fill the gap left by old practice, and attention to how this process plays out is equally important to attaining the desired results as instituting new practice. This is especially relevant to institutions attempting to make wholesale department-wide change for improved practice, when entrenched practice, and the fear of loss, leads to change resistance.

Introduction

Many of today's higher education institutions (HEI) are adopting digital teaching tools while shifting their attention to attainment of learning outcomes (Dodero, Fernndez, & Sanz, 2003; Olapiriyakul & Scher, 2006). This is where Information Communication Technology (ICT) is hoped to bring about positive changes, from supporting interactive presentations styles through tools like interactive whiteboards (IWB), to challenging traditional "on campus" classes through the adoption of flipped and/or partially (blended) or fully online classes. These transitions are considered necessary not only to change teaching styles but also to respond to a society that is influenced and driven by informa-

tion and communication technologies (ICT) (Kukulska-Hulme, 2012; Lawless & Pellegrino, 2007). There is a wealth of research concerning these transitions in order to maintain and improve active, engaging and rich learning environments (Keengwe & Kidd, 2010; Van Weert, 2005; Watson, 2006).

Integrating ICT and applying ICT specific pedagogical practices requires that teachers are aware of the affordances ICT offers (Webb, 2005). Webb explains that the term affordance "describe(s) opportunities provided for users in ICT-based learning environments" (p. 707). Unless teachers are aware of those themselves they will struggle to be certain that they are apparent to their students. If the affordances of ICT stay hidden to teachers they will find it difficult to see the potential benefits in using ICT and will be less inclined to be using ICT, if they have a choice to do so. Not only do teachers need to see the potential benefit in using ICT they also need to understand that they play a key role in implementing ICT informed approaches (Webb, 2005).

The existing research predominantly reports on studies that involve voluntary participants and this means in most cases early ICT adopters or those who are willing to 'give it a try', thus people who are motivated to explore the affordances of ICT. This may result in the fallacious assumption that all teachers are ICT literate and/or prepared for this new form of teaching. For example referring to the production of video content that can be used for flipped or blended learning approaches Brecht writes: "Using a personal computer, an instructor can create them [video] quickly and easily" (2012 p. 75). Aldunate and Nussbaum (2013) show that while nearly 75% of teachers' identify themselves as innovators or early adopters, only 34% invest more than an average amount of time in using technology. This is similarly reflected in the handbook of design research methods in education which reports a meta analysis result of 2.5% of participants as innovators and 13.5% of early adopters (Kelly, Lesh, & Baek, 2014). Early adopters have the traits of being self-organizing and self-learning with motivation to evolve practice. Based on a negative educational technology adoption scenario from Zellweger (2007) they are unafraid to make errors. Zellweger goes on to say that it is only the innovators (representing around 5% for that particular study) which had the motivation to improve practice and all the remaining participants tended to abandon new technology.

In this paper, the reference is specifically to the challenges experienced by teachers who can be described as late adopters, who are on a spectrum, reluctant to adopt to ICT supported approaches. More specifically the interest is focused on the production of video content that supports, complements or replaces traditional lecture style teaching. Next is a brief description on using video to support University teaching.

Video to teach content

Video lecture content comes in four broad types (Chen & Wu, 2015): Lecture capture format, based on the simple recording of an in-class lecture; The voice-over presentation or 'talked slides', simple recordings played over an automated slide presentation; The picture-in-picture method, which shows the presenter and captures slide annotations, and finally, animated video with a voiceover, signified by animated drawings or diagrams and only keywords or lists being shown as text (Chen & Wu, 2015).

The literature is undecided if learning is improved by differentiating these types (Zhang, Zhou, Briggs, & Nunamaker, 2006). However, the incorporation of video is said to be beneficial in online teaching (Bishop & Verleger, 2013) as well as in a variety of face-to-face and blended learning environments (Shephard, 2003). Students value the use of videos as resources especially if they represent "short, concise video content that is immediately relevant to the topic at hand" (Tiernan, 2015 p.88). Rienties and Toetenel (2016) describe that content is less important than the learning design which may account for the mixed results video content type studies. However, the production of video content represents a challenge to teachers who have to adopt new ways of content preparation.

Impediments to video production for teaching

Examining the literature on the topic of ICT adoption and implementation, including that of video production and use for education, shows also that there is little work available that examines those who are resisting or avoid technology uptake. To deal with this research turned to parallels from studies dealing with other ICT implementations. One example was the uptake of interactive whiteboards (IWB) where, despite the growth in IWB hardware acquisition, there is no consensus that there are sustained benefits of using IWBs for teaching (Van Laer, Beauchamp, & Colpaert, 2014). Van Laer, Beauchamp and Colpaert found in their study that in HEIs there were typically fewer than 5% advanced users of IWB even though the technology had been an integral part of the classroom set up for years. While IWBs are widely available in modern HEIs they are rarely used to record lectures and their annotations nor does it seem to be widely known that IWBs can be used to record slide presentations using PowerPoint and that advanced adoption and usage of IWBs is still relatively low (Al-Qirim, 2016).

Those who are less motivated to adopt ICT must overcome this to successfully integrate technology into their teaching. Many faculty members are reluctant to capture their traditional on campus routines for an online format because it requires a change in teaching practices i.e. teachers should adopt a more student-centered teaching approach (Keengwe & Kidd, 2010; Kukulska-Hulme, 2012). Video has been suggested as a suitable means to move content into the online environment (Bishop & Verleger, 2013; Chen & Wu, 2015). However, since video represents a form of online teaching Palloff and Pratt note (2003 p. 23) "Faculty members cannot be expected to know intuitively how to design and deliver an effective online course" and that often "faculty members have not been exposed to techniques and methods needed to make online work successful". Other barriers include the perceived requirements to prepare storyboards, scripts and scene preparation, hence demanding more time from teachers to prepare (Davis, 2016; Halili & Zainuddin, 2015; Sengel, 2016).

There is another important issue that affects the implementation of ICT, specifically video content that is not often discussed because, as mentioned before, research often utilizes volunteers. When one considers recording a lecture or some instruction it is implicit that there is an element of 'one's self' in the recording, typically either through the recording of one's self or the capture of one's voice. Many teachers are put-off by their own voice when they hear a recording since it is different to how they perceive themselves, and this creates an immediate aversion to the presented self, when seen in video format (Fuller & Manning, 1973). This 'presented self' is a term coined in psychology connected to one's self-image in relation to esteem and behavior. Brownlee (2015) writes that there are two sides to the presented self, the presenter and the observer and the teacher who records himself will experience the presenter and the observer as the same person. Research found that negative emotions such as guilt, fear, shame and anger are expressed more often by teachers watching themselves recorded than watching others (Fiske & Taylor, 2013) and they tend to be more critical of themselves than others when viewing others and their own teaching (Kleinknecht & Schneider, 2013). These studies and others point to the existence of a 'fear of the presented self' experienced in varying intensity by up to 85% of teachers who are not innovator's or early adopters of ICT. The literature reveals another barrier to recording videos for education, that of the fear of using new technological equipment (Bennett, 2012; Brunsell & Horejsi, 2013; Fuller & Manning, 1973; Raths, 2013). Zellweger (2007) goes as far as to say that fear prevents adoption of technology and increases the early abonnement of it.

Untreated, these fears may hamper efforts for HEI's to undertake modernization and integration of videos in teaching at an institutional scale. Commonly,

techniques used to reduce fear are variants of incremental exposure techniques (Heimberg, 1995). The hypothesis under consideration here is if incremental exposure can be used to reduce the fear of ICT and the presented self in teachers who are asked to record lectures on video, and whether this also reduces rates of abandonment of technology and practices by the non-early adopters?

Methodology

This paper is based on a larger study (Cass & Kravchenko, in press) which took an action research approach to include researcher work as a teacher practitioner and subsequently involved other teachers at the same HEI. This approach allowed the researchers to follow closely people's changing practices, how they interpret their practices, and the conditions of those practices (Kemmis, 2009).

This research is a longitudinal approach focused on two participants, selected because they have continued to record videos for use in in-class activities rather than what was required for the e-learning. The participants were 'late adopters' labeled in accordance with Kelly Lesh and Baek (2014), not based on self-assessment but on observations. This study adopted a qualitative approach using video-recorded interviews. Since the investigation was undertaken at one institution it was necessary to take note of culturally specific details of the participants' values, opinions and practices (Cohen, Manion, & Morrison, 2011). In addition, the study utilized field notes, action research logbooks and informal discussions with all participants.

The interview was a semi-structured interview with open-end questions, which was preceded by observations, which allowed to develop meaningful and relevant questions (Edwards & Holland, 2013). The interviews were designed to uncover aspects regarding teachers' perceived growth of technical skills, their own opinions about the videos and the reactions of their colleagues to their new practices and how they have adapted their teaching to the use of video specific ICT.

Results

'Late adopters', showed signs of reluctance to even enter the recording studio, evidenced by teachers who would miss appointments for the recording session, reschedule, or find that their calendar did not have a spare moment. However, after having initial positive experiences their enthusiasm for this new technology was evident through the feedback that was received. These participants tended to seek and follow advice from the workshops more deeply and at-

tended more workshop sessions. Their output tended to be refined ten minute videos, where they focused on one point or single concept, utilized advanced features such as animations or annotations.

The video recording training workshops were carefully planned to deal directly with the largely negative preconceptions to recording video (Kravchenko & Cass in press). The teachers preconceptions were that scripts and storyboards were necessary for recording video which is consistent with literature (Halili & Zainuddin, 2015; Sengel, 2016). The first workshop was centered on one primary concept, namely that the easiest way was to recreate exactly what was done in class thereby eliminating the need for storyboards and scripts. It turned out that using existing PowerPoint presentations, slides became the storyboards, and the text became a script for what should be covered in a video. The teachers had used the same material in traditional classes before, so the material was also considered as being rehearsed.

After having success making their first video they reported that: "I was really happy to find out it was so easy" …"it's not difficult as I thought it would be". In addition, they were reflective about possible shortcomings in some of their videos, for example "I found I could not use the PowerPoints directly because they were simply too heavy". This expresses the late adopters' reflection on their own practices and once they found that the recording was easier than previously feared it opened the door to experimenting with the delivery of content. The late adopters attended more workshop sessions and learned techniques on how to shorten videos to a single topic, remove text from slides and add animation. The results were videos that they found more engaging.

Utilising the PowerPoint also meant that teachers did not feel they had to record themselves lecturing as one of the teachers expressed: "I am glad I do not have to record myself but can use my PowerPoint slides."

One of the interviewees reflected that this process exposed weaknesses in his classroom approach, and now in a modified approach, this teacher uses video to make specific points in his classes. "It completely changed my classroom practice, I now play the video with the sound off and speak to them [students] my stories". One theme identified by the late adopters was that teachers felt less need to provide highly detailed information to their students and that the video production resulted in them concentrating on providing key points and then facilitating support to the students finding detailed information themselves.

Discussion and conclusion

The workshop results and teachers' reflections about producing video material was tied closely to the affordances of using the Office MIX add-on to PowerPoint. It characterized the nature of the ICT-rich environments and how this could "support current pedagogical and curriculum innovations within a framework for pedagogical practice (Webb, 2005, p. 732). Since familiar software was used as a starting point the fear of increased workload was reduced and the teachers' competency in using PowerPoint as a presentation format became a tool for eliminating the fear associated with time and effort.

Interestingly, it seemed that middle adopters were quick to uptake the technology but due to feeling securer with the technology they did not modify and adapt their teaching practice which was also pointed out by the work of Kelly Lesh and Baek (2014). In contrast the late adopters found that the recording was easier than previously feared. This opened the door to experimenting with the delivery of content and this is reflected in research that the late adopters are more self-critical (Kleinknecht & Schneider, 2013).

The presented self as a concept helped in this study to better understand the processes teachers go through when they are asked to produce videos in support of teaching. This study showed that the middle adopters may require an incentive develop their practices, since they were less intimidated by dealing with the technology and felt less need to attend additional workshops. The late adopters were via the incremental exposure technique able to completely overcome their fear and produced great content for e-learning in spite of their negative predisposition.

For all groups, it turned out that by building on known and familiar technology the fear of technology adoption could be reduced and addressed, and by incremental exposure this fear could be turned into curiosity and reflection of teaching practices. Utilizing the affordance of PowerPoint for video production strategically supported teaching practices and is a way to address professional development in technology adoption that is both reflective and innovative.

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Bodily-material resources for students' collaborative imagining and problem solving

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Abstract

In this paper, we analyse how architecture and design students work together in their studio space in Aalborg University (AAU). At AAU students work together in groups identifying, formulating and solving problems during each semester. Each group is supervised by a researcher with whom they will meet to discuss the progress of the project 4-6 times during a semester. Finally, the supervisor and an external examiner will assess the written project report made by the group. While the meetings with the supervisor and the group based exams give us some information about the ways student' work together, we know less about the daily naturally occurring collaborative activities where the students are identifying, formulating and solving problems. Thus, by analysing a small video extract from a larger collection of observational material, we show how a group of six students make use of different bodily-material resources for imagining and problem solving together.

The analysis shows that the student' are building a flexible infrastructure (Jornet & Steier, 2015) to support their design imaginaries and problem solving activities on a moment-to-moment basis. The infrastructure is composed of historical artefacts located in the studio, but also improvised artefacts produced in a moment of interaction for supporting their collaborative imagining and problem solving. In the process of developing and maintaining this infrastructure, they are making use of diverse bodily-material resources in the context of their studio, which they fluidly integrate into the activities. Thus, we wish to discuss how students solve problems and imagine designs together in the process, not in the format of an assessment of the written report.

In the video clip, the group of students are in the middle of critiquing each other's design concepts – in pairs the student's have made pencil sketches of a building which they first present and then discuss with the rest of the group. In their process of presenting and commenting on an idea, they integrate and make use of bodily-material resources (e.g. gestures, , drawings on paper, manifold paper and iPad, styrofoam shapes, and new pencil sketches) which is used for communication and thinking together. We approach the analysis from both

a video ethnographic perspective, as well as an analytic perspective grounded in embodied interaction analysis.

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Looking for Learning: An investigation into the development of students' critical voices through the production of multimodal responses to literature

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Abstract

Mobile technologies are being introduced into classrooms at a rapid pace. (Clark & Luckin, 2013) However, there is no clear rationale for their usage in the English literature classroom. The current National Curriculum for English (DfE, 2014) makes no mention of modern modes of communication and there is little research published on their educational impact in this area. Whilst teachers often capitalise on available technology to use visual and multimodal approaches in their teaching, students appear to have far fewer opportunities to convey their ideas visually or multimodally, as their learning is almost wholly assessed in written form. This action research therefore explores how enabling students to collaboratively produce multimodal responses to literature on iPads impacts the development of their critical voices.

I use the term critical voice development to outline my ideas for an updated model of the development we are trying to foster and evaluate during the study of English literature at school. With existing assessment criteria focusing only on linguistic elements, teachers lack guidance on how to effectively use and evaluate multimodal composition. Critical voice development is intended as a term which will feel familiar to teachers and their traditional conceptions of English Literature as a subject, yet be broad enough to accommodate some new practices around texts emerging in response to new technologies.

Reader-Response theory, (Rosenblatt, 1995) particularly personal growth through literature, has been a key theoretical influence on English teachers' notions of what it means to teach and read literature. (Goodwyn, 2012) Rosenblatt's transactive model of reading highlights the importance of the individual's subjective response in making meaning from literature and the value of a pedagogy which encourages students to voice their responses. Responses to literature become more critical as individuals consider a broader range of perspectives: those of peers, teachers, authors or critics. Reader-response theories also highlight the role convention plays in shaping responses to literature. Fish

(1980) observes that 'meanings are the property neither of fixed and stable texts nor of free and independent readers but of interpretive communities.' For a response to be deemed 'critical' and recognised as such, awareness of disciplinary conventions around how to voice ideas is necessary.

In the English Literature classroom students' critical voice development is traditionally evaluated verbally, through their essays or their contributions to class discussions. However, this study draws on broader conceptions of voice. Kress' social semiotic perspective on learning suggests that meaning-making with text is 'the result of (semiotic work) whether as *articulation* in the outwardly made sign, as in writing, or as *interpretation* in the inwardly made sign as in reading.' (Kress, 2003) What students articulate, across various modes, such as visual, verbal or gesture, are taken as their voiced responses.

I also draw on Bakhtin's notion of heteroglossia to help theorise and explore the social and cultural aspects of critical voice development. Bakhtin suggests that texts are heteroglossic in that they contain various voices in dialogue. As the multimodal texts in this study are made collaboratively, in groups, they represent the responses or voices of multiple students, of the author and of the teacher. In addition, as forms of text which are not typically made in the English literature classroom, they may also draw on conventions of other genres as the students try to use new modes to respond. The notion of critical voice development also then considers the fact that 'appropriating voices of prior texts is an issue when learners attempt multimodal composition.' (Hafner, 2015).

Working with a practicing secondary school teacher and her class as they study a literary text, we have piloted the approach and data collection methods. In addition to the students' multimodal texts, we have also video recorded the students as they make these texts and as they present them to the class. Audio recordings of their discussions while making the texts shed additional light on their meaning-making and critical voice development.

The pilot data suggests that the multimodal text-making may enable forms of critical participation that would not otherwise be available. For instance, the use of images and the visual features of the presentation appears to have enabled some students to see other perspectives more readily.

Students engage in forms of 'bricolage' and bring in knowledge and from their wider lives and other domains into their texts which may help with the connotative thinking required in English literature lessons. There is also evidence of transduction encouraging efforts to verbal articulation among the students, and inter-thinking between the students and with the teacher. Kress suggests that the process of transduction occurs when we have to move 'semiotic material…across modes,' for instance articulating verbally an idea you got from

an image or expressing the ideas of a poem in dance. When this occurs there are sometimes instances of students seeming to try to 'feel' the meaning of the images through their gesture and comments about 'seeing' what others are thinking.

Crook calls for more research 'at the intersection of academic literacies and new technology.' This research responds to this call, exploring how 'new technologies can support 'old' literacies, such as the critique of literary texts.' (Crook, 2005) The research may improve understanding of the possibilities for educational practice in a core subject. In addition, it may develop understandings of literacy as a cultural practice in light of recent technological developments and fill gaps in current research around the effect of incorporating mobile technologies into literacy education.

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System Earth Cable

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Abstract

Few users of social media and mobile devices recognise how their everyday swipes, likes, and retweets mobilises a global megastructure that spans the earth, impacts ecologies, and plunges under the sea. This experimental 20-minute video submerges the audience in the socio-ecological tangles of the materiality of the internet. It shows what can been seen and mediates the unseen. The video focuses not on the consumerism surrounding digital culture but rather on the symbiotic relationship between information infrastructure and the geographic, geologic, oceanographic, and atmospheric elements. This video immerses the audience in the textures, sounds, vertical vision, of the digital ecology of the North Atlantic. Featuring drone footage from Iceland, Faroe Islands, Shetland Islands, and London this video traces several undersea cables and in the process, reveals how the internet is a material political object intertwined with the natural environment and human labour.

Trailer: System Earth Cable - Einstock Mountain -
https://vimeo.com/204996348
Password: cables

Video Journal of Education and Pedagogy: video as research and research as video

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Abstract

The *Video Journal of Education and Pedagogy* represents a new movement in academic publishing by connecting the idea of a video journal with an open access publishing model. The presentation will try to give some insight about how the research in the field of visual pedagogies and visualization methodologies can benefit from open access, considering at the same time what challenges to overcome and boundaries to test. In addition, we will try to expand to a broader discussion on the fascinating perspectives created by how videos interact with scholarly publishing, academia and scientific communication in a broader sense, exploring new frontiers in terms of impact, engagement and societal involvement. Furthermore, a quick insight about platforms for hosting and sharing videos will be provided, and the future plans and projects of the *Video Journal* will be illustrated.

Unconscious content in filmic dream sequences

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Introduction

In film-making, dreams have provided inspiration and source material for a wide range of practitioners, from commercial to experimental work. Using dream sequences can enable internal states to be visualized, allowing explicit and implied information about on-screen characters to be communicated to an audience.

Typically, dream sequences are visualizations of what Freud termed as a dream's manifest content. From a psychoanalytic perspective, the manifest content of a dream acts like a code, generated from the dream's true meaning, the latent (unconscious) content. In contrast, cognitive and neurological theories of dreaming tend to state that analyzing dreams to uncover any form of hidden meaning is outdated and unscientific.

The principle aim of this thesis is to produce a series of filmic works which address dreaming and the unconscious mind by comparing psychoanalytic and neurocognitive theories, and exploring different methods of producing dream sequences which contain unconscious content. The work contributes directly to the fields of film theory and film-making practice. Additionally, findings contribute to the field of psychology and current discussions concerning the nature of the unconscious mind, and also offers interesting potential for use within the field of art therapy.

The thesis utilizes a combination of action-based and theoretical research, using both primary and secondary sources. The action research includes producing films in a range of formats and investigates four influential dream theorists, Sigmund Freud, Carl Jung, Allan Hobson and Antti Revonsuo, to determine how each set of theories can be applied to the production of filmic dream sequences. Key writings include: Freud's *Interpretation of Dreams* (originally published 1899), *Beyond the Pleasure Principle* and *The Ego and the Id* and his theories of the compulsion to repeat, the death drive, phylogenetic inheritance and The Uncanny Jung's theory of the collective unconscious (proposed in 1916), dreaming and archetypes; Hobson's theories of activation-synthesis (proposed with Robert McCarley in 1977) and protoconsciousness (first proposed in 2009); and Revonsuo's Threat Simulation Theory (TST) (proposed in 2000). The theory of the adaptive unconscious, outlined by Timothy D. Wilson in 2002, is

incorporated to provide a contemporary view of the unconscious mind and to enable further scrutiny of the selected theories.

The research has revealed twelve key elements which are utilized by filmmakers to denote a dream sequence. The analysis has revealed how the different dream theories inform the content and production of filmic dream sequences. Through action research several methods for presenting unconscious content have been devised. An unexpected outcome is the potential for developing a method for collaboratively creating personalized dream sequences as part of a therapeutic practice.

Methods

A close comparative analysis was made of the opening dream sequence of Federico Fellini's *8 ½* (1963) and the opening of Joel Schumacher's *Falling Down* (1993), which features similar content but depicts waking reality. A set of eight elements were discovered which denote *8 ½'s* opening as depicting a dream. Nineteen further dream sequences were analysed to investigate if they share the same dream-denoting elements of *8 ½* and to discover if additional dream-denoting elements exist. This lead to the discovery of four more elements, giving twelve in total. The twenty selected dream sequences were also analyzed to see which dream theories they employed and whether any unconscious content was incorporated into them. Findings from the dream sequence analyses coupled with the review of the selected dream theories were utilized in the production of a series of dream-films; so far three have been produced, with a fourth currently in pre-production.

Forest Dream (Glew, 2015a) was based around Freudian theory and used the surrealist technique of automatic drawing to generate the initial storyboard, due to the close connection between surrealist art and Freud's theories of the unconscious. The storyboard was filmed and the images were then analyzed from a Freudian perspective to reveal possible unconscious content; this unconscious content was then reproduced and added as a second layer to *Forest Dream*. During this stage, aspects of Jungian dream theory were also incorporated. *Mira Dream* (Glew, 2015b) was inspired by Hobson and McCarley's activation-synthesis theory. Video was randomly selected and pieced together and the selected footage was synthesized to create a final film. The synthesis stage included developing a narrative by combining and manipulating the source material, and by incorporating several of the dream-denoting elements.

Dream Three (Glew, 2016) attempted to replicate an actual dream report. The dreamer was involved at both the pre-production and production stages of the film-making process, in pre-production via several interviews and during production as a technical assistant and on-set consultant.

Findings and Argument

The twelve dream-denoting elements are: 1) Violates the rules of cause and effect / nature / physics; 2) Difficult or impossible to understand the logic of the main protagonist and other characters; 3) Difficult or impossible to understand the manner others react toward the main protagonist; 4) Camera technique to give the viewer the same visual perspective as the main protagonist; 5) Filmic technique to shock or surprise; 6) Exclusion of diegetic sound / sparse use of sound; 7) Ending the sequence with an action that clearly signifies a dream took place; 8) Low definition / obscured image; 9) Alteration of colour; 10) Use of slow motion; 11) Protagonist is isolated / alone with one or two others in a usually highly-populated setting; 12) The location resembles a corridor.

These twelve elements can be utilized by film-makers in different combinations to create a range of filmic effects and to produce dream sequences in many styles. Nineteen of the twenty sequences utilized Revonsuo's TST to some degree. This can be attributed to the need in classical cinema for each event in a film to develop the narrative and to also be uniformly interpreted by all audience members, with TST allowing specific threats to an on-screen character to be clearly communicated. Freud's theories are directly employed by Hitchcock and Dali in *Spellbound* (1945) and *The Discreet Charm of the Bourgeoisie* (Bunuel, 1972), and are alluded to in sequences from films such as *Wild Strawberries* (Bergman, 1957) whilst images relating to Jung's archetypes occur in several of the sequences, such as a woman with the head of a spider in Enemy (Villeneuve, 2013). Hobson's activation-synthesis theory was directly linked with only one sequence, *The Phantom of Liberty* (Bunuel, 1974), as randomly generated content doesn't naturally lend itself to tightly constructed film narratives.

Many of the analyzed sequences allude to unconscious content; for example, repressed memories of being attacked in *Before I Go to Sleep* (Joffé, 2014), internal physical changes in *An American Werewolf in London* (Landis, 1981) and mental illness in *One Hour Photo* (Romanek, 2002). However, unconscious content as defined by Freud and Jung is only implied and never explicitly visualised within each dream sequence.

Each of the selected dream theories generates a different filmic form of manifest content. For sequences based around Freud or Jung's theory it is possible to directly theorize what the unconscious content might be whilst for theories that do not specifically focus on unconscious content (Hobson, 2015; Revonsuo, 2000) it is possible to apply Wilson's theory of the adaptive unconscious to generate possible unconscious content. Additionally, from a creative perspective it is possible to mix and match content; for example, to initially produce a film using the activation-synthesis theory but to then read the film's images from a Jungian perspective to generate Jungian-inspired unconscious content. Combining variations of conscious and unconscious content within a filmic dream sequence can produce original and interesting work; by utilizing the twelve dream-denoting elements the film-maker can ensure the viewer will still read the images as a dream sequence.

Dream Three highlighted the potential for producing personalized films as part of a therapeutic practice, in which a subject could contribute to each stage of the production. This process would enable a subject to creatively engage with and discuss their on-going concerns, leading to the production of a film which could be used as a tool to illustrate to professionals and family members the subject's problems and issues.

Conclusion

In the field of film theory, the research findings contribute toward developing a specific theory on the representation of dreams in film and unconscious content in filmic dreams, by incorporating psychoanalytic dream theories, contemporary neurocognitive dream theories and associated fields such as research into the adaptive unconscious. In addition, the findings contribute to the ongoing debate around the adaptive unconscious as defined by Timothy D. Wilson versus the unconscious as defined by Freud and the collective unconscious as defined by Jung, and also contributes insights into interactions with dream characters.

In the area of film-making the research provides detailed findings which can be utilised by film-makers in the production of filmic dream sequences, offering a range of creative possibilities depending on which dream theory and which techniques are applied. Dream Three has revealed potential for the production of filmic dream sequences as a form of art therapy, through collaboration with the dreamer which could be used as part of the treatment for those suffering with issues including depression, stress, recovery from coma and PTSD.

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Digital didactical designs in multimodal, hybrid learning environments

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Abstract

The three components in digital didactic design bring three specialties together. Syntactically speaking, the word design is the main constituent, which is articulated at two levels: [digital*(didactic)]. Didactic design can be viewed as process design for learning. Design reaches beyond routine planning and has a larger creative potential for configuring didactic settings, which further deep learning. When didactic design is digitally enhanced, the didactic possibilities are extensively enlarged towards new forms of innovative pedagogic thinking. Arguably, the digital modalities are not only attributes to the didactic design, but they have a deeper impact on the learning processes involved. Digital didactic design covers the creative processes and reflections that focus on digitally mediated designs for learning. Digital didactic design can thus be regarded as a new paradigm in teaching and learning. Based on a concrete case regarding the development of a digital didactic educational design, I look at new affordances for learning that take form in an extended, hybrid learning and action space characterized by multiple digital modalities. A hybrid learning design emerges as the principles for didactic design are displayed against the creative possibilities for digitally enhanced content and collaborative processes and social relationships across multiple learning and action spaces. The educational design referred to in this paper, outlines a hybrid learning environment that contains activities in three learning spaces, where physically and digitally mediated resources and interactions co-exist and supplement one another in both physical and virtual environments ensuring continuity, actuality and presence. The didactics change from being teacher and institution centered to becoming life and learning centered.

Introduction: A need for renewal

We live in a time where we expect information to be freely accessible and knowledge easy to acquire through a multitude of vivid, online digital modalities. New socio-cultural practices arise based on countless social, mobile and creative technologies and online networks. This will arguably revolutionize the

role of educational institutions, as we know them today, and the way formal education is organized, towards increasingly decentralized, digitally mediated, dynamic learning environments (Horizon Report, 2016). Traditional teacher roles, as knowledge providers, are out of pace with this development, which is calling for radical pedagogical innovations in order to provide adequate learning conditions in the fast changing, technologically advanced, hyper-complex modern societies. Not surprisingly, these trends are subject to a growing research field, which brings digitalization, teaching and learning as well as design practices together in an attempt to systematize new exploits within learning designs in a multimodal, digital world.

In this paper, I discuss the notion of digital didactic design as the particular exercise of developing a hybrid learning environment that exploits multimodal and particularly visual modalities in designing for learning in cross-action spaces (Jahnke, 2016). This exercise was undertaken by a teaching development team, including a teacher, a technology professional and a pedagogical specialist (myself), in search of new pedagogical approaches to enhance learning among in-service professionals engaged in continuing vocational training. More precisely, the design concerned a 10-ECTS course in Process Consultancy through Co-creation, as part of a graduate program in Leadership at a Danish University College. The need for a new type of learning design arose out of a critical gap in terms of learning transfer with regard to the course learning objectives, which emphasized co-creation competencies, which again implied learning through co-creating in practice. There was a need to bridge several learning and action spaces, including formal and informal learning and various working and networking settings, and this was met by designing for learning in hybrid, cross-action spaces that would be digitally enhanced to mimic learning in real life work situations. The course is now fully designed and expected to run this Autumn.

Hybrid learning is not only a mixed classroom and online interaction model, also known as blended learning. Rather it is a way to expand the range of teaching and learning opportunities to include out-of-classroom experiences in contextualized, authentic settings. The target group in our case would be provided with flexible access to enriched digital learning materials online that support in-depth delivery and analysis of knowledge (Young, 2002), as well as the opportunity to train new skills during scheduled workshop days with teachers and peers. Meanwhile, the learning space is substantially expanded to include the participants' respective work settings as the contexts of reflection, application and analysis of the provided knowledge and tools, as well as on- and offline peer collaboration to critically assess the validity of knowledge

in action (Jahnke, 2016; Vasudevan 2010). The multimodal, visual digital tools play a significant role in this as they present affordances to activate knowledge on demand as well as documenting and exchanging examples of using this knowledge in practice, promoting individual and group reflections and a-/ synchronous interaction and feedback among peers and with teachers. The question when considering hybrid learning is how to make informed didactic choices when designing for learning in enriched, digitally mediated multiple space environments.

