

VIDEO RESEARCH SEMINAR:
INSIGHTS AND CHALLENGES IN VIDEO RESEARCH

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Abstracts

Infrastructure practicalities - supporting contemporary classroom research on an international scale

Keynote presentation by Professor David Clarke, Melbourne Graduate School of Education

Contemporary theories of social interaction must be matched by research methodologies that exploit the relative sophistication of available technologies of data generation, storage, access and analysis. The establishment and development of the International Centre for Classroom Research and its role as the hub of the sixteen-country Learner's Perspective Study will provide the major example of the infrastructure required by international comparative research

Access All Areas? Practical challenges and possibilities in fieldwork and analysis when following children in and outside school

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Recently, substantial contributions to learning research have been made by studies that argue the social interactional nature of learning. In this view, learning is not restricted to formal educational settings, but occurs in different every day life situations of the learner, inside and outside classrooms and schools. To educational researchers, this shift opens up empirical possibilities but also creates challenges, in particular for classroom researchers used to the relative comforts of data collection in classrooms. The introduction discusses some of the practicalities of studying six- and seven-year old children's learning using video recordings in different settings, such as in the classroom, in the school yard, while eating lunch, while walking to and from school, when having dinner at home, and when being read a bedside story. In particular, I will discuss ethnographic quality, ethical issues, and amount of data generated in pursuing (micro) longitudinal fieldwork and analysis in collaboration with children, teachers and families. The presentation is based on on-going fieldwork in Finland and Sweden, where children have been followed extensively for approximately a week in different contexts, within the research projects Multilingual children's learning and identity (MULIE), and Learning, Interaction and the development of narrative knowing and remembering (LINT).

Several Spaces, One Time: gathering, managing and analysing video data in physical and virtual spaces

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Our paper presents an approach for non-linear analysis of multi-modal data including videos, animations and textual data. The emphasis is heavily on the former two but the textual data cannot be omitted in our case examples. The key elements of our approach are 1) working with several synchronised video files simultaneously, 2) easy non-linear use and quick access to any part of the data and 3) the ability to “dive” into the data by selecting elements of the audiovisual data on any given moment.

Background

Our approach was developed for the InnoEdu project for detecting the ICT skills rooted in informal learning contexts pupils utilise without teacher’s distinct prompting and discerning the temporal patterns of activity that produced the utilisation of these skills. The paper is based on a study conducted in February and March 2008 with 25 5th grade pupils (ages 10-12) producing digital concept maps. The data consisted of 12 hours of dual-camera and 3 hours of single camera video recordings of the classroom activity, 99 screen capture animations from the pupils’ workstations, 9 stimulated recall pupil interviews using the screen capture animations as prompt material, internal recordings and log files of the IHMC CmapTools software for outlining the temporal distribution of edits performed on the actual task product and finally questionnaire data for discerning the informal ICT-contexts of the pupils and the pupils’ perceived social relations within the peer group.

Data gathering

Synchronising is essential, especially with 21 devices recording simultaneously. The two cameras in the classroom were synchronised with one another with a timecode-cable and manually with the workstations. The centrally managed workstations synced their clocks with a server and thus our automated screen capture utilities on each of the 19 workstations were reasonably in sync with each other. To enable diving we used high-definition cameras with complementary points of view and two highly directional microphones. The larger resolution of high definition video enables diving into smaller details by cropping and enlarging without the image becoming too blocky. Directional microphones are good in recording the sounds originating from different parts of the physical space into separate audio channels. A well thought out file naming system saves much work later on with the screen captures.

Analysis

Atlas.TI software was used as the main platform for managing all of our data keeping it easily retrievable and in order. The textual data such as transcriptions of interviews or discourse was also analysed using Atlas.TI. Because of Atlas.TI’s limitations in playing video and audio files we used ELAN, a video annotation tool capable of playing up to 4 media clips simultaneously from a larger, synchronised selection. With ELAN we were able to index, annotate and code the videos and animations for network and content analysis and easy retrieval. The network analysis was carried out utilising Netdraw, a part of UCINET network analysis software package. The main benefit from using ELAN was the ability to follow the activities of an individual or a group in the classroom and on their workstations simultaneously.

Acknowledgements

The DIVE-approach has been pioneered by Stanford Center for Innovations in Learning, multiple timescales and event mapping we have adapted from the Santa Barbara Classroom Discourse Group and especially Judith Green. All of the software tools we used excluding Atlas.TI are available free of charge for non-commercial use. For additional information on the tools and work flow see <http://balsa.helsinki.fi/~mjkivela/video>

Catching the fleeting moments of learning: the audio material of videoresearch

Jaakko Hilppö, Varpu Tissari, Lasse Lipponen, Leena Krokfors & Kristiina Kumpulainen

Doing videoresearch in natural surroundings of emergent learning and teaching poses not only methodological and methodical challenges for the researcher, but also challenges of technical nature. Although video recording technique has undergone a significant evolution since its debut as means for data collecting there are still some challenges ahead. One of these is the quality and usability of the audiotrack accompanying the video. The arrival of affordable high-definition cameras has improved what we can see on the video, but not what we can hear.