Methodologically, the teaching development team leaned against educational design research (McKenney and Reeves, 2012), which emphasizes the reciprocal interaction between theory development and design development acknowledging "the role of theory in informing design and the role of design testing and refining theory" (s.11). Similarly, new teacher roles are being developed as a result of teachers engaging with technology within an emerging "teacher-as-designer" culture in education (Mor and Craft, 2012). Combining subject matter knowledge with pedagogical expertise and technological assistance offers a suitable framework for capitalizing on the digital affordances in teaching and learning (http://tpack.org). Of particular interest when advocating hybrid pedagogies, are the means of connecting learners to the fields of knowledge and to their co-learners and teachers, as well as rendering the world of practice visible to educators and applying technology to mediate the creative aspects of knowledge in action. The concept of multimodality helps engender various forms of configuring new media technologies and means of expression (Jewitt, 2005). It also helps engaging participants in negotiating meaning across multiple learning and action landscapes. Multimodal composing (Vasudevan, DeJayner & Schmier, 2010) infers more than just a combination of several modes of expression, i.e. via text, image and sound. Rather, it widens the range of possibilities in terms of what types of meaning is conveyed (Jewitt & Cress, 2003) and how it makes sense across the technologically mediated hybrid spaces that learning practitioners inhabit and traverse during their learning journeys. Mobile technologies and all-around wireless connectivity enable instant access to digitally mediated knowledge that can be displayed and activated in its context of use, and at the same time allowing for multiple ways to record, reflect upon and discuss what happens when putting knowledge into practice, as well as composing practice informed topics.

The case for digital didactic design

This paper takes a didactic perspective on designing for learning, the main point being that multimodal, digital representations and mobile technologies provide increased teaching and learning affordances that alter the way people learn. It is argued that this has the potential to enhance the learning process and the learning outcomes provided the learning design be subject to thoughtful pedagogic and didactic thinking. By affordances, I refer to the preconditions for learning in terms of the relationship between the objective qualities in the learning environment and the participants' subjective capacity to activate them (Dohn, 2015). This line of thought implies that affordances can be further enhanced through design, seen as "the human capacity to shape and make our environment in ways without precedence in nature, to serve our means and give meaning to our lives" (Heskett in: Dohn, 2016: 52). One avenue for shaping the affordances for learning with technology is the design-for-learning approach (Goodyear and Dimitriadis, 2012), which keeps the learning process at the core of the design process. Subsequently, the role of the teacher becomes that of designer for learning (Laurillard, 2012). Meanwhile, we need clearly defined objectives and learning needs, else "educational design becomes mere exposition" (Laurillard, 2002).

In our case, the focus is on on developing co-creation competencies, with a strong emphasis on action. Co-creation refers to a new paradigm in the public sector, where relevant stakeholders, including the recipients of welfare, i.e. the citizens, partake of the creation process of new welfare solutions, across sectorial-administrative and professional divides (Sørensen and Torfing, 2011). The process consultants are expected to attain competencies to identify, mobilize and facilitate potential co-creation constellations. Co-creation has been referred to as entering a learning partnership with the relevant parties. A partnership is in itself a hybrid construction as it does not as such require a predetermined outcome, but rather a mutual commitment to explore potentiality and be part of a creative relationship over time (Andersen, 2012). The participants are thus expected to identify, analyze and facilitate processes related to co-creation within an action research approach to promote methodologically informed and knowledge based decisions. These particular learning needs echo socially situated, participatory, constructivist but also hybrid pedagogies that can mediate learning and action across various contexts as well as collaboration with peers.

These requirements need to be accommodated at the didactic level. We support the notion of digital didactic design (Dohn, 2016) to reflect a form of "conditional creative forming" (p. 49, my translation). The design concept in-

dicates the itearative nature of creative decision making processes, which are rendered even more complex when considering the myriads of possible digital cofigurations. Jahnke (2016) defines didactic design as "process design for learning", which can be digitally mediated in order to help students seize learning opportunities in various contexts. The learning process follows the learner and teaching shifts from being teacher- and institution-centred to be learner- and life-centred.

Fig.1: *Hybrid interaction model*

In our case, the digital didactic design consists of a hybrid learning environment based in digitally mediated social interaction at three levels of interaction in order to ensure fluid reciprocal connections between conceptual, processual and creative types of knowledge in relation to participants' respective contexts of practice. The hybrid interaction model that we developed (Fig.1) shows how the three domains of learning are mutually interrelated involving hybrid spaces and digital modalities. 1. The communication of knowledge, where the learner interacts directly with digitally mediated content knowledge. 2. The processing of knowledge, where learners train, apply and reflect on their experiences with

putting knowledge into practice in their respective contexts – here learners avail of face-to-face training opprotunities and mediated process descriptions, as well as various multimedia tools for recording, sharing and critically refecting upon their experiences together with peers and teachers. 3. At the third level of interaction, participants are advised to identify a co-creation project in order to produce practice-based knowledge through problem-based learning (PBL). Particpants work individually or in groups. However, this exercise involves explicitely the creative use of multimedia for collecting 'reality case stories' from the field and documenting their approach to co-creation in the form of multimodal compositions. The knowledge creation is thus problem and project based. The course ends with a knowledge-festival day, where participants are invited to present their projects and what they have learned, preferably with digital samples from their respective projects.

Multimodal, visual pedagogies

When learning thus moves beyond the formal institutional context and into real work and life settings, teachers need to design in a corresponsive manner, i.e. making use of vivid, rich modalities that favor human presence (Pacansky-Brock, 2013) to reflect real life situations, enable social relations and promote creative contributions that mimic real-life participation. From the field of human-computer interaction research, we learn that online environments that use color, pictures, shapes, video and photographs, have an emotional appeal among users. Although usability criteria remain important, it is equally important that online interfaces contain faces, i.e. human images and a sense of social engagement and of involvement (Cyr, 2014). The incorporation of human presence in the form of human faces in online environments promotes a sense of community among users (Donath, 2001). Furthermore, perceived social presence online is subject to the feeling of psychological connection and human contact, and thus relative to "the extent to which a medium allows users to experience others as being psychologically present" (Gefen and Straub, in: Cyr, 2014).

The imagery of human presence and psychological connection can be easily associated to the video format and the rendering of real life content. In a study on using video in the professional development of teachers, Woodard and Machado (2017) argue that video has the potential to record and document richer and far more detailed information from complex events and situations, than any other modality. They identify three categories of video use in relation to professional development (p. 56): 1. consuming videos, i.e., engaging critically

with video mediated content knowledge; 2. connecting through videos, i.e., collaborating in a number of ways based on real life recordings and through video mediated personal and group reflections and discussions; 3. creating videos, i.e., composing and sharing videos to document knowledge in practice. These categories correspond to the three levels of digitally mediated interaction that was identified in the hybrid learning model for competence development in our case, which adds to the evidence on the efficacy of video and visual communication in teaching and learning.

There are however a number of impediments to the full integration of visual pedagogies into digital didactic design. Our experiences confirm Woodard and Machados identified barriers to harnessing the full potential of this powerful tool, namely participants' hesitation to perform visually online. These challenges need to be considered when designing for learning in hybrid digital environments in order to scaffold learner experience by gradual and meaningful initiation to video enhanced learning.

Conclusion

Portable technologies can access increasing loads of digital content through faster and more stable connections. In this way, we stay connected most of the time. Education needs to make a firm move in being part of the hybrid, online and offline spaces that learners traverse in their daily activities. It is not an easy transition as it demands designing for learning expeditions in ever changing complex settings with due regard to capitalizing on learning affordances in various environments. Digital technologies and multimodal possibilities for framing and mediating designs for learning can no doubt inspire teachers' didactic fantasy. However, a move in this direction requires organizational support in terms of philosophies of change, on the one hand, and the due capacity development and practical support, on the other. In this way, educational institutions can prepare to receive future generations students that will now doubt bring along radically different conceptions of communication and learning in an increasingly hybrid living environment.

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Collaborative Video Sketching

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Abstract

This paper introduces to what we define as a *collaborative video sketching* process. This process links various sketching techniques with digital storytelling approaches and creative reflection processes in video productions. Traditionally, sketching has been used by designers across various disciplines, as an integrative part of everyday practice and has proven to have a multitude of purposes in professional design. One of the main purposes is to either investigate a problem space or explore multiple solutions to a specific design challenge. In the paper we clarify, how sketching can take many forms and through empirical examples, we present and discuss the video recording of sketching sessions, as well as development of video sketches by rethinking, redoing and editing the recorded sessions. The empirical data is based on workshop sessions with researchers and students from universities and university colleges and primary and secondary school teachers. As researchers, we have had different roles in these action research case studies where various video sketching techniques were applied. The analysis illustrates that video sketching can take many forms, and two common features are important findings: 1) They are based on a collaborative approach. 2) The sketches act as a mean to externalizing hypotheses and assumptions among the participants. Based on our analysis we present an overview of factors involved in collaborative video sketching and shows how the factors relate to steps, where the participants: shape, record, review and edit their work, leading the participants to new insights about their work.

Keywords: Video sketching, learning, reflection, dialogue, collaboration

Introduction - Research Questions, Method and Theory

The research interest in video sketching as an approach to learning and knowledge sharing emerged, when we began experimenting with the combination of these two areas in our teaching and research. These experiences resulted in conceptualisations and discussions on how to interpret this new form, which showed reflection potentials: Which questions could we ask and investigate,

what constituted video sketching, and how does it relate to other forms of sketching?

The method consist of both an establishment of the theoretical framework of sketching, through readings of the literature (inspired by backward snowballing - Jalal & Wohlin, 2012) and the small action research experiments from our own teaching and research (Greenwood & Levin, 2007). Both served as a way to strengthen the methodological developments of this type of sketching. The empirical material consists of a number of cases, which are, in this relatively short paper, represented on a vignette or exemplary level. Here, we rely in particular on findings from two cases. The first being a four hours workshop with approximately 75 students on a master studies programme, using video sketching in their problem-based learning (PBL) projects. The second is an example of researchers video sketching on a research theme they have worked with on a number of years. The other cases are from the design experiments and data gathering situations in our research, as well as teaching and competence development sessions with teachers and educational administrative personnel.

Sketching has been used by designers across numerous proficiencies as an integrative part of everyday practice and has proven to have a multitude of purposes in professional design (Olofsson & Sjölén, 2007). Generically speaking Goldschmidt uses the term "*backtalk of self generated sketches*" (Goldschmidt, 2003) as the designer through the materialisation of her thoughts creates an opportunity of entering a dialogical space. The dialogue can either be limited to including only the designer him or herself and the sketch work or as a means of triggering development in the idea generating process in a design group (Goldschmidt, 2003, Buxton, 2007). Schön (1992) analysed design processes where sketching helps designers investigate a problem field and discover new ways to set a problem. Schön refers to this as the dialectic of problem setting and problem solving.

The purpose of sketching expands, however, beyond problem solving. Olofsson & Sjölén (2007) argue for four different purposes: investigative, explorative, explanatory and persuasive. Investigative sketches works on the problem identification level. The purpose of explorative sketches focuses on the possible solutions of the identified problems. In explanatory sketches the aim is to communicate a clear message to others than members of the design group and communicate in a neutral straight-forward manner getting feedback from users, clients and external experts. Lastly, persuasive sketches have the function of trying to "sell" a proposed design concept to influential stakeholders and are in Olofsson & Sjölén (2007) therefore often artistically impressive examples. Consequently, there is a big difference from the numerous, rough, pencil drawn

and disposable explorative sketches to the highly detailed 3D rendered persuasive sketches. Buxton on the other hand, maintains the definition of sketches as thinking drawings generated by designers for designers in the process of ideation. Explanatory and persuasive sketches would in his vocabulary be labelled description drawings and presentation drawings (Buxton 2007). In this sense sketching is seen more as a specific mindset rather than a constrained technique. The focus is on pruning and experimenting on what might be and not on what already is.

Apart from the purpose, sketching can be categorised in numerous other ways, as e.g. medium and subject. Traditional media counts pencil, markers, pastel, airbrush, etc. but new research within the field have proposed to expand this category to include temporal media, as in Vistisen (2016) and his approach to sketching with animation. The pacing, rhythm and audience anticipation add more to the sum of the animation than the individual frames themselves. Further, animated sketching excels in providing the novices means to mentally simulate the future (Vistisen 2016) and can thus function as a powerful tool in communicating proposed concepts similar to the purpose of explanatory sketches explained above.

In this paper we work with a form of temporal sketching, which we label video sketching. This approach is characterised by video recording any type of sketching session which again can contain vastly different purposes, as depicted below. The video itself is then often edited, rethought and re-recorded in an iterative manner, which means the video itself constitute a form of sketch - a video sketch. Thus, the approach focuses on different reflective practices and conversations among the participants in the different video sketching sessions.

Reflective Video Sketching in PBL and knowledge sharing settings

Approximately 75 students from the first semester at the Master of Arts (MA) in Learning and Innovative Change participated in a four hour reflective video sketching workshop in October 2016. The formal objective according to the teaching plan was to use ICT as a medium for documenting and disseminating students' knowledge and lessons learning about learning and change processes in their problem-based learning (PBL) projects. As lecturers, we also saw the potential to let the students experience how they could learn from and be reflective about their work process as it unfolds, in order to illustrate that the process is just as important as the end product.

The workshop was scheduled as a process, where the students worked in their PBL groups through 4 phases inspired on one side by the 4 types from (Olofsson & Sjölén, 2007), and on the other on iterations of sketching while recording, and editing the recordings, see table 1. As teachers, we acted as facilitators during the four hours, both in respect of getting the sketching and video recordings to run smoothly in the groups, but also on a more subject matter level, of using sketching as a means to encourage a dialogue on the issue at hand. The students recorded using mobile phones, tablets and for some the webcam in a computer. We did not ask them to use specific editing software, but did give a couple of links to freeware in case they did not know any.

1 – INVESTIGATE	**2 – EXPLORE**	**3 – EXPLAIN**	**4 – PERSUADE**
In groups choose a problem/opportunity from your PBL.	Sketch & Record a common idea about the theme	View and edit recording. Do it again, while sketching	Choose elements for your sketch – edit, re-record, and produce.

Table 1

We saw how the students discussed and sketched out central points in collaboration, while recording. This meant the dialogue and the sketch temporal aspects were documented. When the students viewed the recorded videos, we as facilitators noticed, how this brought about discussions on not only the content of the sketches and what was talked about, but also gave the participants insights into why certain directions were chosen. For example one utterance from participant A, lead to another reflection from participant B, and as a result the sketch and dialogue evolved as it did. A few groups had time to explore several pathways, though this is something we could explore further in the future. Another and more predominant aspect, was that the participants realised they had mentioned issues in the dialogue that was important for them and the group, but that these issues were not explicit to them prior to reviewing the recording. As facilitators our role in this process, in between phase 3 and 4, was to highlight ways of getting to the core of the issues and to reflect, by introducing steps and questions as “what would happen if you in the next round of recording and sketching enlarged one area, omit another, introduce this concept in different ways, or how can you represent what you are talking about visually etc”. As such this video sketching process in many ways introduced obstacles or obstructions by deliberate choice-making.

The phases, described above, have also been applied in smaller settings with teachers, administrators and pedagogical consultants / practitioners in particular from vocational training and college educations. In these sessions, the participants were asked to work in ad-hoc (for the occasion generated) groups, where they individually selected an area for exploration in a reflective video sketch, which they then explored in collaboration - providing feedback to each other. The videos were very first versions of ideas to work with in their own home institutions or teaching, and therefore the videos itself were not shared. Nevertheless, the participant uttered in the breaks and afterwards, that they found the video recording of the sketching gave them another dimension of *backtalk*. It seems the process supports a meta-level of communication, where one is confronted with one's own meaning as per the recording, which provides a way to be more clear or explicit about e.g. priorities' in a job or a task at hand.

A Video sketching dialogue

Another set of video data stems from dissemination of research findings. The purpose was to prepare a video on a specific research topic based on two researchers (A & B) work. It was to be published on the internet to a broader audience. A third researcher (C) was present, who also had a media background, and was to record and edit the small movie. Before the recording, the researcher A&B had a brief talk for 10 minutes, while sketching out the area they wanted to discuss. During this process, it became clear, that the sketches supported the researchers getting into the topic, to have a common dialogue around the topic. Neither of them had made the sketches before. The third person (C) began trying out the two cameras, which she had installed on camera-stands. All three then briefly engaged in the setup: how much of the table was viewed, how was the angle etc.? After recording the videos from the two cameras, they were edited and re-designed into one video. The third researcher (C) made all the editing choices.

Prior to commencing, one of the researchers (A) was uncomfortable with the situation of being filmed during the communication on the research topic. This researcher afterwards explained that sketching supported her in creating a fix point and reduced her uneasiness with the two cameras filming her. It supported her focus on the research topic and communication of the topic. The relation between the two researchers (A&B) was based on them being colleagues through years and having several years of research experience in this specific topic. This seemed to give the researchers some freedom to reflect spontane-

ously on the topic. The room where the recording took place was an informal room with cozy atmosphere. Both researchers (A&B) were at the end of the session quite intrigued concerning the speed at which they had formulated their common knowledge through the sketches, and was pleased about the overview the sketch generated, which also aided in providing the researchers with clarity on what was important and what was not.

When analysing this retrospectively, the sketching activities performed before the actually video recording began, predominantly emanated from an exploratory sketching approach. The researchers (A&B) explored how to communicate the chosen topic in a (for them) unusual setting while sketching. The sketching activity during the video recording (where A&B sketched a common visualisation while having a dialogue - knowing they were being video recorded) interprets as an explanatory approach of sketching. However, one could also argue that this sketching activity was a combination of two approaches namely an explanatory approach and a persuasive approach. The researchers (A&B) were focused on explaining and communicating an agreed and specific research topic, but when analysing the video afterwards and from discussions with the two researchers (A&B), knowing the recorded would be edited into a public available video, changed the dynamic and a performative layer were introduced. This performative layer also stepped-in during the post-editing process, where the third person (C), edited the recording to a video sketch that was to be useful for many. In some ways, the performative layer, as a third eye, played a role in the making, in-situ, where the researchers found they were more conscious, but then also more explicit about their research findings, which let to new insights for all three researchers participating.

Collaborative video sketching - a visual overview

In our empirical material, we see that the process of video sketching typically consisted of the phases or steps as shown below, but in a manner where there is not one start or end point (figure 1).

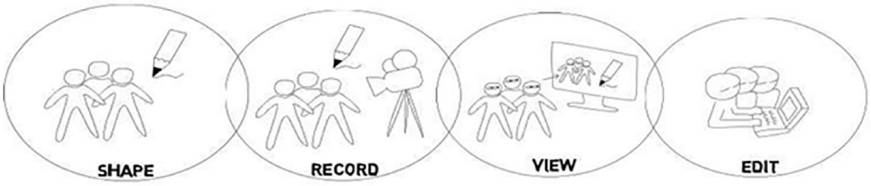

Figure 1

Shape: In this step, sketching is done, as understood from the traditional perspective, where the sketcher enters into a conversation with the material, which is typically pen and paper, but could also be clay, lego bricks etc. The sketching activities can be individual or collaborative.

Record: In this perspective, the traditional sketching activities are video recorded. These recordings can be recorded from different angles focusing e.g. on the sketcher (individual) or the oral dialogue between skechers (collaborative) or on the material. The recordings can be done with camera stands or with mobile devices where the participants record themselves.

View: In this perspective, the recorded sketching activities are being viewed. The recordings can be viewed by the participating sketchers in the video or by external participants, which initiate a reflection on different levels - as briefly outlined in the cases above.

Edit: In this perspective the participant enter into an editing mode where the video is used as a sketching tool. By using different framings such as zooming, paning, jumping and layering the participant enters into a conversation with the material by reframing and remixing the recordings in order to explore new possibilities. The edited recordings are video sketches that can re-enter into the other steps, or can be viewed by other people than the participants (external participants).

From this perspective, we find that each step evolves a number of decisions and choices which the facilitators and participants in video sketching processes for learning and knowledge sharing can experiment with. These choices are not seen as scales or as mutually exclusive, but factors that one can be aware of: as the choice of shaping medium, the recording medium etc. (figure 2).

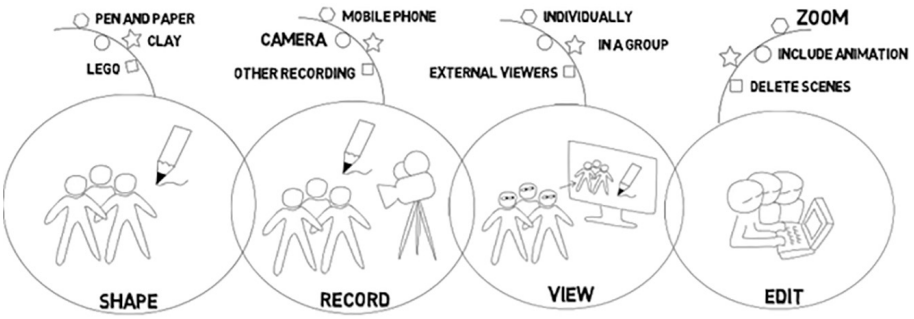

Figure 2

Schön focuses on reflective practices among practitioners and he notes that it is vital to combine the ability to operate in uncertain and unique contexts in

the field of design. According to Schön, a design situation is unique due to the fact that there is not only one way to solve the problems that may occur. This places a demand on the designer to reflect in terms of *reflection-in-action* and *reflection over action*. Schön further points out that through the designer's conscious use of reflection during the sketching process, the designer engages in reflective conversation with the situation: "*Reflective conversation with the situation may occur in the mode of discovery, or in the mode of design, or in the hybrid forms that combine the two*" (Schön, 1992, p. 126). Our data suggests that there is yet another layer of dialogue introduced with video sketching, than the presented *back-talk* characteristics (Goldschmidt, 2003; Schön, 1992). This is the dimension of collaborative dialogue in retrospective viewing. As such there is both a reflective element in a Schön interpretation, that is as the sketch is made, and in the reviewing and re-design of the video sketch. But there is also a reflective element through dialogue with peers. In our empirical data, the dialogue with peers took place at different levels, which we denote as related to if the reflective dialogue was intended to result in a video sketch for internal or external use.

We see that the different purposes can be used explicitly by video sketch facilitators and participants to move around in these modes, and to maintain a more investigate or more persuasive approach depending on the objectives (figure 3). This results in an overall suggestion for a video sketching framework as follows:

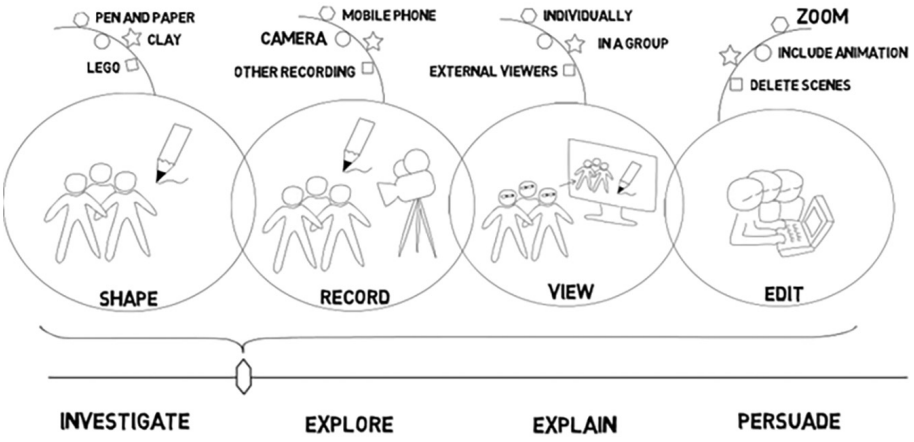

Figure 3

Conclusion and future steps

In this paper, we formulated four different steps of collaborative video sketching: shape, record, view and edit combined with different modes and factors in order to endeavour the learning potentials of the collaborative video sketching process. We have analysed collaborative video sketching processes and found they can facilitate a thought process that aid in the externalisation of ideas and reflection through dialogues with peers and interaction with the material. In this relatively short paper we have not unfolded every aspect, but only briefly shown there can be for example ethical issues (as getting people to be comfortable with recording themselves or their voices and sharing this with others). We also have found that when working with video sketching there is not only one way, but multiple ways to facilitate the process. However, when is one choice of approach more appropriate than others? In the future, we need further analysis of aspects like these.

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From representing to relating to: researching child-smart phone entanglements in classroom

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Abstract

Posthumanist ontology and its denial of distinction between subject and object of knowing has evoked a rethinking of the conceptions of analysis, data, or qualitative research in general. The idea of doing research has moved towards relational middle spaces, and it is highlighted that research is performative, making things and realities and not only reflecting, revealing, or representing them. In this presentation I bring together the issues of performativity, representation and critical research in connection with visual ethnography relying on photographs and written field notes in a Finnish classroom. I draw on a Nordic collaboration between researchers and teachers as well as on my own related post doc project on children and digitality in schools. At this initial phase the focus is on things and bodies understood as child - smart phone entanglements. The specific contribution is twofold: to map children's digital behaviors in schools, and to explore non-representational methodologies in this connection. The preliminary empirical material was photographed during seven days in a Finnish 5th grade classroom. Thinking with these photographs, written observational field notes and posthumanist feminist methodology, I focus on specific encounters in which I find myself 'capturing' children's digital behaviors by my own mobile phone camera. These encounters allow an examination of wider ethical and methodological questions, such as how visual data is sensitive in context-specific ways, and how to find ways other than representation in using these data. I use a posthumanist feminist narrative approach to map the field and to enhance a non-reductive movement between things and bodies and the more-than-human entanglements involved. This examination also accounts for non-individualistic affects central to children's digital activity such as addiction, boredom, and vulnerability.

Video Lifecycle Data Management and Collaboration

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Abstract

Doing video ethnography and video interaction analysis is a widespread used methodology within humanities and within humanistic ICT studies. While researchers from humanities and social sciences have been frontrunners in developing these new methods, the researchers are challenged when it comes to handling the data, and especially in storing the data in a systematic and secure way, and also considering that data can be re-used for collaborative research and data analysis, and used as case materials for students. The paper discusses how a workflow process data management model was developed as part of the pilot project Video Lifecycle Data Management (VDM). The paper will present the flowchart, which describes the structured way of thinking about video research data collection and processing, including the type of research data a research project will produce, the format it will use, the storage it will require and how the data can be accessed and collaborated on and the reflections behind.

Keywords: Video lifecycle data management; Humanistic ICT studies; Workflow process model

A process model for video data management

Researchers use many resources to collect the video data and to store the data in personal archives, however there is a lack of developed guidelines and procedures at an institutional level, which supports the individual researcher as well as the community of researchers in lifecycle data management. The literature review (Antonsen, 2016) has identified the following issues to consider, when doing video-based research:

- Data collection
- Documentation and metadata
- Ethics and legal compliance
- Storage and backup
- Selection and preservation

- Data sharing
- Responsibilities and resources

To support researchers working in educational studies and who are using video for data collection requires sustainable systems that support the data lifecycle of the video data. To address these issues a collaborative pilot project, (VDM) was initiated with the following partners: Aalborg University (AAU), Copenhagen University (KU), The University of Southern Denmark (SDU), and The State and University Library (SB) funded by the Danish e-Infrastructure Cooperation (DeIC).

The project was developed identifying:

- That, there is still no common infrastructure in a Danish educational setting satisfying the need for secure storage solutions, secure online sharing options for video, or permanent IDs available to educational researchers in humanities working with video data.
- There is no existing common procedure or infrastructure in place that supports video data management that is compliant with codes of research conduct while fulfilling research needs.

The fundamental goal of this pilot project is to explore the data management processes and infrastructures that support sophisticated research with video technology. Part of this pilot project is to produce guidelines for a video data management plan. To satisfy this aim, a workflow process chart was developed, which can form a basis for developing a workflow model. This flow chart will produce guidelines for a video data management plan to provide a structured way of thinking about video research data collection and processing, including the type of research data a research project will produce, the format it will use, the storage it will require and how the data can be accessed.

The development of this workflow process chart has been based on a research-led participatory design approach (Sanders & Stappers, 2008) based on three cases of doing empirical research using video. Case study one is about new learning spaces (AAU), and the video material has been collected as part of a study observing teachers and students in three science and technology primary classrooms to explore how a substantial redesign and renovation of their science classroom impacted on the teaching and learning. Case study two is about multimodal Communications (KU) and the material consists of two sets of videos showing situations of multimodal communication. The first set consists of twenty videos, created by students as part of their thesis, the other

set is videos from research experiments. Case study three is on early second language learning in school (SDU) and material for this pilot project is from a project that investigates the effect of early language teaching and includes ethnographic observations and video footage from a small number of classrooms collected over a period of two years.

These cases have provided concrete and detailed insights into different ways of working with video and the involved researchers have in a dialogical process supported by card-sorting provided the input for the design of a flow chart. The flowchart has afterwards been developed in an iterative process between the involved researchers doing research using video and the lead researcher.
Figure 1 below shows the workflow process model in the form of a flow chart.

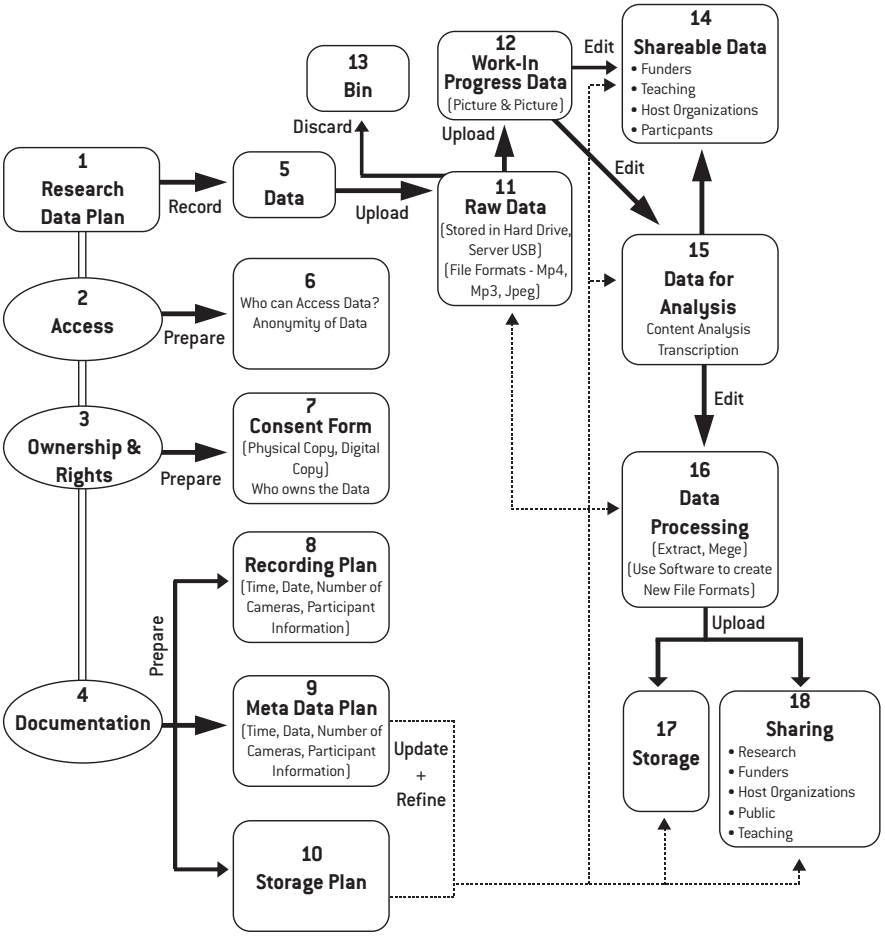

Figure 1 *Workflow process model showing the lifecycle of video data management*

Description of the flow chart

1. Research Data Plan
2. Access
3. Ownership & Rights
4. Documentation
5. Data
6. Who can Access Data?
7. Consent Form
8. Recording Plan
9. Meta Data Plan
10. Storage Plan
11. Raw Data
12. Work-In-Progress Data
13. Bin
14. Shareable Data
15. Data for Analysis
16. Data Processing
17. Storage
18. Sharing

Processes described in arrows

Record, Prepare, Upload, Edit, Update + Refine

BN: Box Number.
(e.g. 1st Box Research Data Plan will be BN1)

Explanation to the Workflow Process Model

- First stage of research data management **(BN1)** is recording and collecting the data. Data is recorded and the collected **Data** is shown in **(BN5)**
- The box from **BN2** to **BN4** describes the various attributes related to the data management related to access, ownership and rights and documentation of data.
- **BN2** is **Access**, which will prepare information described in **BN6**, about who can access the data and information related to anonymity of data.
- **BN3** is **Ownership & Rights**, which will prepare information about, consent forms that are stored in physical form as well as digital form. This should also give information about who owns the data as shown in **(BN7)**
- **BN4** is **Documentation** and this is about preparation of **Recording Plan (BN8)**, which gives information about date of recording, time of recording, number of cameras used, information about who were the participants. Documentation is also about preparation of **Meta Data Plan (BN9)**, which gives information about date & time of recording, number of cameras, used, information about who were the participants who were recorded. Storage Plan of the data **(BN10)** is also prepared as part of documentation
- **Data** collected **(BN5)** is uploaded which is shown as **Raw Data (BN11)**. This raw data will be stored in external hard drive, institutional server, USB sticks etc. This raw data can be in the form of different file formats like mp4 files, mp3 files, jpeg files etc.

- This **Raw Data (BN11)** is usually untouched and the researcher will upload the data to further work on which is described as **Work-In-Progress Data (BN12)**.
- **Raw Data** after being stored and uploaded will be discarded as shown in **BN13**
- **Work-in-Progress** data may be sometimes edited to shareable data BN14 without further analysis. This data could be in the form of data to be shared for funding organizations, for teaching purposes, for the host organizations (e.g. school, university) and also for the participants.
- **Work-in-Progress** data is edited for analysis **(BN15)** content analysis, transcription could be some of the stages, which goes throw this phase of data analysis.
- Data processing is another step which as shown in **BN16**. Sometimes the data is also extracted and merged using software's. This will lead to new set of file formats.
- **Analysed and processed data** will be uploaded either for **storage** shown in **BN17** or **for sharing** shown in **BN18**. The data shared can be for research organizations, for teaching, for funding organizations, for host organizations (e.g. schools, university), for participants and also for public.
- Meta data plan and storage plan will be updated and refined and this goes as a continuous process which is shown as doted arrows linked to raw data, shareable data without analysis, data for analysis, data processing, and storage and sharing of analysed and processed data

Research Integrity and Data Management

In 2014 the Danish Ministry of Higher Education and Research initiated work on developing a Danish Code of Conduct for Research Integrity (Sbj, n.d.). A cross disciplinary and cross institutional working group developed the guidelines after consultation with the research community. The objective was to develop common guidelines, which could be used within all faculties and across private and public research organisations.

> "The Danish Code of Conduct for Research Integrity provides the research community with a framework to promote commonly agreed principles and standards. The Code of Conduct aims to support a common understanding and common culture of research integrity in Denmark" (p. 4).

Of relevance for this article we will especially focus on the two first principles: Research planning and conduct (1) and Data Management (2).

Conscientious research planning and conduct is viewed as a prerequisite for responsible conduct of research. "Responsible conduct of research applies throughout the research process, from planning of research to reporting of results" (ibid p. 8). This applies to all fields of research, however the standards also recognise that research methods varies across fields of research.
Further they describe, that "Research strategies, plans and protocols are types of planning tools for how research could be carried out. The form, content and implementation of these tools are decided by the field of research in question and thus may vary across different disciplines" (ibid p. 8).

In practice video-based research within humanities is not always based on conscientious research planning and protocols, more often video is used as an explorative tool to support open and semi-structured studies of practice. The researcher has ideas of what kind of data to collect, how to collect etc., however often researchers using qualitative methods have to adopt their research plan to the specific situation of the practice. However, with the development of national standards as the Danish Code of Conduct we should use this as an occasion to place emphasis on strengthening and bring forward a conscientious research planning within qualitative, humanistic video-based research, including data management.

Data management is the second standard for research integrity. "Responsible conduct of research includes proper management of primary materials and data" (p. 9). The foci are on primary materials and data, responsibilities of the researcher and division of responsibilities between the researcher and the institutions. Also, the lifecycle of the primary materials and data is part of data management. "Primary material is any material (e.g. biological material, notes, interviews, texts and literature, digital raw data, recordings, etc.) that forms the basis of the research. Data are detailed records of the primary materials that comprise the basis for the

analysis that generates the results" (ibid p. 9).

The work flow chart above distinguishes between raw data (similar to primary material), which is the video recording and the "Work-in progress data", which are copies of the raw data.

The Danish Code of Conduct (Sbj, n.d.) specifies that:

> "Primary materials and data should be retained, stored and managed in a clear and accurate form that allows the result to be assessed, the procedures to be retraced and – when relevant and applicable – the research

to be reproduced. The retaining period should always be made explicit determined by the current practices, however data should in general be kept for a period of at least five years from the data of publication." (p. 9)

Furthermore, The data records should enable identification of persons having conducted the research and persons or institutions having the responsibility for the primary materials, data, and research results. Moreover, the data records should contain a precise and traceable reference to the source as well as any changes to the primary materials or data should be clearly accounted for in a way that allows clear identification of the changes made (p. 9).

The work flow chart is in line with these guidelines on access, ownership and responsibilities, see BN2 – BN4, however what is missing is criteria and procedures for the retaining period of the raw data and the work-in progress data. In general, the code of conduct specifies 5 years, however in practice there are no policies developed yet at our institutions.

For many video researchers within humanities developing data management plans is a formalization of the research process, which they are not used to. Video-data is very often just kept by the individual researcher. This becomes his/her property. He/she has used many resources to collect the data, and very often the researcher has promised the participants anonymity, which is more easy to handle, when the researcher keep the raw data and work-in progress data by him/herself.

However, in the VDM project, we believe, that video-based humanities research can gain from dealing systematically with data management. Our motivation is in the research community to be able to re-use raw data and work-in progress data, to share work-in progress data for shared analysis, and also to develop and make available datasets of work-in progress data, which can be used by students in their study and research. Also, students' work on video-research could be a resource for building up a repository of raw data and work-in progress data of unique situations, which could be used in research and by other students.

It seems as a logical thing to strengthening data management, however since the practice haven't developed yet, it points at challenges implementing these services, issues we are going to investigate further in the VDM project.

Acknowledgement

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Digital Storytelling in Classes of E-Media

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Abstract

This research explores the interactivity and narrative of digital media as means of classes of E-Media, at faculty for E-Business, E-Government, E-Culture at UIST, Ohrid. We are going to explain how we use digital storytelling as a tool for seeing, exploring and expressing. By analyzing examples from art including: photographs, literature, films, video games and interactive artworks, we will look at the various forms of storytelling in relationship with media. Issues that are included, discuss subjectivity, rhythm and repetition, interactivity and the role of the observer.

Aristotle's (1997) *Poetics*, give base for storytelling and narration that today is integrated in digital storytelling. Speaking about narratives we gain concepts from Barthes (1978) and try to apply on visual narratives.

How is story connected with media, especially digital media?! We can look for an answer in *Digital Media: An introduction* by James L. and Richard L. L. (1978) that provoke analyze of media and its relation with art.

Students of E-Media were introduced with anthological Taschen book *Photo Icons I and II* (Koetzle, 2003a, 2003b), that help them to become aware of media and its influence to narration. Lambert's (2012) study *Capturing Lives, Creating Community (Digital Imaging and Computer Vision)* can be used for interpretation of the phenomena wider.

Classes of E-Media allows students to develop a critical perspective of digital technologies and to articulate the rational of incorporating digital media that reflects one's teaching and learning.

The research objectives: develop critical skills to explore digital media

Methodology: analyze, generalization, comparison, visual representation

Discussion of (expected) outcomes: Evaluation, suggestion and concept for the future.

The free online encyclopedia, created and edited by volunteers around the world and hosted by the Wikimedia Foundation, Wikipedia, explains Digital Storytelling as short form of digital media production that allows everyday people to share aspects of their story. The media used may include the digital equivalent of film techniques (full-motion video with sound), stills, audio only,

or any of the other forms of non-physical media (material that exists only as electronic files as opposed to actual paintings or photographs on paper, sounds stored on tape or disc, movies stored on film) which individuals can use to tell a story or present an idea.

If we are looking for more profound and more academic definition we can say that digital storytelling at its most basic core is the practice of using computer-based tools to tell stories. There are a wealth of other terms used to describe this practice, such as digital documentaries, computer-based narratives, digital essays, electronic memoirs, interactive storytelling, etc.; but in general, they all revolve around the idea of combining the art of telling stories with a variety of multimedia, including graphics, audio, video, and Web publishing.[1]

In the middle between colloquial and academic we can found some kind of metaphorical definition and say that digital storytelling narrate strong stories told with use of digital media. Starting from individual to the general, that stories make a mark, mark that is visual and literal. Speaking about visual, some of digital stories during time become part of collective cultural heritage.

Going in the history of digital storytelling we can found that one of the field's most noted pioneers is Joe Lambert, the co-founder of the Center for Digital Storytelling (CDS), a nonprofit, community arts organization in Berkeley, California. The CDS has been assisting young people and adults in the creation and sharing of personal narratives through the combination of thoughtful writing and digital media tools since the early 1990's.[2] On the page of the Houston, University we read about another pioneer in the field, British photographer, author, and educator Daniel Meadows defined digital stories as "short, personal multimedia tales told from the heart." The beauty of this form of digital expression, he maintained, is that these stories can be created by people everywhere, on any subject, and shared electronically all over the world. Meadows added that digital stories are "multimedia sonnets from the people" in which "photographs discover the talkies, and the stories told assemble in the ether as pieces of a jigsaw puzzle, a gaggle of invisible histories which, when viewed together, tell the bigger story of our time, the story that defines who we are." In continuation we can say that, that stories define our past, present and future.

Personal attachments to digital storytelling as these one give wider picture of digital storytelling and prove that digital storytelling is more than methodology in some way of speaking is way how someone understand himself and world around. Its way of live and way of communicating with the world.

1 http://digitalstorytelling.coe.uh.edu/page.cfm?id=27&cid=27
2 http://digitalstorytelling.coe.uh.edu/page.cfm?id=27&cid=27

Including concept of digital storytelling in classes of e-media offer new understanding of media. Students enjoy digital method for telling stories. Analyze through the examples from history of art lead to distinction of analog and digital storytelling concept. The storytelling as a concept, by itself, too, is very valuable in understanding visual narration. We can ask about relation between storytelling and visual narration, using theory of narration, classical and modern.

Taschen book titled *Photo Icons* uses concept of *reading pictures* to create creative narratives. Those visual narratives are connected with analog as well as with digital photographs. In the preface of the book Hans-Michael Koetzle, speaks about photography and the photographic ere. Heralded in 1827 by a camera picture produced by an exposure lasting over several hours, using a simple asphalt-coated plate. Meanwhile, official statistics tell us that over five billion photographs are printed each year in the big laboratories in Germany. He adds, there can be no doubt about it: we are living in an age of technically produced images. Photographs, pictures from film, television, video and digital media all fight to catch our attention. They try to seduce us, to manipulate, eroticize and even at times to inform us. That provokes controversies, but in same time takes place in history of media and history of art. People talk of how we are being deluged by images, which sounds threatening, but at hurt this points above all to a phenomenological problem: how do we deal with all of these images? How do we select between them? What in fact do we manage to take in? And what, on the other hand, still has a chance of entering our collective memory? (Koetzle, 2008, p. 6)

Speaking of media and e-media we can agree with Koetzle that now we living some paradoxical moment. While traditional analogue photography is losing its influence in its traditional territories, such as photojournalism or amateur photography and snapshots, the conventional camera photograph is becoming increasingly the object of a public discourse. Today, photographic images are accepted fact in art galleries and museums, at arts fairs and auctions. Koetzle is questioning whether phtographs are actually art appears to have answered itself. Six figure dollar cheques for key works from the history of photography, or for works by contemporary photo-artists, have long since ceased to be a rarity. A young generation has discovered in photography the same thing that previously investors found in antiques. Photography is starting to reach a ripe old age, and yet is more relevant now than ever before. As a medium of the more contemplative kind, it has found – in unison with mostly flickering images – a new, forward-looking role. We have relation in both direction, media-photography, both define themselves and each other.

The media scientist Norbert Bolz has spoken in this connection of the "large, quiet image" that grants something like a secure foothold in the current torrent of data. Where television, video or Internet at best produce a visual "surge", the conventional photographic picture – as the "victory of abstraction"- is alone in having the power to take root in our memory and engender something akin to memory. The doyen of advertising, Michael Scriner, put this to the test in the mid-Eighties in his exhibition "Bilder im Kopf" (Pictures in Mind). The show simple presented black squares with captions added in negative lettering: "Willy Brandt Kneeling at the Monument to the Heroes of the Warsaw Ghetto" for instance. Or "The Footprint of the First Man on the Moon". Or "Albert Einstein Sticking out His Tongue". Photography, as the Dusseldorf photographer Horst Wackerbarth puts it succinctly is "the only genre that can achieve a popular effect on the immediate, visible level, and an elitist one after its initial impact on a deeper, more subtle level." (Koetzle, 2008, p. 7)

Taschen, *Photo Icons* presents 20 photographs from some 170 years, all arranged in chronological order. And every one of them is a key image from the history of the medium: images that have pushed photography forward in terms of either its technology, aesthetic or social relevance. There is a tradition to viewing "icons" such as these by themselves, each on their own. With the history of the picture's reception, we arrive at the question of when and in what way the motif become exactly what it is: a visual parameter for central catgeories of the human experience. Almost every technical approach and every major field of applications (from portraiture to landscapes, from the nude to the instantaneous shot) are presented in the anthology, creating "potted history of photography". This prompts us to read pictures critically, to look at them more attentively and with great awareness. As early as the 1920s, Moholy-Nagy pointed to the dangers of visual analphabetism. That applied to the era of silver salts in the photographic lab. Yet it applies more than ever to the age of satellite TV, video and Internet.

Today attitude to the history of photography creates new comments to the history of photography. One example is project "Malkovich, Malkovich, Malkovich: Homage to photographic masters" made by American photographer Sandro Miller. Each photography began with an extremely famous photograph: Yousuf Karsh's portrait of Ernest Hemingway in his chunky sweater, or Annie Leibovitz's of Meryl Streep in mime makeup, or Dorothea Lange's "Migrant Mother," Diane Arbus's identical twins. And each replaces the original subject with John Malkovich, the actor whose highly expressive funny-weirdo face

practically forces you to look again, maybe more than once, at an image you thought you knew inside-out.[3]

Re-photography is way to retell same visual narrative giving new soul, new storytelling and new approach to the media. Visual stories in some way can be equal with digital storytelling have a visual as a principle. Narration is melting point of visual and literal providing new representations of never-ending motives.

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Music and visual research – inclusive learning environments and the shaping of time and space

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Abstract

The paper explores the potential of video ethnography concerning educational research *on music as contributing to an inclusive learning environment in elementary school* (research objective). In music education research, the use of visual data provided by video seems to be a relevant choice of method, because music as a school subject encompasses multiple ways for the pupils to participate and interact in the learning environment, and music itself provides a whole set of complex linguistic rules that will escape traditional observation and interview methods in ethnographic research. Therefore, ethnographic video observation was chosen as a way of handling complex data and analysing complex interaction. Preliminary analyses of the findings indicates the ability of music to both contain and express experiential, sensory, emotional and cognitive complexity in ways that allow for differences in participation. In the video material from our study, the pupils do participate in a wide range of ways, from sitting with closed eyes over listening to their class-mates singing to engaging in the activity as a rock star on stage. The analysis of video data indicates that, paradoxically enough, the complex nature of music may create exactly the space for containing pupils' differences in participation-and-learning styles, and maybe even expressing other complexities of the children's experiences in school.

Keywords: Music Education, Inclusive Learning Environments, Elementary School

Introduction and Background for the Study

Over recent years, the concept of inclusive teaching and learning has gained interest within educational pedagogies (Petersen, 2015; European Agency, 2015). The intense political interest in education as an important means of economic growth and competitiveness between nation states is correlated to an interest in societal coherence and stability, and in a world with increasing mobility and migration, education seems to become a means of securing this coherence and stability:

> "Education and training have a crucial role to play in meeting the many socio-economic, demographic, environmental and technological challenges facing Europe and its citizens today and in the years ahead" (European Council, 2009).

Since the educational systems are regarded as contributing to individual nations' competitiveness, *inclusive education* seems to be one way of conceptualising the goal of social coherence, economic growth and societal stability. However, the focus on inclusion in education does not only relate to economic arguments, but also bases itself in a humanistic human rights perspective, e.g. with reference to the Salamanca Declaration. The right to participate in education is emphasised, regardless of social, economic, ethnical, cultural, and religious backgrounds, and regardless of physical or mental disabilities (Prince & Hadwin, 2013).

In this briefly sketched educational climate, pedagogies, approaches and methods that may support inclusion become of great importance. It is, however, often unclear what is implied in the term inclusion and inclusive education. The concept of inclusion has strong roots in cognitive educational research, where the focus is on how to contain and handle pupils with special education needs in a school setting (. This research is directed on developing knowledge on how to strengthen the individual pupils' weaknesses in e.g. concentration, and on compensating for learning problems and 'insufficient' preconditions in the individual child – in other words what could be termed a deprivation approach to inclusion (Prehn & Fredens, 2011). In opposition to this, more recent psychological research has pupils' perceived 'sense of school belonging' (SOSB) as its focal point (Prince & Hadwin, 2013). SOSB is correlated with inclusion as one of the signs of social integration of pupils in a learning environment. The sense of belonging develops from an emotional experience of being accepted, respected and supported by the social environment (Prince & Hadwin, 2013). One area, which has been gaining interest in the latter respect, is music.

Music in school

Traditionally, the subject of music has played a central role as a unifying and educating activity, contributing to the formation of the child's character within societal norms (Nielsen, 2010). Later, in the 1970ies, music was seen as a liberating force, contributing to societal change. Recent research sees music as contributing with a much broader potential for creating learning environments

with multiple possibilities for the students to participate, express themselves and lay foundations for learning in general. In a socio-cultural learning perspective, music can be understood as cultural production, where aspects like identity building within a community, building of social belonging etc. also can be found (Lines, 2009). When looked upon in an inclusive learning perspective, music may therefore contribute to emphasise an intersubjective aspect of learning processes and learning environments

Over the last two decades however, music seems to be struggling with a reputation of being, at best, an ornamental, recreational or even relaxing activity for students during a hard school day, or, at worst, superfluous and therefore not of value in a school system that needs to compete on 'hard measures' such as math or science (Bamford, 2006).

Never the less, other cognitive paradigms of research have studied learning effects of music on children's brains, investigating pupils with learning disorders and disabilities and their benefits from music (Prehn & Fredens, 2011). This research borrows insights from music therapy, and focuses on the so-called work memory, stating that insufficient work memory is one factor that impedes learning for children with psychological disorders or other inhibitory conditions for learning. Occupying themselves with music seems to help pupils and students with learning disabilities or disorders increasing their work memory. From this point of departure, the conclusion is that music can help these pupils to improve learning content matter in school (Prehn & Fredens, 2011). Other research fields attempt to measure music's effect on the brain and learning abilities, using natural science methods, with great success in establishing scientific evidence of music's positive effects on the brain (Vuust et al. 2012), but with limited effect on the actual status and role of music in education (Bonde, 2010).

This indicates that there is a basic need to investigate and discuss, if music, as a phenomenon and as a school subject, has been studied in a way that corresponds with the complexity of its interactive, social and emotional aspects, and its dynamics in a social environment. The need of a complexity-containing data collection and analysis method is even stronger when we want to study the complex correlation between music and pupils' sense of belonging and inclusion, in this case a learning environment in elementary school. The development of methods that are able to capture, examine and document the effects of music education in a broader, pedagogical perspective seems to be highly relevant. Therefore, this paper will explore the potentials of video observation in an ethnographical framework as one suggestion for a way to study music as contributing to inclusive learning environments.

Method for data collection: video-ethnographic approach

According to Raudaskosi, it is important to embrace the ethnographic nature of studying social relations, and when it comes to studying music as contributing to inclusion in the learning environment, it is furthermore necessary to consider the multimodality of this question (Raudaskosi, 2010). The multimodal perspective is a consequence of asking whether music can contribute to inclusive learning environments. This research question implies music as an agency in the social relations in the classroom, and this agency as having an interactive, social function. This in itself makes video ethnography relevant, but there are more agencies implied in the research question, that underscores the relevance. The musical agency is initiated by the teacher by means of her actions, and by the environment, the music room with its instruments and space for movement. The musical agency is also played out by the pupils, with their bodies and their voices as contributing to the social interaction. This complex interaction between the room, the teacher, the pupils and the music is attempted captured by means of a course of lessons, where the teacher had planned that a 4th grade class should write their own song.

The video-observations were recorded by my colleague Christopher Harter in a successive number of music lessons devoted to writing this class-song. The teacher was a song-write herself. Based on this, she had worked out a thoroughly scaffolded and structured lesson plan with well-defined tasks for the pupils:

1. Lesson one: Creating a text for the chorus, based on a process generating ideas and keywords on a theme for the song
2. Lesson two: Creating a melody for the verse, based on recorded harmonies that were distributed on the school's internal web-server
3. Lesson three: Creating a text for the verse, based on the key-words from lesson one
4. Lesson four: Putting all the parts for the song together

The teacher prepared the pupils for the course of lessons by recording herself singing the chorus melody while playing the harmonies, and recording the harmonies of the verse.

The first, rough round of video analysis of the many hours of material was executed by my colleague Christopher Harter with the aim of selecting situations in which the pupils' interplay with each other and the teacher was framed by the music agency in the music classroom. These video selections were analysed by me by means of a field work-inspired meaning condensation

form (please see below), building on the basic ethnographic approach that the individual situation is a particular case of the general phenomenon that is being studied (Raudaskosi, 2010). Therefore, the video analytical tool is to explain the particular case or situation in light of the general understanding of the phenomenon (ibid). In this case, the video material was watched and analysed by me, using a structured video-observation form that was based on the following themes and research questions:

Pupils' learning and participation (theme 1):

- Are they contributing with ideas to the song writing? Are they singing/playing?
- Do they seem to be able to feel free in the activities?
- Signs: body language, relaxed or tense tone of body, voice, facial expression

Pupils' interactions (theme 2):

- Do the individual pupils' contributions seem valued by the class-mates? The teacher?
- Do the pupils build on each others' ideas for the song (immediate recognition and appreciation of each other by means of music)?
- Signs: body language, relaxed or tense tone of body, voice, facial expression

Apart from the video material, the study also brings group interviews with selected pupils (executed by my colleague Christopher Harter) as well as an explorative research interview with the music teacher into use (Brinkmann, 2012). Based on this, I will outline a preliminary finding from the study on music's potentials for building inclusive learning environments in a 4th grade-class in a Danish elementary school. The example is one out of many, but it is chosen to show the potentials of using video-recording and video observation as a method for analysing correlations between music activity and inclusive learning environments.

Music, Complexity and Participation

The finding relates to music as containing complexity and inviting to participation as an including potential, which stands out from the multimodal nexus analysis of the video material. While the music structures time and space (Green, 2009), the pupils seem to participate in a wide range of ways, from sitting with closed eyes, listening to their classmates singing to engaging in the activity as a rock star on stage. In this interplay between the music structure and the pupils' participation, the video material furthermore captures the correlation between the pupils' varied expressions of participation and the music

teacher's way to frame the song-write-activity in a way that invites the pupils to engage in many different roles. She provides and acknowledges the roles of composer, arranger, listener/audience, player/singer (enacting), analyst, and interpreter (see also Burnard, Dillon, Rusinek & Sæther, 2008). All of these pupil roles in relation to music seems to provide with a wide range of opportunities for engagement, learning, participation and subsequently be a potential for development of inclusive pedagogy. Furthermore, the video material indicates the ability of music to both contain and express experiential, sensory, emotional and cognitive complexity in ways that allow for differences in participation. As one of the pupils states in the focus group interview:

> "I think that we respect each other more in music, because you have to – or else you cannot play or sing together. It feels better, because music makes everybody happy, and everybody can participate" (Pupil, 4th grade)

This statement together with the video analyses points to the preliminary conclusion that, paradoxically enough, the complex nature of music may create the space for containing and maybe even expressing other complexities of the children's experiences in school (Green, 2008). The video analysis shows the complexity of music as inviting to different roles and different kinds of engagement for the pupils, allowing for multiple ways of participation and learning.

The body and multiple possibilities of participation and learning in music

An interesting aspect of the video ethnographical approach is its ability to capture the bodily roots of music, and the interplay between sound, time structure and the pupils' and the teacher's bodies. The video material underscores how the pupils' outset to understand or to respond to music is bodily, when we see the pupils *listening* carefully to the teacher playing and singing the chorus of the song. When the fundamental bodily activity in respect of music is listening, it means that the pupils use their ears as primary sensory receiver of impressions of the sounds of the music (Green, 2008), and this is seen in the video material, when the pupils are sitting calmly on their chairs with their heads and eyes turned towards the teacher. Afterwards, carrying out musical activity, imitating the teacher, adds to the bodily involvement, as the pupils' voices and kinaesthetic interaction with instruments become parts of participation in singing or playing (Lines, 2009), and in the video, we see and hear the pupils

repeat what the teacher just sang and played. In respect of inclusion, this bodily outset for participation seems to be of value, as it creates ways of participating and learning in the classroom that are different than the cognitive, verbal and academic. This corresponds wi*th the video observations, where both teacher and pupils interact* by means of musical tools – they use the pulse, harmonies, melody and rhythms as a social interplay, imitating and responding to each other within the musical agency (Burnard, Dillon, Rusinek & Sæther, 2008), which creates space for the pupils that may not be verbally strong.

Discussion and conclusion: Music, Meaning Making and Inclusion

These findings, based on the video observation and analysis within an ethnographic approach to knowledge creation, provides with insights that will be discussed in light of a socio-cultural understanding of music as creation of meaning. In this perspective, music can be understood as a cultural means of understanding and engaging with the world within schools and local communities (Bruner, 1997). Music thus provides multimodal opportunities of communicating by means of musical expressions, conveyed and understood by means of tones, harmonies, rhythms and melodies (Bruner, 1997) – music is seen as a tool for creating meaning in the situation. The inherent creation of meaning refers to the personal, experiential dimension of music observed in the video material, in which the pupils' responses to specific music are socially and culturally coded. Pedagogies that not only focuses on the analytical and performative aspects of music, but also on creation of meaning as a way to participate and learn within music, enhances the chances of engaging pupils in personal, experiential exploration within musical *expression* (Green, 2008). This experiential approach invites to tolerance for individual, emotion-based meaning making within music (as well when sensing music as when practicing and performing music), which may allow the pupils to participate and learn individually, and to develop a sense of belonging within the school culture as outlined by Prince and Hadwin. In this discussion, the inclusive potentials of music are beginning to contour.

What we can learn from the video analysis of the agency of music as creating multiple roles and opportunities for learning is consequently, that if learning environments are created with variation in opportunities for participating and learning, the potential diversity and variety of the pupils' learning predispositions, conditions for learning and learning styles can be embraced and valued. This means that learning cultures that invites to, allow and reward

more than just one or few ways to learn, and more than just one or few ways to participate, creates the potential to encompass diversity and increase the sense of school belonging. It follows the other way round that a school culture that invites to, facilitates, and rewards only one or a few ways to learn and participate may be of risk of creating exclusive learning environments, where only the pupils meeting the specific ways of participation and learning may develop a sense of school belonging and identity within the school culture (Bruner, 1997; Prince & Hadwin, 2013). This is simplified in the following figure:

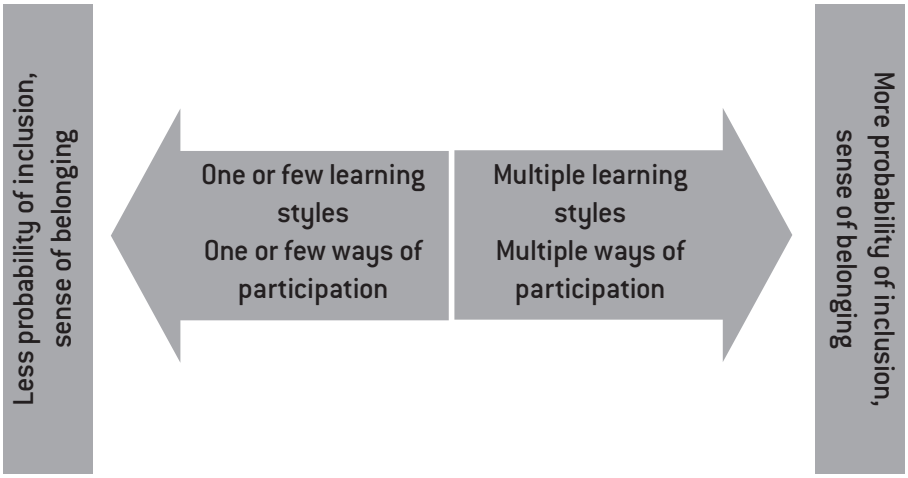

Figure 1: *Inclusive pedagogy continuum (Jensen, 2017)*

This suggests that music may contribute to creating socially inclusive learning environments, if multiple ways of participation and learning are recognised and emphasised. In this sense, music may contribute to the development of a sense of belonging in class and school culture.

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The devil is in the detail: Using video analysis to investigate socially shared regulation of learning mechanisms in collaborative group work

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Abstract

In this paper, we analyze how students work together in groups at Aalborg University (AAU) with a special interest in how they regulate their collaborative activities. Using video analysis, we scrutinize how students support their socially shared regulation of learning (SSRL). The analysis is based in video material from two days of work (6 hours), where the students are working on their Problem Based Learning projects.

The video recordings were tagged by two separate raters with use of a coding framework based on the SSRL theory. The clips that were found relevant for understanding of group regulatory processes were later transcribed to provide a description of observed phenomena. In order to best present the different aspects of regulatory interactions, we decided to utilize graphical transcripts (Laurier, 2014). This paper presents a detailed account of our analysis process, including the initial thoughts on the act of analyzing video, the process of deciding on a proper format of transcription (Derry et al., 2010), and the findings that were made as a result of the data analysis. We also elaborate on how the insights we gained were later used for reflecting upon whether data collected on collaborative activities can support socially shared regulation processes (Panadero & Järvelä, 2015) if presented back to students in form of Learning Analytics (LA). As a conclusion, we argue that video material analysis is well suited for getting insights in regard to phenomena occurring within SSRL. It provides an opportunity of re-watching scenes in order to build a better understanding through finding relevant details in complex social situations and representing them through transcripts tailored to the needs of the research.

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Two workshops on the theme of video/visuals for education

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Workshop 1. Potent Teaching/Learning Roles for Video
Objectives. Participants will gain a robust understanding of the teaching/learning roles that video is potentially good at achieving, due to its distinctive presentational attributes.

Workshop 2. Pedagogic Video Design Principles
Objectives. Participants will be able to implement design principles that are essential to achieve the potential (covered in Workshop 1) of video's teaching/learning roles.

To date, there has never been any other course that meticulously covers these two fields
The two workshops are based on Parts 1 and 2 respectively of a MOOC that I authored and taught in January and February (although the MOOC remains open until 23 April):

WHAT and HOW to Teach with Video, https://platform.europeanmoocs.eu/course_what_and_how_to_teach_with_vid - updated from my book, Designing video for open and flexible learning (Koumi, 2009) Routledge.

In Part 1, the MOOC uses 42 video clips to exemplify 33 Powerful Teaching/Learning Roles in the following four domains:

1. Facilitate **COGNITION**	2. Realistic **EXPERIENCES**, otherwise inaccessible
1. composite images 2. animated diagrams 3. visual representation, analogy, metaphor 4. illustrating concepts 5. modelling 6. juxtaposition 7. condensing time 8. narrative power	1. movement 2. viewpoints 3. places 4. 3D 5. slow/fast motion 6. people/animals interacting 7. chronological sequence 8. resource material 9. rare events/resources 10. staged events

3. Nurture **AFFECTIVE** attributes	4. Demonstrate **SKILLS**
1. galvanize/spur into action 2. motivate a strategy 3. stimulate appetite to learn 4. change attitudes/appreciations 5. alleviate learner's isolation 6. reassurance, self-efficacy 7. authenticate abstractions 8. create sense of importance	1. manual/craft 2. agility 3. reasoning 4. interpersonal 5. verbal 6. studying 7. technical

In Part 2, a further 39 clips illustrate 30 Design Principles in the following 8 categories:

1. **HOOK** (a. capture b. retain interest)
   - a Shock/surprise/delight
   - b Suspense, entertain, engross /appetise

2. **Signpost** (what's coming)
   - a Set the scene
   - b Signpost: what's coming later
   - c Chapter Heading: what's next?
   - d Heads-up: what to look out for

3. **STIMULATE COGNITIVE ENGAGEMENT**
   - a Pose questions
   - b Encourage prediction
   - c Students' personal relevance

4. **ENABLE CONSTRUCTIVE LEARNING**
   - a Words NOT DUPLICATING pictures
   - b Visual metaphor
   - c Scaffold construction of knowledge
   - d Let students see the context
   - e Concretise / Activate their knowledge

5. **SENSITISE**
   - a Priming
   - b Reassure / build confidence
   - c Personalise the teacher
   - d Music style & timing by design
   - e Consistent style

6. **ELUCIDATE**
   - a Vary tempo to indicate syntax
   - b Enhance legibility/audibility
   - c Maximise Cognitive Clarity
   - d Control pace, depth, breadth

7. **REINFORCE**
   - a Repetition (with a new angle)
   - b Re-exemplify
   - c Words-image synergy
   - d Compare / Contrast

8. **CONSOLIDATE**
   - a Recapitulate
   - b Summarise key features
   - c Integrate associated materials

The 11 MOOC videos (total duration of 3 hours) that analyse the above clips are complemented by text, assignments and discussion, moderated by 8 Tutors and the author.

The workshops will be conducted as follows:

The workshop facilitator, Jack Koumi, will play a selection of the 11 videos that he used in his MOOC and stop after each video to ask and answer questions and to initiate discussion – mimicking the interactivity in the MOOC. The

whole content of the MOOC cannot be presented within the two hours of the workshops; however, four Handouts will summarise the missing content.

Here is a link to the preview folder with the four handouts https://www.dropbox.com/sh/6nldanii13kmtgu/AABDH3qQZv0ZphMUcBIlN-dta?dl=0

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Producing and using videos in grammar teaching

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Introduction

At probably all universities (at least in Denmark) we often experience cuts both in funding and teaching hours, demanding of teachers that they find new ways of teaching the same curriculum as before the cuts. We cannot change the economy, so the answer is to engage students more in doing their homework and this is where the flipped classroom can be a very useful resource. I follow the definition of the term *flipped classroo*m proposed by Wolff and Chang (2016, p. 9):

> "[…] a flipped classroom generally provides pre-recorded lectures (video or audio) followed by in-class activities. Students view the videos outside the classroom before or after coming to class where the freed time can be devoted to interactive modules such as Q&A sessions, discussions, exercises or other learning activities."

In 2015, I conducted some experiments in flipped classroom in grammar teaching at Aalborg University. The aim of the project was to: 1) extend the number of teaching hours using flipped classroom; 2) engage the students in self-tuition; 3) help students with no or minimal knowledge in grammar to gain grammatical knowledge better and faster; and 4) find out if flipped classroom is suitable for grammar teaching at a Danish university.

The project was funded with 80 working hours and there were three very important production conditions: 1) I did not have a production team to help me produce the videos; 2) I had absolutely no experience with video production; and 3) I had to produce low budget videos. I produced 10 educational videos with a total playtime of 1:55:23.

Video production

There are a lot of issues to consider when you want to produce a low-budget video including: 1) video type; 2) production style; 3) length; 4) content; and 5) production facilities. In my case, the first question was fairly easy to answer: I was going to produce lecture videos with definitions of grammatical concepts.

I was (and still am) a practitioner without substantial theoretical knowledge about video production, and therefore I turned to the literature to answer the second question about production style. According to Guo, Kim and Rubin (2014), the most commonly used production style in EdX are the following six types:

Slides – PowerPoint slide presentation with voice-over
Code – video screencast of the instructor writing code in a text editor, IDE, or command-line prompt
Khan-style – full-screen video of an instructor drawing freehand on a digital tablet, which is a style popularized by Khan Academy videos
Classroom – video captured from a live classroom lecture
Studio – instructor recorded in a studio with no audience
Office Desk – close-up shots of an instructor's head filmed at an office desk

Ilioudi, Giannakos and Chorianopoulos (2016) also mention a production style used in the Khan Academy which we could name:

The hand – full-screen video of an instructor's hand drawing or writing on a digital tablet

The question was which production style to choose? Since I did not have an assistant to work with the camera or the facilities for much post-production (like editing), the videos had to be shot in one take. Therefore, I ruled out the Studio and Office Desk types, even if they are much more student-engaging than e.g. PowerPoint presentations with voice-over (Guo, Kim & Rubin, 2014). I also ruled out the code style, simply because I found the style too boring to look at, and I wanted to engage the students. The videos were produced during the summer holidays so I did not have an audience for my videos; consequently, I ruled out the Classroom type. That left me with three production styles to choose from, the PowerPoint slides, the Khan-style and the hand. The difference between the Khan-style and the hand is the lack of a visible hand in the Khan-style. Since the Khan-style is more engaging that the PowerPoint slide presentation (Guo, Kim & Rubin, 2014) and since I did not have the software to produce Khan-style videos, I ended up choosing the hand as the production style for my videos.

The third question was the length of the video. A video may last up to six minutes if you want to keep the students' attentions (Guo, Kim & Rubin, 2014). That puts severe limitations on the content of the videos (question 4), and it

ruled out the possibility of shooting a full lecture in a single video. I had to split up the lecture into smaller units, and I decided to produce 10 videos for the second lecture: Video 1: Definition of the sentence; Video 2: Criteria used in defining the constituents of the sentence; and Video 3 – 10: Definition of the constituents of the sentence, i.e. subject, object, and so on.

The fifth question was about the production facilities. My production site consisted of a camera placed at an appropriate height relative to a piece of paper, two spotlights, and a microphone. I was ready to shoot the videos … or so I thought.

It turned out to be a very good idea to plan the video and the speech before shooting, i.e. the preproduction is of great importance. I wasted a lot of time on takes because of mumbling, pause sounds, and wild digressions. Of course, I had an outline for each video but that was not enough to produce a fluent and continuous stream of speech. In the end, I had to write a manuscript for each video, and later I realized that I had to know the manuscript by heart to be able to make it sound like natural speech.

The last question was which type of writing to use: handwriting or typeface? According to Cross, Bayyapunedi, Cutrell, Agarwal and Thies (2013), handwriting is considered to be personal and engaging (if it is readable), whereas typeface is considered to be clear and legible. I wanted my videos to be personal and engaging, and therefore I chose to use handwriting. My handwriting is not bad, but as it turned out it is much too slow (cf. Kristensen, 2015a), and it caused a lot of pauses when I wrote definitions and examples. Too many pauses make the videos too long. Consequently, I switched to typeface and prepared the definitions and examples in advance, using only my pen to point to the written text (cf. Kristensen, 2015b).

Even if I eliminated factors that could slow down the speed and ultimately make the video too long, most of the 10 videos lasted more than 6 minutes, going from 4:51 to 17:25. I decided to keep the idea of one video for each topic, even if the video's length exceeded the recommended length, because I wanted to exhaust the topic in one (potentially long) film instead of a number of short films.

The students' grammatical knowledge

During the first lecture, the students' knowledge about grammar was tested. The test result showed that most of the students could identify only the subject and the verb of the sentences, and only very few students could identify clauses, predicates and so on (cf. figure 1).

After the first lecture, the students were asked to: 1) read a chapter in the text book about grammar; 2) watch the 10 videos; 3) talk to each other in groups about what they had read and watched; and 4) email me questions about the grammatical theory.

The group work and the questions were very important. If the students are ever going to gain an unconscious competence (Noël Burch) in grammar, they must gain a language by which they can talk to others about grammar, and this is where the group work is a very useful resource. The questions on the other hand were very useful because the students had a possibility to articulate what they found difficult – helping them to be aware of what exactly they did not know – and I used the questions to prepare my teaching so that I was only going to talk about issues that the students did not know about. In a normal lecture, I do not know what the students find difficult; so, I have to be very thorough about all topics and issues, which might be unnecessary and it certainly takes a lot of time. In this way, we save a lot of time that could be used for exercises.

In the beginning of the second lecture, after the students had watch the 10 videos (and before talking about the students' questions), the students' watchedgrammatical knowledge was tested again, and the test results showed a clear progress:

		es	s	v	sp	o	op	a	clause
All	Test 1	0	79,9 %	79,9 %	1,7 %	0	0	0	0
	Test 2	35,6 %	96,6 %	100 %	57,6 %	61 %	86,4 %	69,5 %	32,2 %
Some	Test 1	0	18,6 %	18,6 %	16,9 %	27,1 %	0	8,5 %	16,9 %
	Test 2	0	3,4 %	0	8,5 %	33,9 %	5,1 %	23,7 %	3,4 %
No	Test 1	100 %	1,7 %	1,7 %	79,9 %	71,2 %	100 %	91,5 %	83,1 %
	Test 2	64,4 %	0	0	33,9 %	5,1 %	8,5 %	6,8 %	64,4 %

Figure 1: *Learning progress in grammar*

The scheme must be read in this way: for the existential subjects (es) holds that in the first test no students found all constituents, no students found some constituents, but all students found no constituents. These numbers change in the second test, where 35,6 % of the students found all constituents, no students found some constituents, and 64,4 % found no constituents. Without going into details, we see a very clear progress from the first to the second test: many students are now able to find all subject predicates (sp), objects (o), object predicates (op) and adverbials (a).

The most important news between the two tests, is the fact that the students use another methodology in test 2. In test 1, all students found subjects and verbs in all sentences regardless of whether the subjects and verbs were part of a clause. An example could be:

Peter knows that the dog is hungry
s v s-------- v

An analysis like this does not recognize the fact that that the dog is hungry is actually a clause and the object of knows:
Peter knows that the dog is hungry
s v o----------

It is a very common mistake for Danish students to forget the clauses' function in the sentence but, in the second test, 32,2 % of the students found all clauses. That means that the students are able to identify the clauses as constituents. From a grammatical point of view, this is a huge and very exciting progress, because awareness of clauses normally comes quite late in the lecture series, and for the weak students the awareness often never comes.

It is also very interesting to see the progress for the students with the lowest and the highest score:

	point Test 1	point Test 2
Student 14	1	14
Student 55	1	9
Student 6	7	16
Student 35	7	12
Student 53	7	13
Student 3	8	17

Figure 2: *Learning progress for students with the lowest and highest score*

Not surprisingly, the students with the lowest score demonstrate the highest progress from test 1 to test 2, but also the students with the highest score improve their abilities between the two tests – as we can see, the students are now more or less on a level with each other in test 2. The videos have therefore served one of their purposes, i.e. to help students with little or no grammatical knowledge to gain that knowledge quickly. In a normal lecture series, most of the students will not be able to find the different constituents until after the third or fourth lecture; therefore, we have saved a lot of time using the videos.

The students' evaluation of the videos

After the second test, the students were asked to evaluate the videos by filling in a questionnaire. I asked them to give their opinion about among other things the videos' difficulty, length, speed, and if they would like more videos or not. All the students wanted more videos. Almost all of students found the videos adequate, but a small number (5,1 %) found them too difficult and slightly more students (22 %) found some of the videos too long. The longest video (the one about the verbal) took 17:27, and, as per the recommendations of Guo, Kim & Rubin (2014), it is far too long.

I gave the students an opportunity to write comments on the questionnaire, and many of them did. Most of the comments were very positive, saying it was a very good idea to use video for teaching grammar, but a few comments were moderately negative. The following two comments sum op the overall opinion:

"Jeg synes at undervisningsvideoerne er en fantastisk undervisningsform! Så kan man pause og spole tilbage, hvis man har brug for mere tid eller forklaring"

'I think the use of videos is a fantastic way of teaching. It is possible to pause and rewind, if one is in need of more time or explanation'

"Der var for mange informationer på en gang. Men ellers var de gode."

'There was too much information at once. But besides that, they were good!'

The students emphasised as a positive aspect that they could watch the videos as many times as they wanted, and the number of showings indicate that several of the students saw the videos more than once. I did not track each student, so I do not know who saw the videos more than once or if they saw the whole video when they watched it the second time. However, after only the second lecture the video about the subject (cf. Kristensen, 2015b) had been watched 103 times (the number of students in the class was 75). So, some of the students saw the videos more than once.

The few negative comments all concern the amount of information in the videos. With a total playtime of 1:55:23, which equals the amount of time in a lecture, the students are given a lot of information to process. My idea was to make comprehensive videos that exhausted the topic of each video, so that the students could both learn from the videos in the beginning of the course and later on use the videos in preparation for their exam. Indeed, some of the students did use the videos before their exam. The day before the exam, the video about the subject (cf. Kristensen, 2015b) had been watched 142 times. Naturally, it would have been better to produce short videos for the beginning of the course and longer, comprehensive videos for the exam preparation, but there was no time for that in the project.

The students' recommendations

In 2016, I once again conducted experiments with flipped classroom, using the same videos as in 2015, and the results in 2016 were to a large extent the same as in 2015. Guo, Kim & Rubin (2014) only use quantitative data in their research in MOOC videos. In order to get qualitative data on the matter, I decided to interview 4 students about their view on educational videos. In the

interview, I showed the students different types of educational videos, and we talked about their view on the production style, length, content and so on. Due to space limitations, I can only give a very brief summary of the findings and the students' recommendations.

The good news is, that students really enjoy watching educational videos and that they do not really care if the videos are produced by a professional production team or not, as long as the sound and picture quality is fairly good. The students are not that into the production style either – a PowerPoint presentation can be as good as a so-called "talking head" video (cf. Guo, Kim & Rubin, 2014), as long as the content of the video is interesting and informative – this directly contradicts the quantitative findings in Guo, Kim & Rubin (2014), and more qualitative studies are required to determine the students' preferences. However, none of the students found the classroom style engaging, because they felt that the video was approaching the classroom audience rather than them as viewers. According to the students, a video is more personal, if there is an animate entity e.g. a hand in the picture, but content is still more important than animacy. All in all, the students were much more interested in the video content than in production style, and they gave a lot of useful recommendations regarding the structure of the videos:

1. The picture or the slides cannot be too overcrowded. Too many graphic elements and colours are confusing.
2. The students prefer one piece of information per slide, otherwise they will read ahead and stop listening to the speaker/voice-over.
3. Do not use fast forward on the picture side in order to speed up the tempo of the writing. It is not credible and it is confusing for the students.
4. The picture and the sound must relate to each other; so, do not write anything on the slides that you are not talking about.
5. When you approach the students, do not use rhetorical questions. The students consider it to be fake and not credible.
6. Keep a clear structure in your video. Start with the definition of a concept, explain the definition and give a couple of examples to illustrate the ideas.
7. Do not say anything in the video that is not important to the topic, and stick to the topic without making digressions, i.e. make the videos as informative as possible – exhaust the topic, not the students!
8. It is a very good idea to use a pen to point to what you are talking about – it makes it easier for the students to keep focused.
9. Give a small summery at the end of each video that the students can use as a memo.

Conclusion

In this article, I have described an experiment with the flipped classroom that I conducted in 2015 and 2016. The aim of the project was to: 1) extend the number of teaching hours using flipped classroom; 2) engage the students in self-tuition; 3) help students with no or a minimal knowledge in grammar to gain grammatical knowledge better and faster; and 4) find out if flipped classroom is suitable for grammar teaching at a Danish university. To answer the last question first, flipped classroom is most certainly suitable for grammar teaching at a Danish university. The students' quantitative and qualitative evaluation of the project was very positive, and their knowledge about grammar was dramatically improved between the two tests, indicating that using videos (combined with group work) functioned well as an extra lecture. The students seemed much more engaged in the video lecture than in normal lectures; they read the chapter in the text-book, watched the videos, did the group work, and sent me questions regarding the theoretical content. Normally, the students would only read the chapter in the text-book; so the project has certainly engaged the students in self-tuition. The videos also helped students with no or minimal knowledge of grammar to gain grammatical knowledge better and faster. The speed of the learning process was very high; in the second test, almost all students were able to find all types of constituents in the sentences (it normally takes 3 to 4 lectures), and the test results also showed that students with the lowest and the highest score in test 1 were more or less on a level with each other in test 2. So, in conclusion, flipped classroom was very suitable for grammar teaching at the university and I intend to produce more videos in the near future.

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“Peeling an onion”: Layering as a methodology to understand learning as an embodied assemblage of practices

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Abstract

This paper considers science learning as an embodied assemblages of practices and seeks to propose a methodology to systematically analyze the multiple layers that shape how students’ do and learn science. Science learning as an *embodied* assemblage of practices sensitizes us towards the dimensions of learning that are grounded in the body. These assemblages can be found by e.g. considering how laboratory science equipment physically configure lessons and in doing so, become part of epistemic configurations, or how bodies and movement not only pertain to different modes of communication, but also in relation to identity and well-being afford different kinds of experiences of learning situations to students. To encompass the multilayered nature of embodied assemblages of practices I propose to look at interactions as essentially an onion, where each layers provides a particular theoretical insight. This is done by looking at video-captured interactions though different theoretical lenses, yet using the previous lens as a point of departure for the next lens. With an embodied focus inherent to this particular study, the analysis is build up around *moving bodies*, which means first looking at interaction without sound, then adding sound, and from there move onto to look at space and how students made sense of space by aid of ethnographic interviews.

Introduction

Video as a method for classroom interaction research is a powerful tool that enables us to perpetuate evolving situations and interactions in great detail and in doing so retain data closer to authentic than e.g. field notes. It furthermore enables to record details that the observer might miss, review the data multiple times, or gain access to non-verbal matters such as facial expressions, intonation or stance-taking (Cohen, Manion, & Morrison, 2011), which render this method more complete and accurate compared to observations made the naked human

eye (Knoblauch, Schnettler, Raab, & Soeffner, 2012). The obvious benefits of video have prompted researchers to make use of this medium in a wide range of ways. Video has been used to document classroom practices (Clarke, Keitel, & Shimizu, 2006); create accounts or narratives of teachers practices (Cowie, Otrel-Cass, & Moreland, 2012) and student practices (Radinsky, 2007), create visual platforms for discourse analysis (Goodwin, Cekaite, & Goodwin, 2012) and hence expanded methods for analyzing interactions, to encompass more than just talk, such as body posture, gesture and facial expressions (Streeck, 2014); or even analyze emotions (Ritchie & Newlands, 2016). Video has also been used as a medium for sharing and communicating findings in ways different from traditional transcription conventions, such as the Jefferson Transcription System. By using consecutive still-frames from video readers are enabled to gain a visual impression of the interactions, and also an impression of the temporal aspects, such as in the works of Sigrid Norris (2012).

However characteristic for the above studies and interaction analysis in general is the tendency to pull out and hone in on one particular element, e.g. talk, and foreground this in isolation from other elements (Knoblauch, 2009). Talk, prosody, gesture, posture, et cetera are tangible components of embodied interaction and we have a language for explaining and examining them separately and in conjunction. Yet the problem is that there is more to embodied interaction. It is true that we can only foreground one thing at the time, but the different components that make up the complexity of interactions need to be seen in relation to each other. This represents assemblages of practices, which denotes an "amalgam of places, bodies, voices, skills, practices, technical devices, theories, social strategies and collective work that together constitute… knowledge/practices" (Watson and Huntington 2008, 272, citing Wright 2005, 908 in Mulcahy, 2012). Embodied practices cannot be reduced to gesture or talk alone as these are fundamentally rooted in the lives of human beings and therefore must be seen as such, bearing with them significance and meaning in the concrete social situation. Mulcahy (2012) argues that adopting a focus on bodily matter affords recognition of the idea that "materiality is governed by relations of indeterminacy, contingency and openness", and furthermore that "far from being passive or inert, matter is a lively force that actively participates in events" (pg. 10). The question then becomes how to deal with this in video analysis? How can video be analyzed holistically and in doing so sensitize us towards the complex assemblages of embodied practices?

To deal with this conundrum the article takes a point of departure in Glaser and Strauss (1967), who argued that videography generates multiple forms of data, which can be considered 'slices' of data. That is, each form (picture,

sound, text, and so forth) grants a different vantage point from which to understand the social phenomenon at hand. In the process of 'slicing' the data the researcher foregrounds certain qualities of interaction, such as gestures, prosody, talk and so forth. The very act of 'slicing' may be seen as contradictory to the aim of this paper, which is to propose a methodology to understand complex social phenomena. One could question why we need to disassemble something so obviously complex, to understand and recognize the complexity? By foregrounding certain qualities (slices) we are sensitized to for example, the role of materials in relation to how bodies move in the laboratory space and this very act opens up for related inquiries that call for different slices to be considered. For example, how come and why does bodies inhabit the space around the materials differently. Such an inquiry would take a point of departure in an analysis of how materials interact with people, but transgress the original enquiry by calling for e.g. movement analysis and/or ethnographic interviews. By acknowledging and utilizing multiple slices of data the researcher is able to exceed the limits of one perspective, which contrasts the classical idea of 'objective truth', and opens up for a view of the phenomenon of interest as complex. Yet, the main question is how do we reassemble these different slices to form meaningful aggregates without 1) succumbing to the complexity or 2) reduce the more intangible dimensions of interaction such as body posture or facial expressions to auxiliary functions of the analysis? According to Luckmann (2012), who together with Peter Gross in 1977 attempted to re-synthesize different dimensions into a holistic multimodal sequential analysis using notational score in a project named "Data about Data", the act of re-synthesizing is the crucial task of any analysis of interaction by video, but at the same time complex to the extent that no project so far has been really successful. A key issue in their project was the attempt at moving from detailed representation of coding to vernacular transcripts, where the amount of detail proved too high and complex for communicating and/or analyzing. What can be gained from the insights of Luckmann and Gross (1977) is that it is all about balance. By this I mean that we need to find a path that neither leads to oversaturation of data nor oversimplification of data that only yields the body an auxiliary position. The purpose of this paper, is to consider and exemplify how such a balance might be reached. In the following I consider what types of data that we need to consider to understand *embodied* assemblages of practices, before progressing to a methodology for accomplishing this.

Rationale

As mentioned, *embodied* practices are fundamentally rooted in the lives of human beings and must as such be seen as bearing with them significance and meaning in the concrete social situation. This particular attention to the *embodied* perspective on practices emanate from an understanding of bodies as essentially communicative and agentic. The idea of the body as central to our existence and perception was advanced by French philosopher Maurice Merleau-Ponty (1908-61), who argued for the intertwining of body and mind. He introduced the term l*ived body* as a way to overcome the Cartesian dualism, which traditionally has affected how we understand and theorize the relation between body/mind and subject/object (1962) habitually relegating the body to a mere vessel of the mind. Merleau-Ponty argued that human perception is not solely a product of our minds. Instead it originates from peoples embodied experiences of the world, and as such the body is a sensing sentient and intentional *being* that through its physicality and affective stance shapes how we perceive the world and interact accordingly (Merleau-Ponty, 1962; Thøgersen, 2014). In relation to how we conduct video analysis, this perspective emphasizes behavior as embodied practices where the body based on feelings, experiences, physical competences and the given situation thrusts itself into the world and makes sense of this world in the very interaction that it immerses itself in. This means, that we have to look at the body as knowledgeable, competent and communicative in itself – not only an auxiliary function of some higher form of rationality, i.e. the mind.

However, in foregrounding the body and recognizing the agency within it, we run the risk of over-emphasizing the body as the location of agency at the expense of the *person*. Charles Varela (2004) commends Merleau-Ponty's contribution to a somatic turn in social theorizing, yet states that "without a concept of person, the body itself is ambiguously granted agency" (2004, p. 75), which is problematic because it reproduces the Cartesian dualism only this time with opposite signs. Instead Varela claims that "the agency of intentionality *must* entail the power of causation, and that power belongs to a person, *not* to an intention" (2004, p. 76). To transgress the above conundrum, Varela (2004) argues that the body is more than experiencing, feeling and even perceiving. The body is moving – acting in this world. It is not only bodies that move it is human *persons* that are moving, and as such, their movement has to be understood against the backdrop of what it means to be a person. People are personal agents – "while they are enabled by their natural being, they are *empowered* by their social being to engage in the conversational practices of their local culture"

(2004, p. 71). Movement as such, can be understood in terms of conversation as signifying acts, where the primacy of movement entails language and gesture, which is all varieties of *signifying acts*, not only verbal language and movement with hands and arms. Varela thus acknowledges that conversation is grounded in bodies and likewise shapes actions, but at the same time distancing himself from the body in looking at agency as *not* stemming from the body, but located within persons. In doing so he builds on Rom Harré (Harré & Madden, 1975) who claimed that the enactment of agency is social, wherefore actions have to been seen in a causal relationship with others that entails the consideration of how our actions are perceived by others, and how others in turn will reply to our actions (Ivinson, 2012). This idea resonates strongly with Erving Goffman's stage metaphor, which he employs to describe the ways in which we interact with others. He notes that the manner in which we present ourselves and respond to others are based on cultural values, norms and beliefs, and most importantly the expected acceptance from the audience (others) (Goffman, 1959). As mirrored by Goffman's elaborate descriptions of the presentation of self in everyday life, the agency nested in conversation does not rest on a linear causation, where person A can be seen as directly causing the actions of person B. Instead, we have to accept a complex causality in which there are no closed systems and actions cannot be determined from single factors. Causation as complex leads us to realize that there are no "external minds acting on bodies so much as emerging within complex assemblages that involve multiple interpellations of biology and culture" as Ivinson puts it (2012, p. 494).

I take the notion of *persons* not as a rejection of *bodies*, but as a resource to move beyond the visible dimensions of human behavior. By considering bodies as agentic, communicative and expressive we can as mentioned grant the lived body a prominent role and look at the student's movements as intentional ways of inhabiting and making sense of the spaces they are in. However, building on Varela there is a need to go deeper into the movement as acts of sense-making, and consider who the person embodying these (re)actions are, and what the actions means to him or her. In the following I will propose a methodology that is grounded in these theoretical considerations, and which attempts to foreground the *embodied person*.

Proposition

Building on sequential analysis as the basis of interpretation and analysis of interactions (Knoblauch, 2009) I propose to select a sequence of actions that will be transcribed several times, each time considering a new layer cf. Glaser

& Strauss (1967). These layers will be presented in a cartoon fashion, showing sequences of images, each showing distinct actions in a sequential manner. The layers in focus in this paper are related to embodied dimensions of practice, which means that I seek to foreground the lived body in the layers I chose to present. The first layer examines bodies as sensing sentient beings that are expressive in their own right (Merleau-Ponty, 1962). This means looking at video without sound just noting the qualities of the movements and what these qualities express. The second layer builds on the 'criterion of relevance' (see below), which studies what is indicated as something of importance by the actors themselves, or as Goodwin (2000) notes "just those features of context that we have to come to terms with if we are to adequately describe the organization of their actions" (p. 1509). As such the second layer looks at the same sequence of actions as in layer one, but with sound. Talk affords the observer insights into what the actors are oriented towards – that which matters, which may be not be directly visible in the organization of bodies in space. The third layer considers the space in which the actors (inter)act in in combination with ethnographic knowledge (Knoblauch, 2012) obtained via video stimulated recall-interviews (Morgan, 2007), where the actors were asked to recount their experiences of the particular activity. The ethnographic knowledge is used in this layer to identify (for the actor) relevant aspects of the space that shape their actions, and made such actions meaningful in the particular situation. By focusing on the movements of the actors, how their talk supports their movement, and how they make sense of the space they are situated in I seek to move my analysis beyond those aspects of communication that we have strong transcription conventions for. Instead, I hope to portray tacit, mundane and seemingly invisible dimensions of embodied practice that shape interaction and add to the complexity. In the following I will consider in more detail the theoretical background for each layer in the methodological framework.

Layer 1: Foregrounding the body

In trying to come closer an appreciation of the body as expressive and communicative in ways that are different from the strict semantics of spoken and written language, and perhaps even gestures as another mode of this type of language, I have looked to Laban Movement Analysis (LMA). LMA was developed by scientist, teacher, and artist Rudolf Laban (1879-1958), and provides a theoretical and experiential system for the observation, description and interpretation of human movement. At the heart of this theory of movement is a recognition of movement as "psycho-physical process, an outward expression on inner-intent" (Groff, 1995, p. 28). LMA provides a detailed notation system

that provide an interrelated vocabulary for describing the ways in which bodies express themselves through interaction (Laban & Lawrence, 1974). However, it would not make sense for the scope of this paper to provide such in-depth descriptions of movement relating to the discussion concerning balance. Instead this paper focusses on the four major categories of movement elements as defined in LMA: Body, Effort, Shape, and Space (for overview see: Konie, 2011). These categories work as an eye-opener and sensitizing tool to take note of and describe the embodied performance of the students in the selected footage. In short Body relates to the WHAT of movement – that is, which parts of our body do we use when moving, and how do these parts relate to each other. *Effort* is HOW do we move. How do we do a certain movement and with what energy (direct/indirect, strong/light, quick/sustained, bound/free). *Space* looks at WHERE. Where is space do we chose, to move, and how does our movement relate to our kinesphere[4]. Lastly, *Shape* is the WHY of movement, where we consider why certain movement are chosen and how these respond to the environment and the individuals we interact with. These categories, their related adjectives and qualities allow us to transcribe the movement that occurs in the video across time and space, while also being sensitive to the expressive and affective stance inherent in the different movements.

Layer 2: Identifying criterion of relevance using talk

Talk is a vehicle of human action (Schegloff, 1991) and as such talk is corporeally intertwined with other forms of action such as gaze and gesture (Goodwin, 1981) that are crucial resources when actors attempt to align themselves towards the activity of the moment. As such talk, like visual orientation or gestures, can be used to identify what is experienced as pertinent to the situated activity. Tools such as the Jeffersonian Transcription Notation system (Jefferson, 1984) are commonly applied when working with talk, as this allows the researcher to consider verbal content, non-verbal and paraverbal features in depth. However, the same level of detail available in the notation system is also the obstacle when trying to combine it with movement analysis in an aggregate, as the expressive potential of movement is easily lost if we attempt to break it up into individual stances to integrate it into conversation analysis. An example of successful merger between talk and movement is seen in the works on multi modal transcripts, where Norris (2012) combines talk with perception and kinesthetic experience (touch/feel). By placing excerpts of utterances on top of still frames from the video, and then using on the one hand big and small fonts

4 Kinesphere is the 3D volume of space that I can access with my body without shifting my weight to change my stance (Laban & Lawrence, 1974)

to indicate differences in spoken emphasis, and on the other hand positioning the utterances to align with a certain gesture or change in posture Norris is effective in communicating and portraying a sense of not only what is taking place, but also the temporal and embodied expressions in the interaction. In her work, Norris (2011) directs our attention to the challenge with working with multiple modes of data, stating that "when transcribing multimodal data and positioning the modes in hierarchies, aggregates, and/or equal states onto the transcript, the analyst needs to always consider which modes make the use of other modes possible, which modes can be used without the use of others, and which modes are distinctly interconnected." (p. 92). Looking at talk and movement in terms of aggregates our attention is drawn to how these modes inform and enhance each other, rather than privileging one before the other, which in turn enables the researcher to avoid positioning the body in an auxiliary position in comparison to talk.

Layer 3: Making sense of space

Space is already explored to some extent in the first layer, where space in relation to the movement and posture of the body is explored. While this perspective yields us expressive qualities, it does not open up for inquiries into how the space in which the interactions unfold privilege or prompt certain acts as more or less meaningful. Pink (2011, 2015) uses the word *emplacement* to draw attention to the idea of bodies as parts of places. She argues that by taking note of the body as part of a place in a biological sense, we realize that the body not only relies on embodied knowledge and skill to act in that place, it is simultaneously transformed. Hence, when students handle equipment in the laboratory their fine-motor skills are honed or their sense of smell is heightened. Furthermore, she stresses that we need to adopt a broad understanding of the place. The place is not something that is already fixed although it has material characteristics that temporarily have been steady for a longer period, instead it something that we come to know through movement *in relation to* the elements of the environment. This reflections render "embodied knowing, skill and practice as contingent" (Pink, 2011, p. 348) and physics education as a place-event is therefore reconstituted each time "through the convergence of an intensity of things in process, emotions, sensations, persons and narratives" (Ibid, p. 350). Paying attention to how the students experience the place is therefore central to understanding the meaning of their movement in the video. By examining visual and verbal cues in the video, as well as asking students to re-narrate their experience of specific situation by means of video-stimulated

recall interviews (Morgan, 2007) allow the researcher to focus on why certain actions were preferred or more/less legitimate a particular situation.

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Multimodal video analysis based on the semiotic structure of Peircian sign triad

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Abstract

This paper presents a multimodal video analysis framework that builds on Peirce's triadic sing structure. Various forms and frameworks of multimodal analysis have been developed (Norris, 2004; Baldry & Thibault, 2006; Machin, 2007; Jewitt, 2014). Such analyses tackle, for example, advertisements, photographs, combinations of modes such as web pages, speech-photographs (Hallewell & Lackovic, 2017) and any image-text relationship. Video has also featured as the focus of multimodal analysis, offering a range of analytical frameworks and grids to perform an analysis (e.g. Bezemer, 2014). When it comes to educational research and the field of education studies, video can be a useful tool and method for capturing and analysing learning events (e.g. a lecture, seminar). For example, Sakr, Jewitt and Price (2016) provide an example of video analysis that explored emotional engagement in the context of primary school history learning. Otrel-Cass and Cowie (2016) show how video chat can usefully mediate teacher reflection among peers at different locations and act as a research tool. However, video has rarely featured in the literature exploring learning in-situ via teacher-student interactions, movement and resources in higher education. Building on Peirce's sign triad (Peirce, 1998; Lackovic, 2014; Hallewell & Lackovic, 2017), this paper shows how Peircean structural triad (Representamen-Interpretant-Object) informs a pragmatist multimodal framework for analysing videos in educational research. The analytical framework was developed by the author and is currently applied by the author's PhD student with regard to videos of higher education seminars at a Business School. The PhD study explores what visually recorded aspects of the seminar suggest about the nature of teaching and learning. In terms of a specific subject field contribution, this paper is situated within the multimodal and semiotic studies in higher education and video analysis in particular. However, its application can be expanded to research across fields and subjects.

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Exploring possibilities of video based constructing grounded theory – a case study

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Abstract

This paper explores and illustrates the possibility of transferring constructing grounded theory approaches to video research. It is based on a study, which examined the notion of curiosity in an early childhood educational environment (Menning, 2016).

Traditionally grounded theory aims to describe a theoretical description of a process grounded in the empirical material instead of using grand theories. Due to being based on symbolic interactionism, grounded theory often uses interview data. However, some have shown that in certain cases, e.g., when getting oral information from participants might be challenging, a grounded theory approach based on video-observation can also be useful (Nilsson, 2011).

In addition, Charmaz (2014) attached in her constructing grounded theory approach a social constructivist epistemology to grounded theory. This involves a recognition of the researchers as having a part in this co-construction of knowledge. But, how can this *constructing* element in the case of video observation based constructing grounded theory research be understood and involved actively? To explore this, two different strategies will be presented:

a. Use of the concept of skilled vision to describe the process of filming
b. Storyboarding as an analogy for reconstructing the events

Skilled vision involves that the videographer is the apprentice, who wants to learn the way of seeing of the skilled who is observed. Here seeing is "a ductile, situated, contested means of situating oneself in a community of practice" (Grasseni, 2007, p. 2). Storyboarding, which originated as a tool in the preparation for shooting in the film industry, is used as an analogy for the process of reconstructing the observed events in the analysis. The two strategies will be illustrated using the case of a participating videography in a kindergarten toddler group (Menning, 2016).

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Towards the production of reusable and searchable annotated multimodal corpora of human-human communication

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Abstract

In this paper, we describe existing work for creating annotated multimodal corpora and present on-going work aimed to the definition of a minimal number of metadata fields in order to enable search and reuse of files in these corpora. Face-to-face communication is multimodal since it involves at least speech and gestures corresponding to the auditory and the visual modalities. Gestures comprise various body behaviors such as head movements, facial expressions and hand gestures. At the Centre for Language Technology, multimodal corpora have been collected and annotated the past decade, and a scheme for the annotation of gesture shape and function has been developed in cooperation with Swedish and Finnish researchers. In the present work, we focus on metadata for these multimodal corpora as a part of the ongoing Video Life Cycle Data Management project.

Keywords: Multimodal communication, annotated multimodal corpora, metadata

Introduction

Face-to-face human communication involves more modalities, inter alia the auditory modality (speech) and the visual modality (body behavior). Body behavior comprises, for example, head movements, gaze, facial expressions, body posture, arm and hand gestures. In the following, we will call them all gestures. In order to understand and build models of multimodal communication it is essential to collect corpora of face-to-face communication and annotate both modalities and their relation in a formal way.

At the Centre for Language Technology at the University of Copenhagen, video- and audio-recorded monologues and conversations between two or more

participants are transcribed and annotated in order to be able to analyze and process automatically speech, co-speech gestures and their relations. The multimodally annotations follow a pre-defined model, the so-called MUMIN model, in which the shape and function of gestures are described via predefined attributes and values (Allwood et al., 2007). Gestures can have more functions at the same time, and this is accounted for in the model. The relation between body behavior and speech is also coded via multi-links. The data annotated according to this annotation scheme have been used to both qualitative and quantitative analyses as well as training data for machine learning algorithms. The annotation model is implemented in an annotation tool (ANVIL). In this tool, the time-stamped annotations are saved in XML-format and this format only includes few metadata indicating the name of the file, the annotation scheme and the coder. The video- and audio-formats required by the various annotation tools differ and there do not exist fast procedures for handling the different formats and annotation types. We are planning to annotate new types of conversations and students at the international master in IT and Cognition also use these data and collect data, which we want to make available. Therefore, we are currently investigating format for and procedures to produce reusable and easily searchable metadata and annotations in the Danish Video Life Cycle Data Management project[5] (VDM). The issue is to define a minimal set of metadata fields for the corpora and few fields describing each file in a corpus, which the researchers might choose to fill in.

Creation of multimodal communication corpora

In face-to-face communication, gestures and speech are related semantically and temporally. Their relation is complex and how people speak and gesture strongly depend on many factors, comprising the communicative situation and setting, the cultural and linguistic background of the participants, their number and relation. In order to study the complex relation between speech and gesture in different conditions, it is therefore important to collect and annotate multimodal corpora, which cover these different aspects. Multimodal corpora consist of video- and audio-recorded interactions and their annotations comprise time-stamped transcriptions of speech and annotations of speech gestures. The semantic relation between gestures and speech can be also annotated explicitly in the data. A number of national and international projects have

5 VDM is supported by Danish e-infratructure Cooperation (DeiC): www.deic.dk/datamanagement/pilotprojekter

aimed at the construction and annotation of multimodal corpora, such as the European AMI project (Carletta et al., 2005), the Nordic NOMCO project (Paggio et al., 2010, Navarretta et al., 2012), the Swedish SPONTAL corpus (Edlund et al., 2010) and the Danish CLARIN/MOVIN corpus (Navarretta, 2011).

One problem with existing multimodal corpora is their availability. The large majority of corpora of naturally occurring face-to-face conversations are only available to a restricted number of researchers while free available corpora are often produced in artificial settings with researchers or, even actors playing a specific role or following predetermined scripts. It is also difficult to get good recordings in terms of audio and video quality in naturally occurring settings, and the gestures of all participants are not always clearly visible.

Furthermore, the manual annotation of multimodal corpora is extremely time consuming, and only some gestural features can be annotated automatically with a certain degree of accuracy. Using tracking devises improves the quality of the automatic annotations, but often requires the presence of tracking devices and spotlights, which can result the naturalness of the interaction.

At the Centre for Language Technology, we have a number of annotated or partially annotated multimodal conversations comprising the Danish NOMCO corpus and a subset of the Danish CLARIN/Movin corpus, which was collected by researchers at Southern Danish University and multimodally annotated at the University of Copenhagen. Moreover, we have a number of multimodal corpora collected by students at the IT and Cognition international MSC program, and we want to make part of them available for research. One of these corpora is a collection of Danish narratives in which the participants retell the events shown in a cartoon to a friend, following a strategy for the collection of multimodal comparable data proposed by McNeill (1992).

A number of tools are available for the annotation of video- and audio-recorded data. For example, audio data can be transcribed in TRANSCRIBER[6] or PRAAT (Boersma & Weenink, 2013) which also support the automatic extraction of features such as pitch, intensity and duration. The transcriptions can then be imported in multimodal annotation tools such as ANVIL (Kipp, 2004), ELAN (Wittenburg et al., 2006) and EXMARaLDA partitur editor[7].

Research groups studying multimodal data use different transcription and annotation formats and models depending on their research background and purpose. We are natural language processing researchers and the aims of our research are not only to study multimodal communication, but also to propose computational models of various communicative behaviors and to use the an-

6 http://trans.sourceforge.net/en/presentation.php
7 http://exmaralda.org/en/partitur-editor-en/

notations as training and testing data for machine learning algorithms and for evaluating the models on new data.

Data management of multimodal communication corpora

To be able to manage, select and refer to the desired files in multimodal corpora we see a need to extend the current ad-hoc management of corpus files to a setup that makes it easier to select and refer to the relevant data for the different research tasks. Also the Danish Code of Conduct for research integrity (CoC)[8] implies that the research data used for published results should be referred in a manner that allows for verification of the published results. Furthermore, the video recordings are sensitive material where the consents with the participants also has to be handled in a proper way to make sure that research work are done in respect to the details of the consents.

All the recordings, the annotations and other data about the multimodal files are currently stored on a secure storage solution. Adding information that makes the data searchable, referable, and which contain detailed information are usually denoted as adding metadata. Metadata is usually defined as "data about data". In a broad extend all the annotations that are produced as part of the research work could be defined as data about data, but it is broadly recognized that annotations e.g. a transcription of the words in a dialog are denoted annotations, while the information about who created the transcription, the format of it and other administrative information are metadata.

An important initiative recently increased to enhance the options for collaboration and re-use of data for better research results is the FAIR Guiding Principles (Wilkinson et al., 2016) which are still in progress[9]. FAIR is an abbreviation for Findable, Accessible, Interoperable and Reusable. The principles address the need for data management and metadata with a list of recommendations; here we will focus on only a few of the FAIR guiding principles:

- To be Findable: Metadata and data are assigned a globally unique and persistent identifier
- To be Interoperable: Metadata and data use a formal, accessible, shared and broadly applicable language for knowledge representation
- To be Reusable: Metadata are richly described with a plurality and relevant attributes.

8 http://ufm.dk/publikationer/2014/filer-2014/the-danish-code-of-conduct-for-research-integrity.pdf
9 http://www.datafairport.org/fair-principles-living-document-menu

The multimodal research files consist of raw video recordings, extracted parts of the video recordings, audio files, and annotations that can be produced using the ANVIL annotation tool. As manual annotation is time consuming these annotations typically only covers parts of the original video. Furthermore, we also produce data model files created by e.g. machine learning algorithms, evaluation files when testing hypotheses etc.

As the research material in our case is diverse in format and provenance, we need either a metadata format that is designed for multimodal corpora or a generic format that can describe almost every kind of file. A frontrunner project for defining metadata for multimodal corpora is the ISLE Meta Data Initiative (IMDI). "IMDI is a metadata standard to describe multi-media and multi-modal language resources"[10]. The work started in 2000, and the latest schema update is dated 2010. The IMDI metadata standard handles both the need to specify metadata for a whole corpus with a diversity of files for different uses and in different formats, and the option to specify metadata for only a single file. The standard is expressed in XML and the format enables a hierarchical structure of the metadata. This standard is highly focused on the needs when working with multi-modal language resources, and it includes many domain-specific metadata elements and also allow the researcher to configure own metadata key-value pairs with individual naming and values.

Another metadata standard is The Dublin Core (DC) Metadata Element Set[11], where the work started in 1995 and the latest updated schema is from 2012. The Element Set contains fifteen generic properties for resource description. An advantage of the generic DC standard is that it is used and understandable in large parts of the research community, e.g. the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) protocol[12] for automatic metadata harvesting is widely used exchanging research metadata between data repositories and research data infrastructures.

CLARIN is a research infrastructure that focuses on the interoperability of research data. CLARIN offers a framework to create and use self-defined metadata formats CMDI[13]. CMDI is a meta-model and in the framework one can define its own format. It also allows the user to integrate existing schemas (e.g. IMDI, DC) as components in a new format and this opens for interoperability to existing standards.

10 https://tla.mpi.nl/imdi-metadata/ The latest updated schema for the standard is from 2010: http://www.mpi.nl/IMDI/Schema/IMDI_3.0.xsd. (visited 2017-05-26)
11 ublin Core Metadata Element Set, Version 1.1: http://dublincore.org/documents/dces/ (visited 2017-05-26)
12 Open Archives Initiative Protocol for Metadata Harvesting https://www.openarchives.org/pmh/ (visited 2017-05-26)
13 tps://www.clarin.eu/content/component-metadata (visited 2017-05-26)

When considering metadata for the multimodal communication corpora we should also note that the video camera adds technical metadata into the recordings. Some of these metadata such as *recording date* are very relevant to store as metadata for derived and related files.

When planning how to manage metadata for the variety of files it is important to choose a solution that are easy to use and that can allow for all kind of the necessary information. The solution should enable easy search, and linking between the metadata and the data files is also crucial. Furthermore, the data set is constantly evolving as files are annotated, experiments are carried out and hypotheses checked. This constantly growing dataset asks for data management during the research project and not just in the end of a research project life cycle as often is the case when the metadata are created to enable sharing and reuse of data in the end of a project. Additional, a lot of the multimodal corpus data will never be public sharable, but only shared through close collaboration and with agreements signed of the involved researchers. Summing up, the metadata should mostly serve as a data management tool during the research work.

As a starting point we have decided to use some of the DC metadata elements, which we find relevant. And to get the first impression of which elements are sufficient to express the needs of the researchers, we will enter the metadata information in a number of excel sheets for each major type of data, e.g. a sheet for raw video recordings, a sheet for videos extracted from the raw videos, a sheet for annotations, a sheet for machine learning models. This approach gives us a starting point for collecting and structuring the metadata for the different types of data with the option to add specialized metadata elements to each sheet, e.g. the sheet for machine learning models can have a special element for references to parameter files for the training. As a point-of-departure we have the metadata elements as columns and the files as rows. Two columns are extending the chosen DC elements and they hold an ID for the metadata record, and a reference to the storage system for the data file. A special sheet holds information about the rights, agreement descriptions and consents.

A multimodal corpus will be described by at least a metadata file with the fields listed below; furthermore, the researchers will have the possibility to add at least a description field for the single conversations.

List of proposed metadata element for a corpus file:

- Metadata record ID
- Storage: reference to the storage system for the data file.
- Identifier: an unambiguous reference to the resource within a given context.

- Contributor: An entity responsible for making contributions to the resource, e.g. a validator, a service. *(optional element)*
- Creator: An entity primarily responsible for making the resource, e.g. annotator(s).
- Date: creation date for the resource.
- Description: a free-text account of the resource.
- Format: The file format, physical medium, or dimensions of the resource.
- Language: language of the resource using ISO 639.
- Publisher: An entity responsible for making the resource available.
- Relation: A related resource, link to other files/annotations. (*optional element*)
- Rights: Information about rights held in and over the resource.
- Source: A related resource from which the described resource is derived. (optional element)
- Title: Typically, the title will be a name by which the resource is formally known. (*mandatory for corpus, optional element for single file*)

After adding data to the sheets for each type of resource, we will evaluate the need for metadata elements, and decide on the need for fixed vocabularies and structure inside the metadata. Next, the CLARIN CMDI model will be considered to define the metadata and to generate a schema for evaluation of metadata files.

The storage of the sensitive data and the consent forms is also needed to be decided. Currently we are clarifying internally at the faculty how we can store the consent forms in a safe way.

Summary

We have described some of the challenges with the creation of multimodal corpora and the need for data management for the multimodal corpora files. The definition of metadata for the corpus files is initialised by using the already broadly used DC metadata elements. Hopefully, the work will expose the needed metadata elements and complexity of the metadata structure.

Acknowledgement

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Using sketchnote technique in class to help novice designers improve sketching skills[14]

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Abstract

In design, sketching is a thinking tool next to writing, and sketches are often referred to as the language of designers. The ability to sketch out ideas rapidly in various formats is thus a central skill for a designer, and should be fostered in educational programs. But surprisingly, for most students sketching seems far less developed than writing, and as a result, they avoid communicating visually altogether which limits the quality of designs made in class, and how easily sketches can be used to support dialogue between, for example professionals and end-users.

This paper is about the use of sketchnotes as a means to train basic visual communication and basic drawing skills in design teaching at a computer science for faculty. It presents practical experiments with 55 students were involved in lectures, critique and open sketchnote assignments.

The paper discusses insights related to how the different activities contributed to improving students' skills in making knowledge visual and engaging others with drawings. Specifically, the paper discusses outcomes related to the form of the sketchnotes such as the use of contrasts and to the content such as the abstraction level of the visualised information and relates these to students' journeys towards becoming more confident sketchers.

14 Please also see page 190 for the extended article that was not included in the first publication. It is now included in full length.

Video Data Management Project

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Abstract

Researchers in the humanities in Denmark who work in educational settings frequently utilise video for data collection, analysis and sharing of their findings. However, to date there is no existing procedure or infrastructure in place that supports video data management that is compliant with codes of research conduct while fulfilling research needs. Educational researchers interested in unfolding the complexity of video data analysis have reported the difficulties and the need for more systematic ways of the collection, analysis and reporting of video data (Goldman & McDermott, 2007; Klette, 2009). In response to the lack of a systematic approach to video data management this project's task is to identify and roadmap possible startegies for educational video data management. The Video Data Management (VDM) project that started in 2016 will run until 2018 and is funded through the Danish E-Infrastructure Cooperation (DeIC). This project involves experts (including video based research, library and ITS) from three Universities in the initial stage and one more in the testing phase, as well as IT and legal experts from the Royal Library, ensuring the broad-based national relevance of this project.

The aim of this project is to provide a structured way of thinking about video research data collection and processing, including the type of research data a research project will produce, the format it will use, the storage it will require and how the data can be accessed. Part of the project plan is to unpack the practices and needs exemplified in three different case studies. This presentation identifies the challenges identified in one case that draws on 34 hours of raw data (ca 150 GB), collected from observations in three different primary school classrooms. Informed consent from participants (principal, teachers, students, their parents) to use video data for project and beyond the project life, for continued research and teaching. Up to three video files per hour of recording, plus additional data, interviews (audio, images - approx 3-400 per hour of recording, approx. 1TB), observational f notes, audio recorded debriefing between researchers. Data released for sharing approx 9 hours, approx 50GB, including metadata within the video files. Utilising a data management plan (dmponline.deic.dk) we identified the need for adjusting the data management planning template with video specific details, establish user friendly metadata

standards specific for video collection, and the need to set up stable and secure systems to share data for research. This project is ongoing.

Acknowledgement

This project has been funded as a pilot project through the Danish e-Infrastructure Cooperation (DeIC) https://www.deic.dk/datamanagement/pilotprojekter.

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Primary school students as co-researchers

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Introduction

Research that takes place in schools with young people assigns them in many cases to be participants that are observed and analyzed, even when the research focus is on changing the conditions at school to their advantage. Research that examines how young people experience education often fails to give adequate prominence to children's voices apart from using their words from transcripts of observations or interviews. The UN Convention on the Rights of the Child (CRC) points out the importance to uphold children's rights in diverse educational contexts, and this challenges ethical, methodological, legal and pedagogical issues that arise at the crossroads of children's rights and educational contexts, especially if the focus of research is on how to think and practice differently.

Children's voice in research

The notion of 'student voice' has gained general acceptance over the past decade. Voice suggests a particular point of view, one that is not universal because children don't speak as one but as individuals (Thomson, 2008). Part of the thrust of including student voice is about enabling professionals who have traditionally worked 'on', or on behalf of, young people to move towards working with them to improve their quality of life, and educational experience and attainment (Noyes, 2005). Student involvement in research is however not unproblematic (Lodge, 2005). Researchers hold a range of views about the extent to which young people should, or can, be empowered as participants in the research process. The nature of the methods that best support students to express their thoughts and feelings is another issue to be considered. How to present and represent data that is generated by students is a concern given that professionals, including teachers, school leaders and policy makers, are not always willing to listen to and act on data from students, particularly when they are being critical (Hadfield & Haw, 2001). Here we are reporting about a project on students' use and ownership questions to do with Bring Your Own Devices (BYODs). We are working with the collection of visual data, in particular from videos that have been collected by researchers and by students during re-

searcher/student meetings, during classroom observations and doing children's school breaks, and at home. However, this visual data does not speak for itself (Lesh & Lehrer, 2000) but is an effective means for mediating students' reflections and researcher-student conversations contributing distinctive insights into students' ideas. As such visual information can help to tell 'unsayable stories' (Leitch 2008, p.37) and provide rich accounts that help to better understand children's lives and ideas.

Contemplating 'student voice'

A number of reasons have spurred researchers to take account of student ideas and experiences. One of these is the increasing recognition that children are authorities on their own lives (Clark & Moss, 2001; Mayall, 2000). This view is eloquently summarized by Prout and James (1997) who argue that children need to be viewed as social actors in their own right, not just people in the process of becoming so. The school improvement movement has consulted widely with students on the basis that they provide unique perspectives and are expert witnesses to their own lives (Rudduck & Flutter, 2004). So too have researchers with an interest in democratic schooling (Apple & Beane, 2007). Overlaying this work, the United Nations Convention on the Rights of the Child (1989) provides a political imperative to consult with children. It states that children have the right to actively participate in all matters concerning them. Given, that students are the intended beneficiaries of schooling their involvement in educational matters would seem essential. Indeed, Levin (2000) argues that education reform 'cannot succeed and should not proceed without much more direct involvement of students in all its aspects'. All the more so given information on student views has been shown to be influential in mobilizing teacher change and parent opinion in favour of reform. This said, the extent to which students participate actively within the research process varies in terms of whether the research is on, for, with and by students. The boundaries between these positions are often blurred but, broadly speaking, the focus of discussions at one end of this continuum tends to be on the nature of the methods that support students to express their thoughts and feelings. At the other end of the continuum, some researchers advocate students-as-researchers and children as co-researchers (Milstein, 2010; Thomson & Gunter, 2007).

Findings

We report about an ongoing research project that is currently on the way in three countries, Denmark, Sweden and Finland. In this presentation, we will refer only to examples of the Danish study. This project that is funded through Nordplus Junior intends to identify the practices, and appropriateness of use when primary school students bring their own devices (BYOD) to school. Such technology includes computers and any kind of smart technology (phones, tablets), but also cameras, digital watches and any applications that such devices may be using to access information or collect data. We are also interested in how school-owned technology is used to connect with such devices including if the technology is used to collect information from students. To examine those interests, it has been our aim to involve primary school students (grade 7, 12 years) in our study as co-researchers. So far, we have taken several steps including a meeting with them and their families and the teachers and a joint research day. During the research day, the students were tasked to examine our research questions to identify what they find worthwhile investigating. The students have so far produced videos to share their stories about how they use mobile phones. We also asked them to wear GoPro cameras during their lunch breaks and sat together with them to identify what aspects of their own practices could be used for research and why they could be insightful. We are under no illusion that this project has been shaped by researchers' and teachers' interests and categories (James, 2007) and that students have acted within the bounds of defined school community practices. However, we can see how the deliberate attempt to give young people voice in research gets a step closer to co-constructing knowledge and reduce researcher dominated over or under interpretation of events and what can be seen and observed in the field.

Preliminary Conclusion

The deliberate attempt to work closer with young people creates the need to identify different opportunities for dialogue between researchers and students. We are interested in creating opportunities for students to draw on their own interpretations about their lives. This, we believe may create the opportunities for dialogue that expands on monolithic adult explanations of children's worlds. The accommodation for including young people's experiences, ideas and interests is not easy and cannot be achieved by assuming that adults know about children's lives simply because they once were children too. We find that video may open up the possibility to allow for individual knowledge sharing,

unexpected insights and creative ideas to include young people's experiences, feelings and how they see themselves operating amongst adults.

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Preservation and Interpretation of Artwork using Video Interviews

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Abstract

This paper looks into the traditional approaches to art history in the context of emerging art forms such as art and science programs, art and engineering, and media art. It shows that storing such artefacts for the future requires an in-depth understanding of their functioning, and that traditional art history methods are unable to adequately respond to these challenges. Based on critiques developed by the movement of the New Art History, combined with recent developments in the digital humanities, the paper proposes a theoretical framework for preservation and interpretation of media art using video interviews. The paper analyses the main questions pertaining to video interviews in art history. It asks who should be interviewed, develops a possible list of interview themes, and discusses an appropriate timing and placing for the interviews. Upon answering these questions, it offers rough guidelines for interpreting video interviews. In this way, the paper offers a possible route towards reinvention of methodologies used in the field of art history. This route reveals some ancient challenges, such as the relationships between the object and the subject, and some fresh challenges, such as interpretation of video. Authors recognise that data and knowledge obtained from video interviews should be fed back into the realm of art history in order to make a distinction between the relevant and the non-relevant; the important and the unimportant. At this stage, however, the proposal is fully theoretical, and authors aim to develop such feedback loop in their further work.

Introduction

Contemporary art history aims at preserving both the artefact and the original motifs, ideas, and understandings behind the artefact. In spite of these combined efforts, artwork often acquires completely different meanings due (the lack of) second-order materials such as interviews, surveys, and articles. Areas such as art and science programs, art and engineering, and media art, are often based on technological artefacts (device art and robotics), technical procedures

(telematic art), and laboratory procedures (bio art), or additional historical data (media activism). Storing these artefacts for the future often requires detailed explanations in terms of their functioning and understanding a wider context and discourse.

We are now facing "the radical concordance of image, text and sound, and development of new information/knowledge infrastructures" (Peters, Besley, Jandrić & Bajić, 2016a). This results in the growing importance of "visual cultures" (Bolter, 2001), which are dialectically interlinked with "a world of remediation and cross-mediation in which experience of content both appears in multiple forms and migrates from one form to another" (Peters, Besley, Jandrić & Bajić, 2016a). Digital humanities enable easy step-by-step observation and monitoring, computation, experimentation, and data profiling of long-lived data. However, such methods cannot replace the existing ways of preserving artwork, and should not be seen as a panacea for current methodological issues in art history. Pugh, Buhe and Chu argue that the adoption of what we call "the digital humanities" or "digital art history" should focus less on the "digital," or on this or that tool, and more on research questions, methodologies, and standards of practice. What we call "digital art history" is simply art history, except that its practitioners employ computing tools for research and publication in an informed and critical way. The emphasis should be not on forging or naming a new field but on ways to do what we already do in better, more effective ways (Pugh, Buhe & Chu, 2016).

Traditional fields of inquiry, from art history through education to philosophy, have described visuality (artwork, classroom practices, etc.) primarily through textuality (books, articles, etc.). However, recent developments in video pedagogies indicate that the form of video might provide a possible route towards creating more accurate descriptions and developing deeper forms of critical analysis (Peters, Besley, Jandrić & Bajić, 2016b). Following this argument, this paper examines theoretical background for enhancing current methods in art history by developing a possible route towards understanding (the production of) artwork using video interviews.

From traditional approaches to New Art History

In his classical definition, Roskill (1974, p. 2) defines art history as a discipline that analyses "style, attributions, dating, authenticity, rarity, reconstruction, the detection of forgery, the rediscovery of forgotten artists and the meanings of pictures." Some common narratives in art history are: limited; Hegelian; structured through beginning – peak – decline (Danto, 1998); structured through

progress (Gombrich, 1955). In terms of evaluation, art history is descriptive: it prescribes -early, -high and -late styles, and establishes centres and peripheries (Bal & Bryson, 1991). During the past decades, art history has been criticised on various grounds including but not limited its linearity, chronology, charted appearance, bourgeois origin, feminist critique, and narrowness in relation to other disciplines.

Inspired by these profound methodological issues, a number of critics such as T. J. Clark, Adrian Rifkin, John Bird, and others, have demanded various changes in interpretation of artwork in correlation to development of other humanist disciplines such as literary studies, narratology, film studies; social and political criticisms of sixties; and the introduction of technological experiments and different media into art practice. Since early 1970s, these critiques can be found under the broad collective name the New Art History.

During the past decades, the New Art History has been developed in various forms. For instance, the volume entitled The New Art History (Rees & Borzello, 1986) puts forward a self-referencing definition of the field, while *Calligram: Essays in New Art History from France* (Bryson, 1988) understands the New Art History as "an umbrella term for critical theory as well as the whole range of turns and shifts within the humanities that also began to shake art history, both internally and externally" (Jõekalda, 2013). In spite of various forms and understandings, continues Jõekalda, the New Art History "was evaluated to have shook and slightly regulated the field, but by no means to have brought with it a genuine turn – despite some visible shifts and exceptions, the mainstream of art history has remained quite the same and students are still being taught in the spirit of decades ago" (Jõekalda, 2013).

Both the new art history (Jõekalda, 2013) and the digital humanities (Pugh, Buhe & Chu, 2016) have failed to significantly alter the traditional discipline of art history. And perhaps rightly so – contemporary art can be truly understood only by standing on the shoulders of its historical precedents. Arguably, however, art history also needs to rise up to the new contemporary challenges. In this context, the Russian artist Dmitry Vilensky writes:

Students need to learn the major narratives of art history, and the true question in art production is to determine what belongs to and what sits outside this general big narrative.

However, this does not mean that we take the major narratives of art history for granted. At all times, we must re-examine things which are being repressed and pushed outside of the major narratives – this creates a vital setting for future development of arts and knowledge. And it happens through the struggle

of narratives, and its power to win the crucial number of supporters. (Vilensky, Kuzmanić & Jandrić, 2016)

Our proposal for using video interviews in preservation and interpretation of artwork stands on the shoulders of the critical tradition started by the New Art History movement. It recognizes that using new technologies and methodologies is not politically neutral – it creates a new type of narrative, which provides a different dynamic between inclusion and exclusion of data, information, and knowledge. In consequence, contextualising artwork using video interviews inevitably creates a new power dynamic, a new discourse, and a new politics of art (history).

Contextualising artwork using video interviews

According to Bal and Bryson (1991), traditional art history has five main approaches to context analysis: iconography, connoisseurship, patronage studies, provenance studies, and 'history of looking.' Using semiotic analysis, they show that the approaches and their combinations provide limited insights into authors' motifs and feelings behind artwork:

> The selection of those rules and their combination leads to specific interpretive behaviour. That behaviour socially framed, and any semiotic view that is to be socially relevant will have to deal with this framing, precisely on the basis of the fundamental polysemy of signs and the subsequent possibility of dissemination. In the end, there is no way around considerations of power, inside and outside the academy. (Bal & Bryson, 1991, p. 207-208)

The social sciences are also interested in motifs and feelings behind human action, and interviews are amongst the oldest and the most commonly used interpretative research frameworks oriented towards developing this type of understanding.

> Interview methodology is particularly useful for researchers who take a phenomenological approach. That is, they are concerned with the way in which individuals interpret and assign meaning to their social world. It is also commonly used in more open-ended inductive research whereby the researcher observes specific patterns within the interview data, formulates hypotheses to be explored with additional data, and finally develops theory. (Hamill, 2014)

Using different methodologies, art history and the social sciences both look into motifs and feelings behind human action. Arguably, however, these disciplines are oriented towards clearly distinct goals. For art history, construction of meaning and development of new theories are intrinsic parts of its wider task of dating, archiving, and classification or artwork (Roskill, 1974, p. 2). For the social sciences, construction of meaning and development of new theories are oriented towards understanding the social life of human beings. Both disciplines are interested in context, discourse and power relations. While the full extent of challenges facing post-disciplinary research reach far beyond the scope of this paper, it is important to acknowledge the complex relationships between post-disciplinarity and critical emancipation (Jandrić, 2016).

Focused to different goals, traditional methods used in art history and the social sciences are not mutually interchangeable. However, the described relationships between the disciplines open up opportunities for cross-fertilisation. Therefore, we do not claim that video interviews might replace the existing methods of preserving and interpreting artwork. Instead, we merely propose that video interviews might provide an additional means for complementing, and perhaps advancing, traditional approaches in art history.

In the field of art history, video interviews might provide some of the following qualitative contributions:

1. To distinguish the original (primary) author from the secondary author.
2. To understand social, ideological and economic forces behind artwork.
3. To define discourse by contextualising the author through previous education, social group, geographical position, and similar information.
4. To analyse the dichotomy between the conscious and the subconscious.
5. To define symbolic and real powers and relationships in terms of fantasy and desire (excess; voyeurism; exhibitionism; fetishism).
6. Alongside direct information (content), video interviews can provide indirect information (context) by analysing structure of conversation, pauses, overlapping speech, tone of voice (Alasuutari, 1996).
7. In relation to the artefact, video interviews might provide the means for better understanding of qualitative knowledge in terms of sites of production, exhibition, and collection. Analyses of sites of production can be focused to technology, theory, and composition. Sites of exhibition and collection may be galleries, museums, cinemas, virtual spaces, archives, and databases. Physical sites need to be understood as sites of struggle between discourses, and through underlying power relationships (Bal & Bryson, 1991, p. 207).

This provisional list is based on authors' theoretical insights and anecdotal experiences of doing interviews with artists, and merely serves as a starting point for development.

Developing video interviews for contextualising artwork

There is an extensive body of research about using interviews as a qualitative research method in various settings. In order to enable cross-fertilisation between art history and the social sciences, however, video interviews for contextualising artwork require insights from both disciplines. In the following sections, we identify some important questions at the intersections between art history and the social sciences, and indicate provisional theory-based answers.

Who should be interviewed?

Artwork can be contextualised using various sources: the artist(s), art critics, and audiences. By and large, artists are closest to own original motifs, ideas, and understandings behind the artefact. However, in cases where audience becomes a part of artwork, and in cases where artwork has provoked significant public attention, interview with the author might be supplemented with interviews with other stakeholders.

Interview themes

As an interpretative research method, interview strongly depends on context. Therefore, it is impossible to develop a set one-size-fits-all questions for video interviews aimed at contextualising artwork. However, the traditional views to art history, and their New Art History critiques, can serve as points of departure for developing a list of possible themes that need to be covered during a video interview. A possible list of indicative themes includes:

1. Author-focused themes:
    a. Official / unofficial education
    b. Social background and investment
    c. Personal development trajectory
    d. The conscious and the subconscious
    e. Fantasy and desire
2. Artefact-focused themes:
    a. Sites of production
    b. Sites of exhibition
    c. Sites of collection

3. Context-focused themes
    a. Theory
    b. Composition
    c. Discourse / power relationships
    d. Critique / audience
4. Technology-focused themes
    a. Environmental / social structure of technology
    b. Raw material
    c. Craft, tools and their usage
    d. Function, program.

This list of themes is provisional, and will be further populated during this research.

When should an interview take place?
Art is a temporal phenomenon. Author's motifs, ideas, and understandings behind the artefact inevitably change before, during, and after the interview. For instance, interviewing an artist at an exhibition opening may provide very different insights from interviewing an artist on the 20th anniversary of the exhibition. Arguably, the moment of creation / exhibition will provide 'the purest' data (moments of passion); temporal delay will offer more opportunity for reflection (moments of reflection). Based on experience of longitudinal studies in the social sciences, it would be best to capture both moments of passion and moments of reflection (Hamill, 2014). Sometimes, timing is determined by organisational issues beyond researcher's control. In all scenarios, timing should have an important impact to interpretation of interviews.

Where should an interview take place?
Video provides a lot of contextual information that reaches beyond text. Interviews conducted at the site of production might provide insights about author's methods and aspirations. Interviews conducted at the site of exhibition might provide insights about (curatorial and public) reception of artwork. Interviews conducted at the site of collection might provoke reflection. The relationship between sites and contexts of production and consummation of artefacts is an important research topic in various fields including but not limited ethnography, anthropology, and media studies, and reaches beyond the scope of this paper. However, the location of video interviews significantly impacts contextualisation of video interviews and artwork itself.

Interpreting Video Interviews

Themes and questions for video interviews should not significantly differ from questions for written texts – after all, both methods have the same goal to contextualise artwork and preserve its meaning for the future. However, video interviews are not just about themes and questions – arguably, issues such as timing and placing the interview are just as important. In the stage of interpretation, video provides opportunity for obtaining much richer (visual) information than text. First, we can hear (and perhaps transcribe) what is being said in the recording. Second, we can use various visual props to enhance the narrative (for instance, show an image with voice-over discussion of its features). Third, we can get a glimpse into authors' personality (such as personal characteristics and feelings and authors' surroundings (rich-poor, happy-unhappy). Finally, we can get explanations how to construct and deconstruct, use and misuse, all in order to preserve specific art pieces.

However, human interpretation is always based on impression, which depends on multiple factors. Video editing can be deceptive, because it can depict things radically different from reality. More fundamentally, even with 'raw' and 'honest' materials, perception heavily depends on the beholder. Video interviews can indeed bring about more information, but this information does not need to be more accurate – especially across longer temporal distances. Here, we find it useful to draw on the distinction between vision and visuality (Foster, 1988; Kaszynski, 2016). Vision is everything processed via eyesight; visuality is the process of imagination fostered by interaction between vision and viewer's context. Contextualizing artwork using video interviews is based both on vision and visuality. Arguably, it is the visuality aspect which provides video interviews with the opportunity to make a unique contribution to traditional art history methodologies – and it is also the most difficult aspect for analysis. Therefore, it is within the context of visuality that we aim to direct our further research.

Discussion

This proposal for preservation and interpretation of media art using video interviews covers only a small part of complexities related to preserving the original motifs, ideas, and understandings behind artwork. For instance, while the proposal is predominantly oriented towards authors and their artworks, it could be argued that it may be equally important to video interview audience and / or critics. Based on our individual and collective experience with various forms of

interviews, we are aware that it is impossible to create blueprint one-size-fits-all interview questions. Furthermore, there is much more to the relationships between the artist and artwork than talk: timing and placing the interview may significantly influence research results. These issues are explored in different traditional fields of art (history) and (social) science, and their interplay creates a post-disciplinary research area packed with significant methodological and epistemic issues.

At this stage, our proposal is fully theoretical. In the realm of critical theory, however, research theory cannot be thought of without practice (Carr & Kemmis, 1986), and we aim to develop a practical application of our theoretical proposal in the near future. Upon conducting some interviews, we shall try to feed data and knowledge obtained from video interviews back to their 'mother discipline' of art history. At this stage, art history should make a distinction between the relevant and the non-relevant; the important and the unimportant; the true and the false. In this way, we aim to create a feedback loop and refine this theoretical proposal further.

Conclusion

In order to remain current, and to develop its full potentials, contemporary art history needs to reinvent own methodologies and epistemologies in and for the age of the digital reason (Peters & Jandrić, forthcoming, 2017). Based on diverse approaches of the New Art History movement, this paper directs these changes towards the realm of critical theory. This paper represents a possible route towards reinvention of methodologies used in the field of art history by contextualisation of artworks using video interviews. This route reveals some ancient challenges, such as the relationships between the object and the subject, and some fresh challenges, such as the differences between vision and visuality in interpretation of video. At present this proposal is fully theoretical, and we are sure that its practical application will reveal a number of new questions and challenges. It is within the realm of critical praxis, therefore, that we aim to develop this research further.

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Ten Theses on the Shift from (Static) Text to (Moving) Image

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Abstract

This presentation focuses on ten theses which will be discussed as a series of philosophical provocations concerning the rise of the moving image in contemporary education and culture:

1. The concept of text and textuality are deeply embedded in the practices of education and the humanities since the invention of writing as 'mark-making'. Models of textual analysis abound and structure our disciplinary practices. Linguistics, lingusitic philosophy, semiotics, hermeneutics and psychoanalysis constitute the main forms of textual analysis and critical reading in the humanities. By contrast, ways of critically examining the image have lagged behind these textual methodologies. Outside of art history and films studies there are few accepted methodologies for analysing the image or for recognizing its role and importance in visual culture. Since we are now not only contemplating the *static* image in relation to text, it is to the notion of the *moving* image that we now seek inspiration also.
2. The text is the ruling cultural and academic paradigm. Textual analogues define consciousness, the mind, the unconscious, society, and culture. Science is comprised of discourses and we are presented with text-based understandings of reality that call upon the subject to navigate between text and life. To this day knowledge is predominantly text-based and exchanged, stored and retrieved in texts of this nature. The text dominates our ways of thinking and interpreting the world in philosophical thought. Education is primarily rule by the text – at least in traditional realms of inquiry.
3. The shift from text to image defines our visual culture. This migration from the text to the image is enhanced through new digital technologies. One marketing expert notes that "Between Facebook, Instagram and Tumblr, consumers share nearly 5,000 images every second of every day. Add in Pinterest's estimated 40 million users and even SnapChat's meteoric rise, and

it's clear, a shift is afoot – a desire to share what matters most in pictures rather than words" (Gupta, 2013). This increasing density of images constitute the new visual web and builds on earlier discussions of visual media by the likes of Innes, McLuran & Baudrilland last century.

4. Rorty (1979) discusses the ancient conceit that the mind has an eye with which it inspects the mirror to argue that the notion of knowledge as accurate representation is optional and arbitrary. That it is static and therefore retrievable by all has marked the dominance of rationalism and received truth over many decades. Philosophy has for too long been dominated by Greek ocular metaphors that makes a separation between contemplation and action - the seen in the absence of the see-er (White, 2016). Rorty wants to replaces this vocabulary with a pragmatist conception that eliminates this contrast, arguing A historical epoch dominated by Greek ocular metaphors may, I suggest, yield to one in which the philosophical vocabulary incorporating these metaphors seems as quaint as the animistic vocabulary of pre-classical (p. 11).
5. In Downcast Eyes Martin Jay (1993) demonstrates the ubiquity of visual metaphors that permeate Western languages often in occluded and dormant forms and imbue our cultural and social practices. He comments that exosomatic technologies (the telescope and microscope) have extended the scope and range of vision to encourage an ocular-centric science. And he cites the philosopher Mark Wartofsky who provides a radical cultural reading of vision arguing all perception is a result of changes in representation. Jay's argument is that contemporary French thought is "imbued with a profound suspicion of vision and its hegemonic role in the modern era" (p. 14).
6. The pervasiveness of metaphors of light and sight in classical Greek works can be readily seen in Homer and Plato - who uses the sun as a metaphor for "illumination" and indicates that the eye is peculiar among sense organs in that it needs light to operate. The classical Greeks have been called "people of the eye" because they favoured the visual sense that extended to their most fundamental concepts such as the distinction between knowing (being seen) and contemplation. It is thus to notions of the 'self' and its (now) collective orientation in an era of the moving image, that we turn. We need a new logic to explain 'the self' in contemplation of 'the social'; and a new materiality of images that grants them such presence in the social milieu.
7. Heidegger was influential in providing an account of the metaphysics underlying Greek philosophy in terms of vision and visibility. As Jussi Backman (2015) explains Heidegger's account of Western metaphysics "is rooted in a metaphysics of presence" (p. 16). Being means presence and "seeing" is

a means of grasping what is there to paraphrase Heidegger. Backman explains: "Seeing is the paradigmatic metaphysical sense because it affords a particular kind of access to being as present" (p. 16).

8. Rorty (1979, p. 263) describes the history of philosophy as a progressive series of problematics, or "turns," beginning with medieval philosophy and its concern for things, enlightenment philosophy and the concern for ideas, and last, contemporary philosophy—the so-called linguistic turn--and its concern for words. We might hypothesize the next shift from words to moving images while at the same time as signalling the incapacity of modern philosophy and education to cope with this shift and an unprecedented emphasis on the emerging new power relationships between seeing and being seen that exceed De Bord's earlier emphasis on the spectacle and moves us to the orienting role of image in an era of social innovation.
9. The semiotic landscape infused with moving images is the basis for visual culture and the younger generation seem both more attracted to and more adept at engaging with visual media that replaces word and print as the central information medium. Popular culture is on the rise in this domain, as are trends towards performance, satire and 'post-truth' that blur conventions of reality in the service of modern technologies that provide forum for the exploitation of manipulation and the unleashing of unmasked creativity. From an educational standpoint, however, learners need to learn how to 'read' and 'engage' with the un-real, and to become critical participants in this new socially networked society with so much potential, and so much risk (Peters, 2010).
10. The "pictorial turn" is upon us: "A picture holds us captive" (Wittgenstein, 1953). Investigating the later Wittgenstein on visual argumentation to explore visual images being part of an argument, as the seed for an educational philosophy of the moving image.

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Strengthening problem solving skills in organic chemistry: videos and online activities for active learning in engineering education

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Introduction

Acquisition of knowledge and the ability to solve problems in organic chemistry is demanding and requires that students actively engage in the application of new knowledge and continue to practice it. This is so since the processes organic chemistry is dealing with are typically at a molecular level and not directly observable (Graulich, 2015; Kozma & Russell, 1997). This constitutes a challenge for University teachers on how to ensure that students acquire the competencies to make deep level connections and are able to interpret chemical representations, suggest selected mechanisms, or make analytical evaluations based on the structure–reactivity relationship (Graulich, 2015).

Graulich (2015) explains that in fact one of the challenges in organic chemistry that directly impact on student performance have to do with representational competence, spatial ability, and scientific reasoning strategies. The aim and challenge was therefore to review ways to support students "learning about and retaining designed tools and representational systems that mediate between something that they cannot see and something that they can" (Kozma, Chin, Russell, & Marx, 2000, p. 106). Benedict and Pence (2012) report supplementing in class chemistry activities with online material including videos that can be accessed through smartphones. Some of those videos were given as homework where students had to prepare videos where they had to perform a procedure or use an instrument. Those videos were then shared as a resource and received very positively from students. In our case, we wanted to explore if a similar effect could be achieved by asking students to produce videos and interact online to enhance them solving a range of chemistry assignments.

Context

The case that is presented here is set in the context of a problem based learning (PBL) University where part of the traditional teaching approach includes

that students work in groups and spend time problems solving. Typically, the learning activities are focused on face to face classes, using digital resources as supplementary material. The specific case is a second-year undergraduate students enrolled in an organic chemistry course which is part of an engineering education. In previous years failing rates in this course were very high (between 40 and 70%). It seemed that students were not practicing the concepts and reactions enough by themselves outside of class time. As a consequence of that, it seemed that students could not remember things they had learned in previous classes. In this study four types of interventions were implemented in a semester course. The fours activities included that students had to produce their own videos, have access to externally produced videos, participate in group discussions and whole class discussion in an online forum. This was a novel approach since this University programme is typically based on face-to-face teaching, face-to-face group work, where online material is typically only used as supplementary resource that students can choose to utilize.

Student assignments – Videoed chemistry assignments

The main intervention was to ask second year undergraduate students to video record themselves solving chemistry assignments. The students were provided with instructions on how to produce videos using their cellphones. A link to a video produced by VILA, the Video Research Lab at Aalborg University was posted in the Learning Management System Moodle. The video explained on how to record, transfer and download videos. The production of the videos did not require an expensive program or equipment, and could be recorded using an ordinary smartphone. Once produced the videos were uploaded to Moodle where both teacher and students had access. The student assignments had to be solved individually within a week. The task was to solve reactions in writing and verbally explain the mechanism and record this on video. Each student received two sets of individual assignments during the whole course. The first task was to solve rather simple reactions. The aim was that this could help students and the teacher to test knowledge of rather simple chemical reactions. The second task was an assemblage of multiple step reactions, where either the start and stop compound was given or the start compound in combination with the reactants. The second task constituted a far more demanding task to test the student's ability to solve a more complex problem by applying their knowledge in a broader context. The video recorded assignments were assessed by the teacher and individual feedback was given via email. Overall feedback on

the handed in assignments was given in class by solving the problems together with the students.

Student assignments – Online group discussions

The second out of class activity was a group activity aimed at strengthening the learning processes within each group. Student groups were tasked to find relevant reactions in the literature and exchange it with a second group. The second group needed to solve the reaction and explain the mechanisms. The first group was peer reviewing the solved task. In the end, the teacher assessed the whole process and gave feedback to each of the groups. The teacher was responsible for assigning the roles of the groups within the whole task. The whole task had to be completed within one week. A rotating system ensured that all groups were equally assigned all roles.

Student resources – Externally produced videos

To further improve the understanding of such difficult concepts, short videos explaining these topics were provided by the teacher as additional material. These videos were typically 3-10 minutes in duration describing one topic/concept only. Platforms such as YouTube provide a large number of short video clips which can be accessed free of charge. These videos used frequently visual aspects and were selected on the basis to support and deepen the understanding of a taught topic/concept.

Student support – Online forum discussions

The final out of class activity, was an online discussion using Moodle as the platform. The process involved that the teacher started a discussion on a selected topic from the previous classes and the students were asked to contribute to the discussion. The selected topics were typically covering fundamental concepts or more complex topics which required a deeper understanding of the subject. The discussion platform should provide students with the possibility to exchange knowledge and get better explanations on difficult topics. Due to time constraints and an evaluation on participation the online discussion activity was not carried out throughout the entire course. In parts, this was because it turned out to be rather difficult for the students to select the topics themselves. All of the above mentioned out of class activities were made part of the assessment and contributed to the final grade of the course. Students had regular updates on how they had performed.

Findings

At the end of the semester all students had to complete a written exam. Most students had already collected a good number of points throughout the semester so they may have felt less pressure to perform well in the written exam. However, the student motivation was high and almost all students attended and passed the written exam. The failure rate of the course was reduced from around 40-70 % down to 13 %. The written test was set at the same level as in the previous five years. After the course had been completed the teacher received very positive feedback from the students. They felt engaged and liked the activities. They could also feel the progress in their own learning process. It was not conclusive if the online discussions had been of much value but the videos both students produced and resource videos were much appreciated. This approach of including a number of assessment tasks throughout the course that include also video allowed the teacher to identify very quickly problematic issues that needed to be discussed in class. The videos also provided a resource to the students to be used in the preparation for their final exam.

Preparation of all the out of class activities were quite time consuming for the teacher. To set up all activities as well as to identify useful video material online and find the appropriate chemical reactions for the individual assignments was rather work intensive. However, having the organization and resources in Moodle once established, the time required to run the course again will be reduced since it takes only limited time to revise and update the course. The number of students attending the course was rather low (around 20 students). To implement all out of class activities in a course with a large number of students can be a big challenge. In this case, maybe not all out of class activities should be considered or some of the activities need to be adjusted in such a way that the students are more involved in the peer reviewing process.

Conclusion

Much of the research on learning chemistry focuses on student deficiencies. While it is important to have a good idea about what students struggle with we echo Graulich's (2015) call to share positive stories. We were able to show examples on how students succeeded building their own resources, through relatively simple strategies. Especially the production and viewing of videos turned out to be a successful strategy that may have helped students to overcome the obstacles in practicing and 'talking' organic chemistry. Future research may look into conducting long term studies to investigate the use of video to exa-

mine how this supports identity formation, positive reinforcement and competency development.

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The importance of digital video storytelling in higher education

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Abstract

This paper discusses the students' perception of the importance of digital video storytelling in their professional life and presents the eight steps of effective storytelling process. Digital storytelling has become a powerful tool in everyday life. Every business presentation, corporate meeting or a university lecture is presented in digital storytelling way. The art of telling stories by usage of digital media, such as text, images, audio, video and animation is a definition of digital storytelling. This paper shows the elements of production in creation of digital stories. It indicates the importance of technical knowledge for any media element used in multimedia presentation. The paper also states the importance of the story concept in digital storytelling process. Distinguishing the important from the less important elements of a story is a very difficult assignment when creating a digital story. Furthermore, copyright issues regarding the media elements used in multimedia storytelling are also highly important. In order to get an insight into their perception, a survey was given to the students of Zagreb University of Applied Science, enrolled in modules Video production and Image and sound processing. The survey was given to the students at the beginning and at the send of the semester. At the beginning of the semester, students were asked about their opinion of the importance of digital storytelling in their future business life. At the end of the semester, they were also asked about the difficulties they dealt with during the learning process. The results of the survey are presented in this paper and will be used as a guide in order to make the multimedia modules more effective when presented to the future students.

A multimodal analysis of group collaboration: What does equitable and inequitable collaboration look like?

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Introduction and objectives

In many educational contexts, learners in all age groups are asked to collaborate with peers in small groups as intellectual collaboration is assumed to be a means and goal of education (Fawcett & Garton, 2005; Kuhn, 2015). Despite its importance, learners do not participate equitably in group activities (e.g. Bianchini, 1997; Esmonde, 2009; Kurth, Anderson, & Palinscar, 2002). Some learners have more access to the interactional space whereas others do not get the floor or their ideas are not taken up even when they speak. In this study, we analyze video recordings of group activities of adolescent learners (age 12-18) engaged in afterschool science learning settings. This analysis demonstrates how multimodal video analysis provides an insight into students' interactional dynamics that analysis focusing solely on utterances may not accomplish.

Methodology

This study draws on approaches of video analysis (Derry et al., 2010) and multimodal analysis (Jewitt, 2009). Video data were collected from two afterschool science enrichment programs. From a large scope of video data, approximately 17.5 hours of data were analyzed. we watch the videos in their entirety to identify events, for further close analysis, that suggest balanced or unbalanced interactional dynamics. In micro-analysis of the selected events, we generate "thick descriptive accounts to present the richness of video data, mixing images with verbal transcriptions of speech and verbal descriptions of action" (ibid, p. 51), such as gaze, vocal tone and volume, body gesture and posture, and spatial organization of people and materials.

Outcomes

A close multimodal analysis identified several paraverbal and nonverbal features of discourse that suggest how equitably a group's interactions are coordinated. These features include body posture (e.g., how open and expansive learners' body is), laughter (e.g., who laughs or does not laugh), organization of artifacts (e.g., who is in control of material resources and seated close to them), and seat arrangement (e.g., who is seated in the center or edge of the group). Findings of this study suggest implications for education researchers (e.g., what to incorporate in the analysis of classroom videos) and educators (e.g., what to pay attention to in the coordination of collaborative learning).

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Role of visual mediation in educational event design: visual stimuli in educational environment

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Abstract

The authors present the results of the research into the change of mediation in the contemporary educational communication. The changing landscape of modern educational reality results in new educational trends – on-line and distant courses, massive open courses. We observe how those changes lead towards the change of the traditional role and functions of a teacher and educational communication in an educational event in particular. The objective of the presented research is to detect the interdependence between semiosis of education and the type of mediation in an educational situation. We have distinguished three types of mediation: oral speech, text and image. The domination of each type influences the changes in educational environment. With oral speech (verbal mediation) dominated we face education experience transmission via oral communication. While text as a mediation type dominates, it constructs the particular type of teacher-student interaction. And, finally, when we have image as the mediator, we can observe the transition from text-oriented interaction to the communication related to the electronic mediation and an image as its representation. We state that 'visual turn' in education is the event which is going to happen but not happened yet. We see 'visual turn' in education as prospect and at the same time as the factor which undermines the current educational reality. We draw upon the supposition that the steadiness of pedagogical tradition is determined by the domination of verbal and textual mediators. If that supposition proves to be true, intervention of visual forms into education will be able to result into new forms of education. The presented research is conducted within the framework of the phenomenological method which is focused on personal interaction occurring 'right here, right now'. We believe that the interest to such 'local' (occurring in a classroom) could cast a light upon the nature of such interaction but also reveal the micro-processes occurring in educational community and practices.

Key words: Iconic turn, visual stimulus, visual in education, mediation of educational communication.

Introduction

The presented research is based upon the concept of iconic turn (W.J.T. Mitchell (2013), J.C. Alexander (2008), E. Goffman (1981)) as the innovation that has change the culture code of the contemporary society. The iconic turn has established the 'dictatorship of the eye': nowadays visual domain has become the autonomous symbolic space setting up its own norms and communication rules including the ones of educational environment.

Nevertheless the implementation of iconic turn mode in post-Soviet education faces several obstacles. First, it is dominating textual mode as the leading principle of contemporary post-Soviet education: text (as an article, an educative text from a textbook, a lecture, a presentation, etc.) appears to be the central point of any educational activity. Second, consumer-based attitude towards an image is seen as such an obstacle: we witness the effect of 'sliding', of a shallow, immediate perception of an image while the deep, symbolic meaning of the image is out of a viewer's active interest zone.

As a part of the research, the research teams of two universities – National Research Tomsk state University (Russia) and Belarusian State University (Belarus) – have organized a series of experimental educational events carried out with a visual stimulus as an agent of destructive educational communication. During the experiment the organizers carried out the 'forced slowdown' of nominative and interpretive processes which students demonstrated while facing the visual stimulus. The article presents the typical students' communicative strategies whose detection will help, in our opinion, to design and work out future adequate educational techniques of working with a visual stimulus in a class.

Research Context

The philosophical tradition of mistrust of an image can be traced back to Antiquity. A visual image was considered as something unreliable, unable to become a scientific basis of true knowledge (Plato, Aristotle).

Contemporary culture development is tightly connected with the modifying role of visual image. Image production and consumption are the crucial processes of social activity nowadays. As V. Savchuk (2013) states, 'Images replace reality and, consequently, it leads to the loss of authenticity, to appearing phenomena of reality simulation. Images merge into us, they shape the way we see the world, they replace the real personal experience via simulation'. Visual means of communication as memes, videos, photos reduce the meaningfulness

of verbal communication and simplify language. Visualization of simple and complicated notions has become a common practice of an individual. Logos ceases to define the direction for culture development, it is being replaced by visual content. Thus, cinema, television, advertisement whose influence on modern individual's consciousness cannot be underestimated do not use an image as an artifact but as another language for their message. Images are used as means to provoke a person's (consumer's) instantaneous emotional reaction due to their brightness and colorfulness.

The key feature of such consumer's vision stems from the lack of time and wish to view a visual image carefully. An 'image consumer' instantly perceives the reality constructed by an image regardless of the means that produce such an effect. We can detect the effect of 'sliding', of a shallow, immediate perception of an image while the deep, symbolic meaning of the image is out of a viewer's active interest zone. Due to the high level technological image production, development and distribution, the access to numerous visual images is easy and free. Photos and videos are perceived as facts of the reality while their artificial nature remains concealed from a consumer. Thus, the image itself determines our vision not allowing us to see anything besides the idea it represents.

Currently, we witness the *Iconic Turn* in the culture. A visual image is becoming the focal point of our mindset. An individual's picture of the reality is based mostly on his/ her perception of ideas which are parts of a visual image rather than the individual's real experience. The youth born in the Iconic Turn era (when the discussion on the ontological grounds of the world is replaced with the analysis of visual images) demonstrate their own attitude towards reality: they do not interpret what they see but see what they imagine.

The Iconic Turn is a critical innovation changing the culture code of the modern society and a human and establishing the 'dictatorship of the eye'. The visual domain has become the autonomous symbolic space setting up its own norms and communication rules. Thus, in education nowadays visual mode of reality perception is competing for the authority with the textual mode (Palonnikau & Karol, 2016).

A text dictates the necessity of the hierarchical structure while a visual image draws upon non-linear and non-structural entities. A visual image not simply complements a text but it shapes a new form of knowledge in which there appears no boundary between specific (sacred) and common (secular) knowledge.

While a text is oriented towards analytics and presentation of information, linear argumentation, an image allows representing simultaneously a series of complex events or concepts. "Iconic means comply with other rules of struc-

turing and representing, they also establish other dependences between their elements, different from the ones established by a text. Images cannot be finally verbalized like a written text. The opportunities of visual representations' translation are seen not as limited (in comparison with texts) but as regulated by another mode" (Gerbovitskaya Korchalova & Palonnikau, p. 11).

The reality of contemporary education shows that educational communication participants (teachers, students) lack the skills in dealing with visual images, they are not able to view visual images. Such skills can be formed and developed with the help of active application of visual stimuli in education. The modernization of educational domain can be achieved by means of visual stimuli application. The nature of a visual image, its capability of expressing a particular idea are not under consideration in this article. We focus mainly upon image as a means of knowledge transfer and production.

Methods

The presented research is based upon the analysis of a series of educational situations. Thus, we draw upon the framework of the phenomenological method which is focused on personal interaction occurring 'right here, right now'. We believe that the interest to such 'local' (occurring in a classroom) could cast a light upon the nature of such interaction but also reveal the micro-processes occurring in educational community and practices. The second stage of our research work became the analysis of educational situations transcripts. At that stage we draw upon the practices of discourse analysis focused upon the relations between the participants of communication demonstrated in discourses.

Experiment

As a part of the research project *Mediation of learning with a visual artifact* carried out in Tomsk State University (Russia) and Belarusian State University (Belarus), we conducted several experiment classes for groups of undergraduate and post-graduate students. We created the situation based on the conflict 'students – visual stimulus '. The experiment was aimed at deconstructing students' *presuppositions* with the 'forced slowdown' of students' behavioral automatisms. In the context of our experiment, the term presupposition is defined as a complex of background knowledge and convictions which set the basis for the idea of self-perception and perception of the world around. The presuppositions are axiomatic by their nature, they are not doubted. In the

experiment, we intend to cease their automatic perception, 'sliding' while we deal with visual images.

As an experiment class starts, we show the students a photo which acts as a visual stimulus. While students deal with the image, their visual attitudes are shaped.

The conflict was maintained by the lack of the final educational objective named, the uncertainty of the experiment organizer's position. Such situational uncertainty purposefully created and maintained is the key feature of the presented research experiment. Facing the lack of information about the possible future events, students cannot assess the possibility of those events. Thus, students with such informational deficit cannot follow the conventional "comfortable logic" of educational process. The students' discussions were recorded and later transcribed. In the next stage of the research, we worked with the transcripts of the discussions and indicated and named the communicative strategies of the participants (a teacher – in the experiment we call him/ her *an organizer* and the students - *participants*).

The students were shown the photo titled 'At the lecture' as a slide projected on the wall and asked the question, *What do you see?* The experiment participants demonstrated several typical communicative strategies whose analysis is presented in the following part of the work.

Experiment Results: Analysis of Participants' Communicative Strategies

The first phrase of the experiment organizers set the 'rules of play'.

> ***Organizer:*** *…Now you are going to see an image. The only task you have is to answer the question. 'What do you see?'. Here is the image. You have some time to view it.*

Despite the fact that the students are declared to have 'the only task', there are two tasks they face – to answer the question and to view the image.

The logic of the experiment is to minimize the organizers' influence on the experiment procedure. The organizers have few phrases but those phrases outline their presence and influence on the communication in the class.

> ***Organizer:*** *I have heard all that you have said. All has been recorded and ten will be transcribed. But I am insisting on you viewing the image more carefully as it could be not as simple as it seems to be.*

The organizers try to make the participants think that all their ideas about the image were too simple and that they have failed because of not having viewed the image carefully enough. The reaction of the groups were confusion and indignation.

The strong position of the organizers is illustrated with the following phrase:

> ***Organizer:*** *You can do with everything the image– whatever you think is necessary.*

The organizers approve the participants' activity with the image at the same time loosing his/her power over the image. Those are the students who are going to take responsibility for what they do with the image. Later, we could see in the transcript how the participants trying to address to the organizers face the organizers' 'irresponsible' position.

> ***Organizer:*** *If you want to stop the discussion, OK, we will stop it right now.*
>
> ***Organizer:*** *Still.. you want to stop it?*
>
> ***Organizer:*** *Are you done? [**5 second pause**] As I have told you you can stop at any moment, whenever you would like.*

Describing the organizers' communicative strategy, one should mention the following feature: despite their changing position and ambiguousness of the tasks that they give, the participants – students – feel hard to face an organizer's – a teacher's 'absence'. During the class students try to involve an organizer into their discussion – seeing him/ her as the expert 'who knows the right answer'. An organizer as a participant of local communicative process changes his/ her position while he/ she as a participant of educational communication cannot remain independent of his/ her position. An organizer is involved into the discussion as his/ her phrases – and more – his/ her silence influence significantly the audience.

Describing the participants' (students') typical communicative strategies, one defines the following ones:

- **narration-based strategy:** a participant sees not a static image but action happening right here right now, a participant identifies the people

(and their roles) 'taking part' in the action and interprets the image basing upon the details he/ she notices.

Examples:

> Fragment 1: *I can suppose that in this photo I see many people … a… man standing. I suppose that this man is a professor, it is a lecture or a practice class. Ah, everybody has the same picture on their laptop screens – it's …. mmm….. a hockey match … and …I know that a hockey match means a particular trajectory. And probably guys study this trajectory and ….. later discuss how it could be applied in other subjects or real life situations.*
>
> Fragment 2: *I see a conference here … or a discussion. Probably, that is a class for future sports commentators. They are discussing a particular moment of a match. They are discussing how to comment that moment in the best way. I see that audience .. they are discussing hockey*

The participants 'complicate' the image with many details which make their stories more believable. The participants change the objects/ focuses/ ways of viewing during their discussion (they refer to the image, the reality of action, a photography), but they do it in order to find the 'right answer' among the interpretations they offer in the discussion.

- **transgression-based strategy:** a participant ceases seeing the image and begins to construct the reality 'explaining' his/ her interpretation.

Examples:

> Fragment 3: *It may be a lecture in a modern university. A teacher gives a lecture… But it is not a Russian university… I would say it is … Norway? There all the teachers are like in the picture. They are … more … outgoing ..*
>
> Fragment 4: *Here actually one can see a problem of the society shown in this lecture: many people have no motivation to do what really must be done. So called, lack of motivation and priorities set in a wrong way.*

While students deal with the image, their visual attitudes are shaped. We see this process as an ambivalent one: on the one hand, students facing a visual stimulus start to identify it; on the other hand, students deal with the visual stimulus from the perspective of their subjective experience in working with

other visual images. Thus, every time a person faces a new visual stimulus, he/ she perceives information the stimulus bears regarding his/ her inner attitude or what we call presupposition.

One should also mention, that the participants trying to find support for their interpretations

- address to their mates seeking for the 'support' or react to the others' versions with agreement/ disagreement;

- address to an organizer – to clarify the task/ to receive the response if the 'right answer' has been named/ to restate the procedure of a traditional class.

Conclusion

The objective of the presented research was to examine the signs of text-oriented strategies in communication of education participants. The visual artifact –a photograph was used to inspire a series of utterances which demonstrated the communicative positions and strategies of the experiment participants. It also allowed us to detect the conditions of mediation for the participants' perception. As the analysis has shown, text-oriented strategies (participants dealing with the plot of the image; attempts to decode a visual image as a text) and text-oriented mediation dominated the discussion and were expanded onto the whole communicative environment of the class.

The next stage of the research will be work with the transcript of the class – the participants will read and discuss it. We see such work as a tool to develop students' critical perception of their own communicative strategies as well as of their way of dealing with a visual image. The analysis of the experiment organizers and the participants' communicative strategies will become a basis for a technique of dealing with a visual image in education. We see that technique as the one overcoming text-oriented strategy and allowing students to gain the skills of dealing with a visual image.

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A case study on correlations between thematic scaffolding, emancipatory practices, Minecraft Edu as a learning platform and the participants skills generated in a long term, digital-creative project

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Introduction

According to pioneering research the request for visionary pedagogical perceptions on and concepts for learning rises, as the lives of elementary school students are turning virtual, interactive and digital (Kumpulainen, Mikkola & Jaatinen, 2013). Constant technological advances calls for contemporary, creative and dynamic learning practises. This need also counts for students, educators and pedagogues in Danish school leisure clubs and schools (Mehlsen, 2014).
As a contradicting fact the Danish School system, at its present state, has an increased focus on tests and measurable learning within classic disciplines rather than experimenting with e.g. disciplines and visionary digital learning strategies. And the lack of predictive validation of the future impact of this evaluating style and traditional goal-oriented approach (Peter Allerup, 2017), points critically to a learning style by which the students are subordinated knowledge embodied in an educator who is primarily responsible for transferring curriculum rather than thinking beyond it (Ranciére, 2007). In general this problem advocates that complementary and alternative methods and environments are in need to help the students obtain e.g. interdisciplinary creative and digital competences to become self sufficient learners of tomorrow (Kumpulainen, Mikkola & Jaatinen, 2013).

In contrast it is assumed to be more acceptable to work experimentally, laterally and interdisciplinary in leisure clubs, why they may have an optimal setting for field studies on informal learning in a emancipatory environment. Consequently the empirical part of the case study from Ørestadskole leisure club has its primary focus on a specific creative Minecraft project as a leisure activity. It serves to identify and test phenomena or factors influencing the outcome related to a specific Minecraft project that combines thematic scaffolding, software qualities and an emancipatory, creative learning strategy. Possibly this

leads to new hypothesis as the case progresses. Or it might point out emerging areas of scientific interest that calls for a complete investigation and effort.

This case is expected to evoke a perspective on the simple means by which, Minecraft a platform in a virtual-creative project at Ørestad Skole, triggers new learning potentials in students. Deductively the case describes and test the theory and hypothesis behind the thematic project design and in process hypothesis are also formed dynamically (abductive method) as theory and assumptions are reflected or confirmed in the empirical research or when observations/data reveal patterns in practises and views of the participants.

Scaffolding the learning design: Thematic design

At the school club Minecraft is an informal discipline and a helping tool in other disciplines such as architecture-, game- and engineering design etc. It is a part the realm of these students but it is not necessarily implemented in school activities. Preliminary observations on elementary students (ages 8-10) attending the leisure club indicates that using Minecraft EDU as construction game and learning platform conjugated positively with emancipatory, participatory and creative learning strategies. Observations also indicates that Minecraft and the physical settings at Ørestadinvites to a participatory learning style that reinforces their ability to become self sufficient and socially minded at the same time.

Assuming that Minecraft is suitable platform for co-creative digital productions and for generating divergent- creative thinking(Edward de Bruno), as it is possible to code, construct, alter and develop creations by using virtual blocks, mods and functions, we need a spacious theme that appeals to the intellects and imagination of a diverse group of students. Descending from Foucault's idea of heterotopias e.g. the museum as organising an "[…]indefinite accumulation of time" or a theater representing "[…]several places, several sites" (Foucault, 1984, p. 7) in a single place the thematic choice became the Museum. The Museum theme corresponds to Minecraft functions, because Minecraft also accumulates time and space virtually and simulates or juxtapose different contexts and phenomena that are both present and absent, when students build and communicate in a community on a server. It is possible to draw parallels between Minecraft and a museum as they are both heterotopic counter-sites (Foucault, 1984, p 3-4) that incorporate the same qualities: "They are absolutely different from all the sites that they reflect" (Foucault, p. 4). Our computer room also resembles a heterotopic place like a theater, because the students enact, divert or mirror their culture into imaginary, heterotopic scenarios or sites in a virtual community on a physical site. Accordingly students create representati-

ons of their versions of e.g. history, cultural functions, places, relations while being inhabitants of their own time or narrative. They are participants developers and educators why this Museum becomes an interactive Museum.

On emancipatory practises Ranciere express that the mean by which you learn, in his case a formation novel and language, must contain intellect or complexity. A museum parallels the educative content of a formation novel or narrative, and the students have to master the tools to express or comprehend content , while interpreting the content of the novel or museum simultaneously. His case resembles and sets an example for our emancipatory learning strategy as students have to learn new skills in Minecraft to realize visions while learning about museums.

An aesthetic dimension is also present in the Museum theme and coherent to the virtual-aesthetic profile of our school. Ørestad has no museum because it is a newly constructed city. Mentioning the Museum as a potential part of our aesthetic realm reveals a blank spot to inhabit. Our first museum at Ørestad turns digital and virtual by the invention of Museum Minecraft. After having explored museum types, YouTube videos most students have an idea of where to begin. A light scaffolding is presented by an open and challenging question with no conclusions made beforehand (Simon, 2011).

How would you contribute to a Minecraft Museum City? Subquestion: What museums do you know?

Emancipatory pedagogical and psychological approach

A part of the emancipatory strategy is to let students support each other prior to be subordinated an educator (Rancière, 2007) while bridging the "Zone of proximal development". Subsequently the theory of ZPD founds our practical learning style that bridges the emancipatory learning environment. The hypothesis: What students are "capable in a collaborative situation today they are capable of executing independently tomorrow" (Vyogotskij S.L., 1974, p. 298) characterizes and supports the manner in which students develop and exchange skills and technological ideas by means of a Minecraft Minecrat, as a emancipated, virtual and"heterotopic" (Foucault, 1984; Petersen, 2002, p. 99-100) counter-site to traditional learning environments, the school and Ørestad City.

Staging the project, students attend the first informal virtual-creative workshops as experimenting co- creators rather than subordinated recipients and users. Knowledge of the students and pedagogue is aligned by letting the Museum theme and Minecraft become the common intellect(Ranciére, 2007), that

release the learning potential. Additionally the thematic framework and Minecraft is assumed support creative or divergent thinking (Bruno, 1996) and an emancipatory pedagogical style(Freire, 1973) in a reciprocal way. The students are empowered through common, creative processes rather than receiving the skills and knowledge of an educator.

Initially they show how they collect knowledge by means of You Tube, books, and software etc. Deliberately the pedagogue takes the role as a participator, who accommodates brainstorm meetings, helpdesk and conflict management, to embed an emancipatory strategy. The agenda is to keep them on track (Ranciere, 2007)and be suggestive by handing them sources e.g. pictures of architecture, ruins and museums or talk about Ørestad as an architectural realm.

Participants and empirical studies

A core group of 10-20 participants and the pedagogue, who attend most creative Minecraft projects (2015-2017)are to be observed on video recordings produced in different aesthetic or creative Minecraft projects. 3-5 persons from the Museum Minecraft are interviewed approximately 15 minutes each. These interviewees are chosen because of their advances in Minecraft productions and concepts of creative methods.

Physical settings Physically the environment is gamer room counting 8-10 PCs , which are hooked to a common LAN based server. Minecraft EDU is installed on each PC and functions as a multiplayer and crafting software platform. A master PC connected to a big screen enable students and pedagogues to share videos, screen recordings, avatar perspectives and the masterscreen with everyone. The master user co-creates and save during and after each session.

Virtual setting Minecraft Education software is set in multiplayer, creative mode, which simulates an engineering program and functions as a virtual crafting platform for avatars (Drotner, Koppernagel & Schrøder, 2011, p. 17). The virtual space and software platform forms a construction game, play zone and functions as a mirror of workmethods, relations and places, in which they can form a heterotopic countersite (A.R. Petersen p 99) alongside, simulating or interlaced with the realms of physical space.

Time and duration The Museum Minecraft (2015-2016) project has no deadline. Participants attend and form groups when they want. They create 1 or 2 hours per week in a production phase. Some choose to watch the producers, creators or developers to evolve new ideas. The Museum Minecraft project turned into a long term developing project that ended when the students were

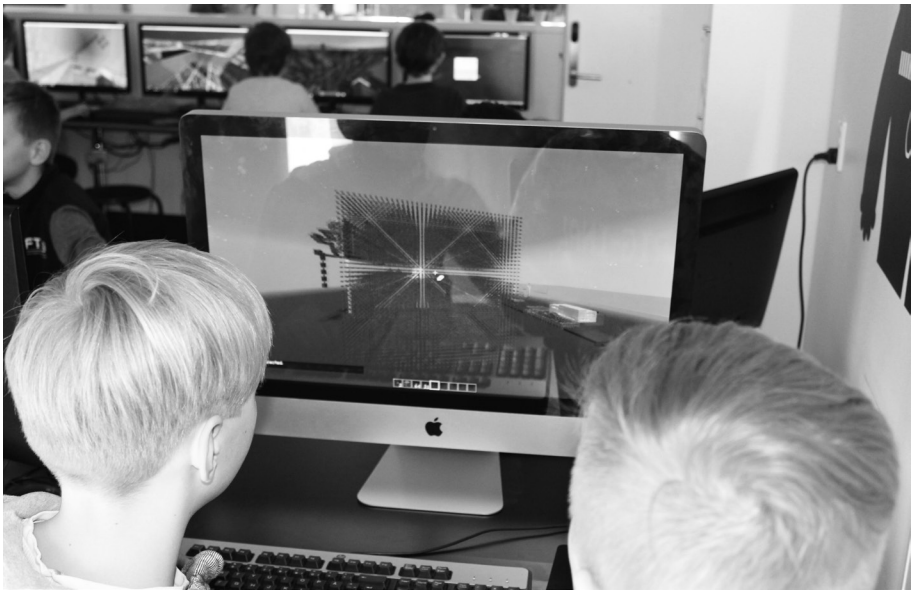
leaving the school club. Until that time Museum Minecraft was a virtual meeting point and the creative work on this serverspace lasted approximately one year.

Processing an emancipatory, creative Minecraft project

Processes are calibrated by dialogues in and outside the PC room. Occasionally the pedagogue presents challenging questions. Is it possible to create or find round shapes which contrasts the square space of Minecraft? Is it possible to create new types of movement in Minecraft such as interactive installations or optical illusions? Meta challenges are formed in order to take an emancipatory break from a normal perspective and see Minecraft as an interactive intelligence, that also has to be challenged.

As a response to the provocative questions and a presentation of a YouTube video, a 10-year-old master user examines the advanced redstone functions that lead to interactive blocks. Several trials and discussions later he is able to create artistic, interactive installations (fig. 1).

Today this pupil conducts master classes on a shared big screen which functions as an emancipating way of exchanging and collective culture. Another participant shows great progress, as he creates a 'bugged' security and sensor system capable of making a server breakdown when trespassed (Fig. 2).



Evidently these students have obtained contemporary and useful skills by working in Minecraft and the virtual- aesthetic museum.

Empirical methods and evidence

As I position myself as observer and participator, the empirical part is supported by supervising videos, screen recordings (produced by students)and photos, that document practices more objectively and saves data for further analysis. So far data and information that links directly to the Museum Minecraft project consists of qualitative semistructured interviews, videos, photos and a test survey .Concerning the present status of this case a participatory perspective on the hypothetical effects of Museum Minecraft project is of interest: Have the students experienced change in perception, methods or an advance in skills by using Minecraft as a learning platform and attending the Museum Minecraft project?

Why is Minecraft a beneficial tool in emancipatory pedagogical practises? Have they become independent creators or thinkers? What are the influential contextual factors? Does the data reveal any signs of this?

To narrow down the area of investigation, a "test" survey is formed to initiate an understanding of what the participants conceive as important factors when creating in Minecraft. The test indicates that a majority of the students, only half have contributed to the Museum Minecraft server, finds that aesthetic

qualities in Minecraft is of importance. 9 out of 10 students points to experimental approach as important when crafting. This discloses a need for an expanded survey to generalise to what extend the aesthetic and experimental approach in Minecraft assures motivation, creativity and divergent thinking. Secondly it points in the direction of examining factors related to creative processes in Minecraft Musuem in depth by qualitative interviews.

Qualitative data from semistructured interviews (Brinkmann & Tanggard, 2010) with participants is expected to document and reveal plausible correlations between producing in Minecraft, this thematic scaffolding and advances in digital-creative skills through emancipatory practices. First audio-recording of an interview with a participant from Museum Minecraft (L., 11 years, National champion in architecture) has been transcribed and coordinated thematically with the interpretation to overview contextual factors and outcome of relevance. Extract of transcription and interpretation (fig. 3.)

Minecraft and the project's influence on social skills

Me: "Did you learn something else"? L: "In the project"? "Yes. I learned e.g... I was terrible at collaborating with others. And actually I learned that over this period of time." Me: "Does the other students pay interest in what you build?" L: "Yes, because many are asking. How do you do (craft) that?"(...) Me: "Who and how collaborate in the Minecraft server?" L: "We usually work together on a project...a bit everywhere. Then we gather in groups."	Working collectively as multiplayers in Minecraft Museum at the leisure club had a great impact on this participant's social skills. At the leisure club they, form groups, advance to an emancipatory level and exchange knowledge by co-creating, asking and inviting each other. They have their mind on the process and the shared benefits of the community.

Skills and learning styles when creating in Minecraft

Me: "What do you like about Minecraft ?" L:"Your fantasy is the limit in Minecraft"(...) Me: "When you created security-systems at the museum it evolved... have you continued that process. How did it evolve?" L: "Well, the door functioning as a security-system? Mmm. It was about me experimenting a lot and then I made a mistake in the game (Minecraft). And that turned into a security system". "Me: "What is your speciality in Minecraft?" L: "I believe redstone. Technique, doors and tracks. Functions. If I do one thing it triggers a reaction and this releases a new reaction. In that sense."	Experiments, or even mistakes, endless possibilities, challenging and logic functions is a motivational factor, which helps L to invent and gain new perceptions of how to create in Minecraft. Conclusively creative and divergent inventions and perceptions are dependent on minimizing fear of mistakes and experiments. Minecraft supports that.

Impact of the thematic scaffolding

Me: "What is the difference in working in Minecraft at home and at school (club)?" L: "At that time they had..over there (in the leisure club) you had the chance to cooperate and the projects were thematic. We carried responsibility for the thematic approach."(..) Me: Did you learn about museums when you built Musuem Minecraft."? L: "Yes I became interested in museums. Fx. the ones we built were, well, cooler than the ones we see in reality".	It makes a difference to have a thematic approach such as Museum Minecraft e.g. his interest in museums and architecture was evoked by this project. And he sees the benefits of Minecraft being a virtual counter-site that contrasts reality. This indicates that Minecraft themes opens his perspective on real physical sites and concepts and on the other hand he appreciates Minecraft as a platform for divergent thinking, new perceptions and alternative reflections.

Creative methods generated by means of Minecraft

Me: "Recently you participated in the national championships in drawing, sculpting and architecture. Do you believe that it has helped you thinking 3D?" L: "Yes it has. I sketch in Minecraft. And it has inspired me to do three-dimensional drawing and architectural design. Minecraft has helped me learn that. I have received much inspiration from combining blocks or bricks. I like drawing that."(...) L: "Everyone thought I would lose because I was sketching while the other boy was drawing. Suddenly my luck was turning when I began to draw my final contribution. A wooden house in a treetop... And it was actually inspired by Minecraft... And the championships is not about the pretty drawings but about ideas and how you think while doing sketches. It is not right to study only one thing. You have to study many things."	L is now practising a divergent and process-oriented creative style when working in Minecraft which also was source of inspiration when he participated in and won the National Championship. He advocates that Minecraft is an important methodical tool when creating and inventing. He combines methods of working in Minecraft with tools or processes outside of Minecraft.

Preliminary results

Minecraft Edu, as it is launched at Ørestadskole in the context and pedagogical environment of our leisure club, embed an emancipatory, project oriented learning environment during the Minecraft Museum project. The virtual-physical heterotopic platform, that Minecraft Edu and the computer room form, functions as a contemporary counter-site to other school activities and environments. Initial empirical research corresponds to the case hypothesis based on emancipatory pedagogical theories and partly confirms that this co-creator Minecraft project is linked to development of social, creative skills and students independent thinking. This case also indicates that the theoretical bridging and learning design of Museum Minecraft unfolds a platform ideal for creative processes and divergent thinking while empowering the students. Additionally it is evident that the educator facilitating Museum Minecraft as an emancipatory

digital learning environment, needs the skills and theory to scaffold in an interdisciplinary complexity and understand the qualities in or lack of qualities in software to provoke learning or development. Initial data analysis confirms that the learning environment attached to Museum Minecraft e.g. thematic scaffolding, experimental approaches, physical settings, emancipatory pedagogical style has an effect on the type of competencies, interests and methods students develop. Several of our students show great results in aesthetic disciplines and it is plausible that the digital-creative Minecraft activities and the methods of learning in our leisure activities are to be partly accounted for that success. How do we appropriate and share this learning style? Consequently more cases and or qualified scientific research is needed to assure and release this learning potential and argue that implementation of long-term informal digital-creative projects help students bridge into the future.

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Video Essay: The multimodal assignment of now

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Introduction

Film and video lecturers are subject matter experts, however many individuals still use traditional teaching methods. To deliver relevant and engaging teaching, lecturers can turn to an emerging form – the Video Essay. The Video Essay is multimodal and works in accord with media literacy practices. As a contemporary approach, the Video Essay is an effective tool in the teaching curriculum (Bateman, 2016; McWhirter, 2015).

This abstract is a summary of our research project funded by a WAND (West Australian Network for Dissemination) teaching and learning grant. The project objective is the design of a Video Essay Resource package to support the introduction of the Video Essay form into teaching areas across creative industries and to encourage learning through multimodal engagement. The Vides Essay Resource package is currently in the design phase and will be online in July 2017.

Current Teaching Practice

At Edith Cowan University in Western Australia, the Video Essay has been trialed as an assessment alternative for film students. Students were given the option to compose a Video Essay or traditional text based essay for an assessment. Those students who took on the creative challenge of working with the Video Essay were enthusiastic at the opportunity to work with the medium and language of film. However, some students immediately fell into writing a traditional essay and recorded the content as a narration and applied corresponding images. On reflection, it demonstrated that this was not the most effective approach to introduce the Video Essay and students didn't explore the potential of working multimodally.

From this trial, we realized that there was a need to investigate the pedagogical application of the Video Essay and introduce activities that targeted the elements of multimodality. A preliminary investigation of the literature established a definition of the Video Essay; examined knowledge acquisition and multiliteracy skills through multimodal composition, and identified issues inherent

in the Video Essay. These issues included copyright matters, academic rigour and assessment rubrics. To create an effective pedagogical framework to the Video Essay the New London Group theories in multiliteracies, multimodality and knowledge processes was applied (Cope & Kalantzis, 2009). The result of this investigation is the Video Essay Resource package.

Literature Review: The Video Essay Form

The term Video Essay is difficult to define as it is still evolving from a longstanding cinematic history (Alter, 2007; Faden, 2008; McWhirter, 2015). We used the literature to formulate a definition of the Video Essay form from two standpoints: from a screen studies and an educational perspective.

From the screen studies perspective, it is a video that analyses specific topics or themes relating to film and television and is relevant as it comments on film in its own language. As a structure, Arielle Bernstein (in Bernstein, 2016) sees the Video Essay as thesis-driven, with an analytical framework, using images with text so that the viewer can read and interpret the images in a particular way, or to view an original work as a re-interpretation.

In educational settings, the literature defines the Video Essay form in multifarious ways: digital video, video documentary, video assignments. The role of video as a pedagogical tool is through teacher/student-learner generated video (Bruce & Chiu, 2015; Kuchel, Stevens, Wilson, & Cokley, 2014; Walters, Hallas, Phelps, & Ikeda, 2015); providing a multimodal experience to students, many of whom are already video makers using mobile technologies outside formal learning environments. Students can form new understandings of a subject by intentionally using their video skills in a creative and expressive way. As an alternative to text based assessments, the Video Essay presents opportunities for students to experience the transmediation process that occurs when composing between written-text to digital forms (Smith, Kiili, & Kauppinen, 2016).

For this project we refer to the Video Essay in the context stated by Eriksson and Sørensen (2012) whereby the form is primarily a merge between practice and theory as audiovisual production and academic scholarship. Grant (2016, p. 4) establishes Video Essays as "self-contained performative acts." These are multimodal transmedia artefacts that "make a direct and original research contribution." According to Faden (2008, p. 4) the "scholar must consider ideas of image, voice, pacing, text, sound, music, montage, rhythm, etc… And by grappling with these problems firsthand, scholars instantly improve their critical and teaching skills".

The Video Essay and Multimodality

The term multiliteracies created by The New London Group (1996), is a literacy theory in response to communication technologies and transnationality, both influencing the way communication and language are present in the global information society. Digital communication and multimedia signaled a shift away from the traditions of text and speech and new modes of meaning emerged. Multimodality is the simultaneous use of two or more individual modes to form meaning these being; written language; oral language; visual representation; audio representation; tactile representation gestural representation; spatial representation. Multiliteracy is therefore defined as a complex interrelationship between the individual modes of meaning, a "form of communication that uses a combination of written, audio and visual forms to convey an idea and works in tandem with media literacy movements" (Ragupathi, 2012).

When engaging with multimodal forms, students can experience transformative learning. Defined by The New London Group (2000) as a pedagogy of multiliteracies, transformative learning identifies four related components or learning dimensions: Experiencing, Conceptualising, Analysing and Applying. To experience transformative learning the students must be immersed into a process of weaving and interacting with each dimension in a purposeful way (Cope & Kalantzis, 2009).

Multimodal Composing

There are advantages to using video in education, the Video Essay being a more sophisticated multimodal form offering authentic learning opportunities for students. Students can experience challenges and benefits when composing multimodally. They need to negotiate, apply, and integrate individual modes to coordinate and transfer "multiple semiotic resources" to convey meaning in an academic way to an audience (DePalma & Alexander, 2015, p. 182). Translating meaning into multiple modes can be 'messy' learning and requires problem solving skills which can promote metacognitive thinking (VanKooten & Berkley, 2016). The creative challenge of using images/sound to communicate a topic makes it more involving and insightful, encouraging academic rigour from an analytical and research-based perspective.

The Video Essay Resource Package

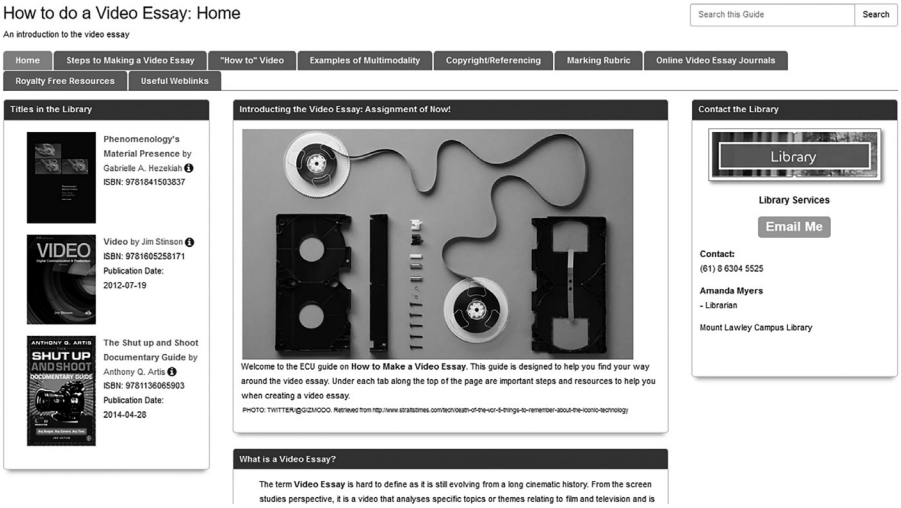

Figure 1. *"How to do a Video Essay" Library Guide – Video Essay Resource package*

This project required us to define the Video Essay through a literature review; facilitate a video production on "How to do a Video Essay" and design a resource package that is generic in content to accommodate different teaching areas across creative industries. Currently in the design phase, the Video Essay Resource package contains:

- a student-produced video production on "How to do a Video Essay,"
- exemplars of academic Video Essays;
- examination of individual modes in multimodality;
- resources in video production skills,
- copyright, referencing and creative commons information;
- Student activities and assessment rubric guideline (based on Australia Qualifications Framework)

The package will be hosted by the library guides SpringShare platform with online access and statistical reports to monitor the number of views over time.
Conclusion

The Video Essay is a "supertool" for learning (Bruce & Chiu, 2015) and takes advantage of the existing production skills of students and combines it with multimodality and critical enquiry. We foresee the potential for the Video Es-

say form to facilitate learning and teaching practices across disciplines in the creative industries. With the launch of the Video Essay Resource package in July 2017, we hope to encourage academics to embrace the Video Essay as an assessment option for their teaching and to gain further insight into the Video Essay through future research and publications.

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Virtual Video analysis: A dialogic event

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Abstract

This workshop explores the ways video analysis might be made accessible to collaborators who do not necessarily share the same physical space and when working with different video sources. Based on a project currently underway - working with early childhood education services to try to understand two year-olds in curriculum - Jayne will firstly share some of her experiences in working with the programme v-note and its methodological contributions to dialogic principles concerning visual surplus. Then, v-note developer, Brandon, will show participants how to work with the software, what to expect and why v-note takes the field one step further in research practices that invite multiple perspectives in the process. Individuals or groups who wish to discuss potential projects are welcome to do so.

Video ethics with infants: International Perspectives and Challenges

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Abstract

International teams of researchers located across New Zealand, Scotland, Finland, Samoa, Cook Islands, USA, Australia and Brazil embarked on a video project last year. Their quest was to try to understand the social and emotional experience of infants as they enter into early childhood education services for the first time. Since the project draws heavily on video excerpts of key events such as arrival, departure, routine, play and interactions, each team sought ethical consent to undertake this work. This presentation outlines some of the many and diverse perspectives towards such an undertaking for each country, and, in doing so, highlights the considerable challenges facing researchers who work in this field.

The research that informs this presentation is based on a current Teaching, Research and Learning Initiative that seeks to better understand the pedagogic nature of two-year-old dialogues in preschool classrooms that were initially established to support older learners. Two year-olds, their peers, and teachers were simultaneously filmed from their visual fields: the first tracking the two year-old explicitly; the second from the teachers visual standpoint; the third taking into account the wider visual field. Teachers across two different early childhood education sites were separately asked to interpret a series of dialogic events of pedagogic significance for two year-olds based on this polyphonic footage during their staff meetings. Researchers undertook the same process in the Video Lab. Their collective insights were subsequently shared as a secondary source of visual surplus which informed subsequent phases of analysis and provided a multi-voiced polyphony of insight concerning two year-old experience, the role of teachers, peers and the wider environment in promoting

(or stifling) learning. The analysis draws from Bakhtin's dialogic methodology (1986) which posits that calls upon interlocutors and researchers alike to immerse themselves in the communicative links that grant meaning through a chorus of (plural) voices.

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Problematizing video analysis rooted in the verbal: Examples from culturally and linguistically diverse science classrooms in Luxembourg

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Abstract

In this presentation, we question the use of video analysis methodologies that are linked to and/or rooted in verbal constructs. Starting with the perspective that science education is a practice that unfolds in interaction, and that prioritizing the spoken and written aspects of science learning does not present the complexities of communication and engagement in science classrooms (Jaipal, 2010; Kress, 2009), we present what we have been learning through analysis of the embodied ways students engage in science. We will demonstrate the processes we use to background the spoken in analysis in order to highlight the nonverbal ways in which Culturally and Linguistically Diverse (CLD) children engage in science investigations. This is significant given the rich cultural and linguistic landscape of the classrooms in which we work and the difficulties many CLD students experience with German as school language (Weber, 2008?). Through the presentation of three examples arising from video analysis of interactions in multilingual classrooms in Luxembourg, we share how we background the verbal (Norris, 2004) in our analytical processes, and through doing this, question first, what does this brings to our video analysis in ever-growing multilingual school contexts, and second, what does this add to our understanding of science learning in general, and the role of nonverbal interaction in multilingual contexts with CLD students in particular.

Keywords: culturally and linguistically diverse students, multimodal, embodied, video analysis science

Introduction

Video analysis in classroom contexts driven by frameworks and methodologies that prioritize the spoken can place culturally and linguistically diverse (CLD) students at a deficit (Authors, 2017). The research projects that our team enga-

ges in examine the resources CLD students employ in science investigations in a multilingual school system, and thus we have come to question the use of research methodologies and theoretical frameworks that prioritize the verbal. In this position paper we present video data from three interrelated research projects conducted in CLD classroom contexts in science classrooms in Luxembourg in order to underscore the benefit of analytical methods that bring embodied and multimodal engagement into view. In comparing selected episodes from these three studies, drawn from both primary and secondary science instruction, we will illustrate how video analysis that incorporates the multimodal and the embodied can help researchers overcome deficit views of students' participation in CLD classrooms by revealing the wide range of resources students employ, in addition to the verbal, when participating in science instruction.

Theoretical Grounding: Turning toward the embodied and multimodal

In our research, we theorize human interaction in general, and interaction in classroom contexts in particular, as situated, evolving from discourse-in-interaction, and mediated by the resources that agents, in this case students and teachers, utilize as they participate in meaning-making events (Kress, Jewitt, Ogborn, & Tsatsarelis, 2001; Siry, Ziegler & Max, 2012). These meaning-making resources are abundant and may include language, gaze, body position, gesture, image, sound, spatial orientation, and movement (Kress, 2009; Jewitt, 2009). Through different combinations of these semiotic resources, people orchestrate meaning (Jewitt, 2009, Kress, Ogborn, & Martins, 1998), and in doing so draw upon the nonverbal as well as verbal (Arnold, 2012). Multimodal research approaches have established the importance of modes other than the verbal in the context of interaction and learning in general, and in science classroom contexts in particular (Kress, et al., 2001; Roth & Huang, 2011). Research that explores embodiment, particularly through the use of multimodal methodologies, can reveal understandings of how learning and interacting are connected. This can lead to further understandings as to how to create spaces for effective pedagogies that build on the embodied nature of learning.

Prioritizing the spoken and written aspects of science learning does not present the whole human complex of communication and engagement in science classrooms (Jaipal, 2010). In this position paper, we present three episodes of student engagement in science lessons, and demonstrate how analytical approaches that background language can provide more robust view of students' engagement in science practices as well as their science-related understandings,

in particular in culturally and linguistically diverse classrooms. Backgrounding the verbal in the analysis of students' practices in the science classroom reveals the social and material engagement of CLD students' participation in the practices of science.

The Luxembourg Context

Geographic, historical and cultural factors have made Luxembourg an officially trilingual (Luxembourgish, German, French) country characterized by a "Mischkultur (mixed culture)" (Péporté, Kmec, Majerus, & Margue, 2010, p. 9). Accordingly, Luxembourg's primary school policy focuses on students being taught in the three languages of the country. At the completion of secondary school students are expected to be fluent in the three languages. To support students in this goal, 44 % of total instruction time at the primary level is dedicated to the instruction of languages. This is the highest percentage in Europe, followed by Malta with 14.9 % (European Commission/EACEA/Eurydice, 2017, p. 11). One of these languages, German, is stipulated by the national curriculum documents as the main language for the teaching and learning of science (*Plan d'Études*/Study Plan, MENJE, 2011).

Adding to the linguistic diversity stipulated in national curriculum, the country has the highest density of non-national residents in Europe. Most of these nationalities are European, the highest percentage being from Portugal. Luxembourg's *super-diversity* (Vertovec, 2007) is reflected in its public schools, almost half of the student population (43.8 %) holds a nationality other than Luxembourg (MENJE, 2015). The diversity is such that students speaking language(s) other than Luxembourgish at home are a majority (MENJE, 2016). In primary school, the latest data available (2013/2014) indicates that 61,3 % of the primary school children have languages other than Luxembourgish as a first language (MENJE, 2015, p. 10). Thus, an extremely high proportion of students learn science through a second language, or a language that is not spoken at home.

Examples from CLD classrooms in Luxembourg

Next we present key episodes selected from three classroom research projects. The episodes we present herein were purposefully selected to show embodied interactions that became evident when we backgrounded the verbal in analysis. As a result, through a presentation of these three episodes, we will underscore key points we see that arise when the embodied and multimodal are prioritized in educational research video analytical processes.

Example 1 - Embodied interaction with a thermometer. This first episode occurred in the context of a primary school research project conducted by three researchers, including two of our authors, Sara and Chris. The focus of this project was on student-driven inquiry-based science learning about the topic of evaporation and condensation. The ten to eleven year old students in this class were provided with everyday materials to design science investigations, as well as tools, such as thermometers. The episode that follows occurred on the first day of investigation, when student small-groups were first working with the thermometers. In Figure 1, Calia (right) and a second student (left) were sitting at a worktable. They had a set of materials including a thermometer, and aluminum pie plate on the table in front of them. Calia picked up the thermometer, and gazed at the thermometer (fig. 1a). She next interacted with the thermometer as she placed her hand over the bottom bulb (fig. 1b-d). She repeated this action, wrapping her hand around the bulb, and then gazing at the face of the thermometer (fig. 1e). Calia next said to her partner, *Oh that (the thermometer)…it doesn't work* (fig. 1f). He replied, *Yes! It works*, taking the thermometer from Calia (fig. 1g). *You have to always.. Later in cold water, it goes down*, he said as he looked down at the thermometer (fig. 1h).

In this episode, Calia was seen engaging with the thermometer as she explored how it worked. Through her repeated action (gaze directed at the thermometer, the wrapping and unwrapping of her hand around the thermometer bulb) she

attempted to see if the thermometer reading would change. This episode shows her engaged in complex interaction with the thermometer. This illustrates how a consideration of the embodied multimodal repertoire of engagement with classroom materials was manifested in action that was not rooted in verbal interaction. Instead, it took place through engagement with a science tool. In considering this example, it is helpful to contextualize that outside of the frame of this episode, Calia was working with three other students, all of who engaged more verbally with each other over the course of their science investigation. If the verbal had been foregrounded during video analysis of this segment of investigation, this moment might have been overlooked as no spoken utterances occurred until the end of the episode.

Example 2 – Pedro's embodied participation during an experiment with a water filter experiment. The following episode is from a second study conducted with 8-9 year old children. One of the children in the class, alias "Pedro", is "Lusoburguês", meaning a Luxembourg-born and educated child with a so-called hybrid identity, being culturally, linguistically and nationality-wise Portuguese and Luxembourgish. The episode that follows is from one lesson extracted out of a series of five on environmental education, and focused on the water cycle. During this fourth lesson, there were four stations students moved among. The following video analysis focuses on Pedro and his group's investigation at one of the four stations, devoted to a water filtering experiment. Pedro's concretely embodied participation during this experiment was particularly different from his participation in other stations, which did not include manipulation of an artifact. In our observations of prior moments, Pedro seems to be passively engaged in the different tasks, especially those that included writing and/or speaking German.


Figure 1


Figure 2


Figure 3


Figure 4


Figure 5


Figure 6


Figure 7


Figure 8


Figure 9

The group of children in this example determined the roles in the experiment on their own when they arrive to the station (see Fig. 1). Through video analysis without the verbal support of this episode, Pedro's change in participation and embodiment is remarkable and sudden. We draw on Goffman's notion of "footing" to illustrate Pedro's sudden change of participation as seen in the video analysis. Goffman (1981) states that "a change of footing implies a change in the alignment we take up to ourselves and the others present as expressed in the way we manage the production or reception of an utterance" (p. 128). This change of footing is visible in the beginning of the task, as Pedro distributes the roles (Figure 1) and in doing so, acts as the "manager" or leader of the group. As can be seen in the video analysis, Pedro is also the first one to address the worksheet (Figure 2) while his other colleagues are still distributing the worksheets. However, Pedro relies on copying from his peers (Figures. 3 & 8) when it comes to writing in German, changing footing and role quickly again, thus becoming a peripheral member of the group.

Pedro is not able to use his home language (Portuguese) as a resource during this activity, as the other children around him default to a use of Luxembourgish. However, through video analysis we see how during an active investigation, Pedro undergoes a sudden change of participation, he who ad-

ditionally does not appear very confident when it comes to other types of tasks such as writing in German (seen in Figure 3). Video analysis also reveals how the leadership of Pedro continues even after he copies from his colleague, which shows a more peripheral role.

Example 3 - Embodied explanations about sustainability. The third example comes from a secondary school, where students at the age of 16-30, who dropped out of the traditional school system, have the chance to gain a leaving certificate. Most of them have a linguistic repertoire of more than three languages. The school supports a holistic approach to learning and diverse forms of assessment. Two of our authors, Anna and Chris, were acting as supporting teachers, and thus additionally encouraged the usage of students' full linguistic and semiotic repertoire for meaning making in the classroom. This third episode occurred in a small-group activity during a project about sustainability. The students were arranged into groups in order to prepare a poster about a specific sustainability related topic. The teacher organized a jigsaw activity for each group to share their ideas with the other groups. It is during this jigsaw activity that one CLD student, alias "Sandra", with a linguistic repertoire consisting of seven languages, explains her topic of investigation to her group. All of the students in the group are plurilingual and in their conversation they make use of their whole linguistic repertoire both for expression and understanding of the others by *translanguaging* (García, 2009). However, as all students have different levels of proficiency and linguistic repertoires, it is not always clear to the speaker what the listeners might understand in which language. In order to bridge possible language gaps for the listeners, it is meaningful to use other, nonverbal means of communication.

It was only during video analysis when we focused on Sandra's almost theatrical performance, that what she was saying in her gestures, eye gaze and body movement became more evident. It was almost as if someone who was not fluent in any of the languages could follow everything Sandra said because of her very expressive nonverbal ways she told her story. Sandra used extensive gestures such as those shown in the examples below:

Sandra: Eh, the soil, *where they plant, they sow*

Fig. 1: soil

Fig. 2: plant

Fig. 3: sow

She first describes the flatness of the soil on a field with a swiping of her hand (Fig. 1), she imitates the hand movement of planting seedlings in the soil (Fig. 2) and then, it looks like as if she was sowing invisible seeds on the field she describes at the beginning of the sentence (Fig. 3). In this way she adds the idea of land grabbing, which is the deprivation of cropland from local farmers by big companies, to their discussion about water extraction in Africa. When discussing less concrete concepts, Sandra would support with several gestures, as gestures are not identical across cultures even in closely related cultures like German and French (Kress, 2009). In Fig. 4 for example, she describes the rather abstract concept of 'not anymore' in the sense of absence. She combines a swiping hand movement and additionally, a shaking of her head to indicate that something is not there or missing.

These examples demonstrate Sandra's embodied engagement in science, which is much deeper than only the verbal means of expression would suggest. This is why it is important to consider especially in multilingual contexts, nonverbal means of expression, as students make use of them as a resource to express their understanding more fully to their plurilingual listeners to facilitate their understanding.

Discussion

The three episodes we present in this paper span a variety of classroom contexts, yet when considered collectively they illustrate the power of methodologies that "turn the sound off". Specifically, the examples and analysis we present underscore how multimodal analysis, and analytical approaches that afford views of students engagement without leaning on the linguistic, reveal the multiple rich resources that CLD students bring to classroom engagements. In the discussion we hope to present in an expanded manuscript, we will further detail how the three episodes, when considered together, demonstrate the importance of methodological approaches that reveal students' abundant communicative resources and engagement in science. We will detail the problems that can occur when conducting video analysis in CLD classrooms, namely analytical views that miss or overlook student engagement and explanation using modes other than the spoken. We will then discuss in further detail the methods we have incorporated into our analytical approaches to overcome this bias. Namely, conducting first rounds of analysis with the sound off, in order to work to overcome our listening bias. Second, to conduct analysis along timeframes and within units of analysis that are not bookended by verbal cues.

Implications and Conclusion

The three episodes we presented herein have shown how "turning the sound off" and viewing classroom videos through methodological lenses that reveal focusing on the nonverbal reveals embodied, multimodal engagement in science classrooms backgrounding the verbal in analysis can uncover more of students' engagement in the practices of science than would be revealed through analysis rooted in the verbal. We share this work with the hopes that others working with video-based methodologies draw inspiration to reflect upon the different facets of interaction revealed when the verbal is either fore- or backgrounded.

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The use of interactive video discourse in making digital teaching development toolkit

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Abstract

This presentation introduces the background, aims and the project task that we initiated at the Centre for Tertiary Teaching and Learning (CeTTL) at the University of Waikato. This project offers a significant contribution by developing a refreshed set of digital tertiary teaching development resources for the University staff and partner locations. The digital modules are to help encourage staff to rethink and re-evaluate their teaching practices. The existing teaching development resources at the University of Waikato are in form of booklets, which are usually printed for those participating in the face-to-face teaching development workshops, or they can be downloaded by staff as a pdf file from the CeTTL website. The digital teaching development toolkit covers a range of topics to ensure we meet our teachers' needs across the University. They include reflective practice in teaching, curriculum development, course design, online assessment, maximizing learning in large classes among other topics. Using a variety of media-making tools in producing the digital teaching development toolkit, we offer focused, succinct, self-directed and interactive modules, which incorporates current and innovative pedagogies.

The digital videos are designed to combine real thinking process that takes place for a teacher in designing and developing various aspects of teaching and learning, guided by commentaries, voice- over, staff interviews, as well as theoretical discussions on pedagogy and learning. The videos illustrate, explain and analyze the strategies used in relation to the pedagogical underpinnings of the teaching in action. The modules are to be transformative in the way teachers' understanding may change by critically reflecting on and engaging with various aspects of teaching and learning. The digital resources are to be evaluated after completion of the first three modules in order to enhance their qualities and focus for the future development and use.

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Using Sketchnote Technique in Class to Help Novice Designers Improve Sketching Skills

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Abstract

In design, sketching is a thinking tool next to writing, and sketches are often referred to as *the language of designers*. The ability to sketch out ideas rapidly in various formats is a central skill for a designer, and should be fostered in educational programmes. For most students, however, sketching skills seems far less developed than writing, and as a result, they often avoid communicating visually all together. This paper concerns the use of *sketchnotes* as a means to train basic visual communication and drawing skills. It presents a practical experiment with 55 students from IT product development at a computer science faculty who were involved in lectures, critique and open sketchnote assignments as part of their course in shape changing interfaces. The paper discusses insights related to how the different activities contributed to improving the students' skills in making knowledge visual and engaging others with their drawings. The paper discusses outcomes related to the *visual qualities* such as the use of various types of contrasts and to the *informational quality* such as the level of abstraction in the drawings comprising a sketchnote. Finally, the paper relates these outcomes to the students' journey towards becoming more confident sketchers.

Keywords: Design sketching, design teaching, sketchnoting, thinking tool, dialogue tool

Introduction

Computer science is not what it used to be. In the past 15 years, faculties around the world have seen research areas and courses like interaction design and shape changing interfaces expand the area of Human-Computer Interaction (HCI).

Figure 1: *Examples of student productions prior to training.*

Consequently, design plays a growing role in IT education. To many, it is a welcome opportunity to combine skills and interests in industrial design, interaction design, and technical and material construction. Unfortunately, students enrolled in a design course at a computer science faculty rarely get the same training in design tools as students in design schools. In consequence, I have –in my role as university lecturer- observed the following practices over the years: Students either *avoid* hand drawn sketches all together, make *a few poor quality* sketches with whatever drawing tool is around, or create work-arounds, for example organizing *pre-made clip art* in a text editing program (for examples, see figure 1). Unfortunately, none of these techniques support thinking and exploration to the same degree as producing fast handmade drawings of a concept or a form. As a result, students miss the opportunity to develop the visual language that they – if they are to practice design professionally – need as a tool for reflection and dialogue.

During my courses in fields related to interaction design, I have experienced how students lack the courage to present information visually and are unfamiliar with common attributes such as line quality, shading or annotation, that are used to convey information in a drawing. Seeing that our curriculum held no room for training sketching techniques as one would expect in, say, industrial design, I started to look at sketchnotes as a frame for training hand drawing in class.

In this paper, I describe the activities carried out in class in order to inspire students to take up the practice, and I will discuss how each activity has contributed to improving students sketching skills.

The Thinking Tool of design

In the design community, sketching is often understood as the production of paper sketches of the type described by (Goldsmidt, 1991; Goldsmidt, 2003), but in fact, sketches can take many forms. Buxton (2007) uses the term sketch to describe any representation of an idea or concept that can be used to get new ideas, develop old ones, or think about well-known issues in a new fashion. Consequently, a sketch can be pen on paper, a design artefact or physical performance of, say, an intended interaction design. In the literal as well as in the metaphorical sense, designers sketch to help themselves and others see things in new ways, including *physical forms* which can be sketched using 3D modelling or experiments with materials, *modes of interaction*, and the potential use *context* of a design, which can be sketched using enactment techniques such as forum theatre, (Newell et al., 2006) or bodystorming, (Oulasvirta et al., 2003).

No matter the material properties of the sketch, the act of sketching is a tool for aiding idea generation and exploration of ideas in a design situation. Accordingly, the activity of sketching facilitates reflection in action (Schön, 1983) because of the on-going dialogue between the sketch and the sketcher. Further, the activity of creating sketches depends on a whole series of choices that spark the process of and attention to the framing and re-framing of a topic, as described by (Paton & Dorst, 2011). Apart from helping new thinking in terms of reflection in action and the framing of concepts, sketching also serves to help designers talk and about and share an idea, as well as remember and store its key components (Ferguson, 1992; McGown & Green, 1998; Ullman, Wood, & Craig, 1990). This is why sketching is many designers' preferred technique to inspire thinking and help them communicate with others. And this is why sketching is such a crucial technique to any designer.

Using Sketchnote to Inspire Training

Sketchnotes is a genre of visualization. A sketchnote is a hand-drawn visualisation made on paper or tablet, created within a short time frame (like, say, a conference talk). Examples include sketchnotes made entirely of words that are organised spatially and sketchnotes with complex drawings that visualises one or more arguments.

Sketchnotes is a genre defined and developed by the people producing sketchnotes, and a variety of examples can be seen at the web page www.sketchnotearmy.com. Perhaps the special 'feel' of a sketchnote is what defines it best; it feels informal, like it has been produced quickly by a playful and light hand, and it is persistent in the way it captures your eye and forces you to look, read and think about what it might want to communicate. This light and informal tone resonates well with the words used by Buxton to describe the quality of designers' sketches such as 'explorative', 'fast', and 'open for interpretation' (Buxton, 2007). This shared quality makes sketchnotes interesting as a means to train design sketching.

Sketchnotes in Action

The free format makes sketchnotes suitable to help novices' practical experiments with fast visualization. If one is uncomfortable with drawing objects, one can start by creating interesting compositions with hand-drawn letters, if one cannot write or draw in straight lines, one can explore organic compositions, that make use of a variation in size and orientation of the drawn elements, and so forth.

While the main goal for having students do sketchnotes was to make the production of visualizations on paper an automatic activity next to writing, the activity had other goals too. These are describes below.

Goals related to visual quality

Introducing students to sketchnoting, I wanted them to improve their drawing *technique* (the way the hand holds and moves a pen). Further, students should learn the potential and constraints of different drawing *tools and materials* such as pencil, pen, iPad, and various types of paper. Lastly, students should improve how they *composed* a hand-drawn presentation, being able to use *dynamic lines, the physical space*, and *various types of contrast* to create and interesting visualisation.

Goals related to informational quality

I aimed at moving participating students from being able to illustrate a text with simple icons (low complexity and level of abstraction, so-called 'bullet point sketchnotes') to being able to create a *complex drawing* that deploys specific *visual qualities* to organise and present valuable (layers of) information (high complexity and level of abstraction). This is in fact one of the core reasons for using sketching as a design technique. A good sketch does not necessarily equal a 'pretty' sketch. One does, after all, not sketch for the purpose of produce a 'well-balanced composition'. But one might, however, avoid sketching all together if one has no idea about why or how to produce a visualization that can inspire thinking.

Using sketchnotes in class

In the following, I will describe the sketchnoting activities carried out as integral part of a 7 ects shape changing interfaces curriculum. These comprise a 'learning the basics' sketchnote workshop, using sketchnotes in lectures, having students do weekly sketchnote assignments, and critiquing each others work.

'Learning the basics' workshop

The voluntary 3-hour workshop on sketchnotes was conducted at Aarhus University, early 2012. The local student organization invited the author to throw a workshop based on more than 10 years of experience with visual facilitation and rapid sketching in various business contexts. Of the 55 students involved in the activities reported in this paper, 12 participated in this workshop, and of these, only a few had tried sketchnoting or done much drawing at all since primary school.

During the workshop, students trained basic techniques to improve the quality related to the *visual quality* of the sketchnotes. These included tips about using *frames* to define and arrange the space on the paper, using *variation* in proportions, spatial density (balancing solid/void) and contrast to create a *dynamic* image, and the use of colour to provide additional information. The workshop also trained the use of *handwritten fonts* and annotation. Students learned about *tools and materials* and about how to use line thickness to convey information. To demonstrate techniques the teacher used a LDC video projector to share her sketchbook drawings live with the participants in the auditorium. After each training session an example from a participant was shared with the auditorium and critiqued by the teacher.

Sketchnotes in lectures

To motivate students, I strived to use sketchnotes myself as the basis for the lectures each week. While my goal was primarily to show how interesting visual presentations do not have to be very complex or time consuming to make, I also wanted to display a range of styles for inspiration and motivation for the students. Further, I wanted it to be a natural thing in my classes to produce, experiment with and share hand-drawn sketches.

Critique of weekly assignments

Each week, students faced a mandatory assignment that involved sketchnoting. Often the assignment was to interpret one or more research papers from the design curriculum into an A4 sketchnote. Other times students were asked to present what they thought was the five key take-aways from, say, a field trip.

The assignments were 'open' meaning that students were free to produce any style of sketchnote they thought would fit into the genre as presented by the examples displayed at the gallery site sketchnotearmy.com.

A critical part of the experiments, was trying out different ways to provide feedback on students' sketchnotes. For some critiques the teacher brought copies of all submitted work into class, and would – after 15 minutes of students quietly browsing each others' work in a gallery session – pick and discuss good examples of a technique or composition in front of the class. At other times, students were – after a silent gallery session – asked to put a mark on a sketchnote that they enjoyed or would like to learn from. The various qualities of the top 5 sketchnotes were then discussed in plenum. Finally, some experiments with providing written or annotated feedback on individual sketches in the online submission system were carried out.

Results

The workshop

The 'learning the basics' workshop proved useful in that it taught the students a few tricks that immediately improved the visual quality of their sketches (for example, see figure 2).

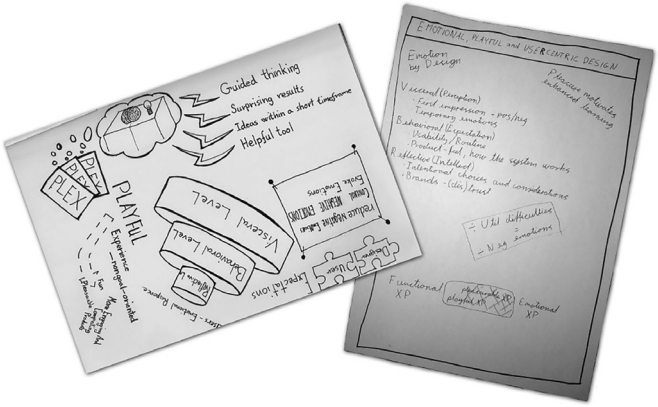

Figure 2: *Examples of two novice sketchnotes made very early in the experiment. The sketcher to the left, had participated in the workshop, and is training the useof line thickness, spatial distribution and contrast in scale and saturation. The sketcher on the right had not participated in the workshop. Students that participated in the workshop, generally performed better in the experiment and were in the following design classes willing to put in more effort in producing their visualisations.*

Sketchnotes in lectures

Using sketchnotes as the basis for lectures proved a useful channel for providing motivation and inspiration to students. However, re-inventing your style or demonstrating a new technique every week, on top of actually producing a visualization of a 45 minutes lecture requires substantial effort, including courage to part with the traditional Powerpoint format, on behalf of the presenter.

Critique of assignments

While writing individual reviews proved time consuming, and did not help the sharing of styles and technical tips between students, the plenum critiques proved a great opportunity to show how effort and attention to detail matters in visual communication. Students instinctively agreed on which were good sketchnotes, and trying to articulate which qualities made a good sketchnotes stand out, helped students improve praxis.

Critique and knowledge sharing is a time consuming matter, however. In a course dedicated to teaching, for example, shape changing interfaces, rather than sketching skills specifically, dedicating an hour a week to improve students' skills, seem too much if solid demonstration of sketching skills is not a clear learning goal for the course.

While discussing examples of good student work is easy, it is hard to talk about the poor submissions, especially for students who are learning how to critique. Accordingly, the teacher must take responsibility and make sure that negative critique is articulated in proper terms and related to composition, finish, information content, etc., to avoid unconstructive critique.

Specific results related to visual quality

Seemingly, students should be told very specifically to experiment with materials or use certain tools. They do not follow open instruction to experiment with various tools to get to know their different limitations.

Figure 4: *Examples of a sketchnote with information content of a high abstraction level (right) and a sketchnote that make use of a series of simple unrelated icon-like illustrations - a 'bullet point' sketchnote (left).*

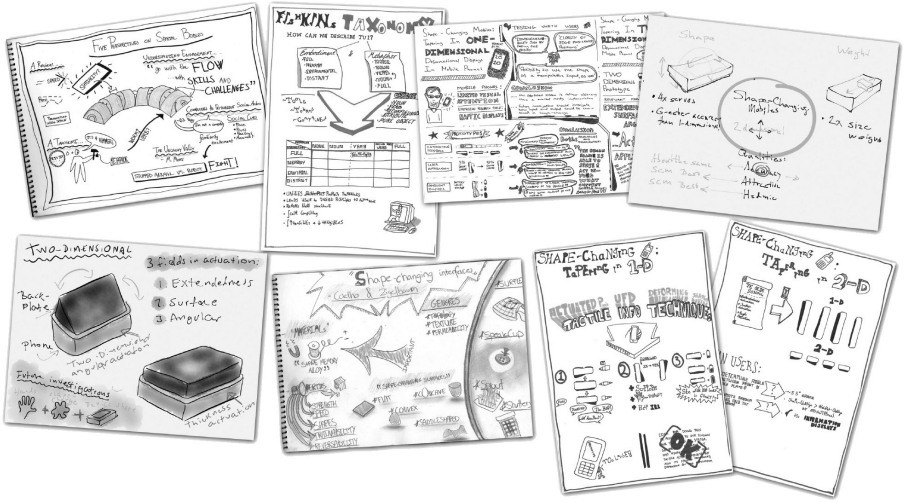

Figure 3: *Examples of successful novice sketchnotes. The examples show use of techniques to improve both form and information content, for example the use of proportions to create a dynamic visualization or the use of colour to code for which elements belong together.*

For example, after several critique sessions about half the students still used worn down pencils on low quality paper. Specific instructions as to which tools to use and which level of finish is expected are needed, as well as a continuous focus on form and finish in the critique sessions.

Students' understanding for how to compose and critique a sketchnote was supposed to be inspired by the vast material available on for example sketchnotearmy.com, by the use of sketchnotes in lectures, and by the critique provided in class. However, concepts like *spatial composition* and *contrast in scale and saturation* seemed too difficult to understand and should probably be trained in dedicated assignments.

The critiques proved a fine arena for repeating the basics taught in the workshop. To provide inspiration for the students motivated to train and learn more, critiquing sketchnotes made by more practised sketchers, such as ones found at online fora, would prove valuable. The sketchnotes used in lectures should be crafted to support and provide examples of what is meant by for example 'balancing solid and void', or show the difference between including or excluding shadows and outline in a presentation.

Specific results related to informational quality

In critique sessions, all students valued the sketchnotes that reflected effort and a fine use of compositional techniques. However, one thing is to be able to identify a well-made sketchnote, it is quite another thing to be able to say why it works well, and be able to use such insight to improve one's own sketchnoting. Students need more training with giving critique in order to be able to articulate what separates the good from the poor contributions, so that they can use these insights to improve own work.

I expected that students would develop from being able to illustrate, say, a text, with simple icons, serving to decorate rather than provide information, to experiment with creating a more complex drawing that captured the same text in one visualization showing a higher abstraction level.

While the correct use of tools and the training of fairly simple techniques to create an interesting composition are valuable in terms of presenting ideas in visualizations that are appetizing to look at, the sketch's qualities related to reflection in action, new thinking and re-framing relate specifically to what (information) is sketched rather than how (drawing technique) it is sketched. Accordingly, my overall hope was to help move novice sketchers from producing sketchnotes, which in effect are nothing but decorated bullet point notes, to start experimenting with and being able to create visualizations at a higher level of abstraction.

Of the 55 students a handful moved from producing sketchnotes consisting of several simple low abstraction level icons to more complex visualizations, that showed the ability to condensate complex information into one coherent visualisation. In figure 3 (right) a student has depicted a man that controls a puppet. It is a visualization of how a designer, through his design choices, can control what the user does. The designer is depicted above the user and is proportionally larger, and the strings with which he controls the user makes him appear a puppet master, but somewhat out of control. Such a visualization is different form the example shown to the right, where a series of simple icons almost chronologically follows the points made in a research paper. In effect, this example is sketchnotes' equivalent to a bullet point list, the icons do little to interpret the claims in the text which leaves their contribution limited.
Other examples of sketchnotes with a high information content included the use of spatial arrangement, arrows and colour to show relations, or the use of soft tones and arrows to show movement or design components otherwise hidden to the eye (see, figure 4).

Discussion

The question remains: is it doable to improve computer science students' sketching skills using weekly training in sketchnoting technique over 7 weeks, and with very little practical teaching? Based on the experienced described in this paper I dare say that it is possible to move most students to a level where they can produce visualizations superior to what is shown in Figure 1, and provide them with a vocabulary then can a) help them critique sketchnotes and b) inspire their own training in specific areas, such as balancing the spatial layout in a composition. But still – as already mentioned – this is not the overall goal of sketching. Are the activities enough to help students move from 'bullet point' sketchnotes of little information value to producing sketches and sketchnotes that are exploratory, proposing and tentative, to borrow from Buxton's description of sketch qualities? With weekly assignments, inspiration and critique, and using a genre such as sketchnotes which is accessible and where exercises are fairly easy to integrate in an academic course, it is possible to put the quality of visual presentations on the agenda. True, some (maybe up to half the) students will consider the exercises a useless chore and put next to no effort in training, And they will not move from 'bullet point' sketchnotes to visualizations with more complex information content. But some will discover that they are learning a new language, which is not only useful for helping them reflect and re-frame their own ideas, but also help them communicate visually with others,

and use sketches to spark dialogue. They will not reach this level of expertise without practising over a longer period of time, but having experienced a slight upgrade in skills and having learnt a basic vocabulary that helps them articulate and see qualities in sketchnotes, many of them will continue training. After all, once you can produce sketchnotes at the level of the examples shown in figure 4, the activity starts becoming enjoyable.

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