Imagine an elementary class on a field trip to the zoo, the near by public library or having everyday lessons in their own classroom. Each of these is a specific acoustic environment on its own and is a challenge for the all-around microphone of an ordinary videocamera. Most of the built-in microphones tend to, at best, pick up only part of the verbal interaction occurring between the teacher and the students let alone record conversations taking place outside the immediate vicinity of the camera. Especially troublesome are situations where the camera cannot be placed near the participants in order for the camera to catch a full view of the interaction. In these situations the audiotrack usually comprises of sounds and voices only secondary to the interaction being observed.

One could reasonable ask if every moment of interaction is truly important and argue that this is not the case. Indeed so, and not every moment counts, but it is very hard to know this beforehand while one is still gathering the data. Mercer (2000) gives a good metafore by comparing the study of learning to watching dolphins swim along aside a boat. Occasionally some of the dolphins come up for air and you will be able to see them. Most of the time they stay beneath the surface. For an observer it is nearly impossible to say when a surfing takes place. A comprehensive set of videodata allows for the researcher to revisit the material and to identify significant moments of interaction long after the actual interaction has taken place and so the researcher is freed for having to predict beforehand which moments might be significant and which not (Engle, Conant, Greeno 2007).

The presentation discusses one way, inspired by Kronquist (2004), to overcome this technical challenge by the use of low-rate mp3 players. Short datasamples are provided from an on-going investigation. In the end the floor will be opened for discussion about other ways to improve the quality of the audiotracks in video research.

References

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Challenges in the analysis of video interaction- Explorations of young children's learning

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This article examines young children's peer learning in a semi-structured situation. Of particular interest is the epistemological viewpoint on learning and what consequences it has for methodological solutions. The focus will, however, not be on the individual learning process, but more on the structure and process of learning with a special focus on collaborative learning processes. It is easy to agree that learning should be understood as a social and not merely an individual phenomenon, however, the consequences this point of view has for learning research must be considered. Tudge (2000) makes the criticism that too few psychological articles give clear connections between theory, method, and analyses. He states that students and researchers in education, psychology, and child or human development are not encouraged to give more than cursory attention to issues of theory and the application of theory in methods and statistical analyses. Furthermore, Tudge claims that the journals in which researchers write tend to be bimodal. As he explains; they either allow a focus on matters of theory, with little or no space allowed for analyses of data, or encourage detailed discussion of methods and analyses but provide little encouragement for authors to go into theoretical depth.

The methodological foundations of this study are based on sociocultural and systemic perspectives. In developmental psychology there is broad agreement about the nature of development as a system where person and environment are bound together and building one system. Development is inherent in systems that are intertwined with their environment. Developing organisms are open systems; that is, selected aspects of their organization are not strictly preprogrammed, but are left to be formed in the organism-environment interaction. It is easy to agree with this, but problems arise when the development should be analysed empirically.

The empirical research unit is a children's collaborative dyad which consisted of either playing a maze game or the conducting of a spontaneous tutoring episode during free play activities. The video-based data included data collected in Finnish pre-schools. The sessions composed semi-structural situations in peer-learning situations. Two ways of analyzing the data are discussed. First, emerging tutoring patterns during the sessions are presented based on the analysis of social relationships and types of interaction in peer dyads. Secondly, the methods based on more detailed micro-level type of analysis are introduced. The episode of dyadic collaboration proved to be useful unit of analysis in the empiric analyses.

How are schoolteachers discussing, negotiating and making decisions

MaE, Inger Österlund, Faculty of Education, Åbo Akademi University

Today schoolteachers have more responsibility and impact on creating their work than before. Still teachers' work in the classroom offer few opportunities for shared practice compared to other social practices. Teachers' cooperative projects around for instance administrative and instructive questions are more regarded as a request than as a spontaneous intention to share experiences. Nevertheless, teacher cooperation arises naturally when problems or crises appear but when the situation is solved teachers often return to the daily rhythm alone in the classroom. Even if much of the teacher cooperative work is done on the informal arena, in coffee room and in the corridors it is difficult to catch and investigate these moments. The joint work has more been described in interviews of teachers but what happens in the social interactions is still unexplored.

This educational micro sociological investigation is based on video records and investigates schoolteachers' social relations during teacher meetings at the formal arena. The talk between teachers is emphasized with an aspect of teachers that represent different subject. The research method is case studies that explore teachers meeting in two schools with two other schools in the background. The data, as video clips, are analyzed in a combination with contextualization cues. The aim of this study is to reveal some phenomena of the social face-to face interactions and to provide more understanding of how teachers establish situations, negotiate, keep the discussions going on and, finally make decisions. The point of intersection between different teaching subjects and the shared educational practice draw attention to differences in ways of talk that may hold back mutual awareness. The expected findings are that verbal and nonverbal communication reveals patterns that put forward the conversation towards a decision or catch side tracks to the subject or put an end to the discussions. However, certain phenomena in the conversations and speech events portray parts that are not noticed which put forward the discussions about the development of the professional work.

Private Time and Public Time as an outcome of teaching

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To school teachers the influence of time on work and progress tends to be important, almost conclusive for the outcome. Discussing teaching goals and working methods with teachers, the time available is pointed out as crucial. This is what I have learned from my own experience of teaching and cooperation with teacher colleagues. Enough time is often considered a condition for teaching success and an evident matter of course, something you cannot do very much about. The time needed for realizing specific goals in Finland is estimated and regulated (as a part of The National Curriculum) according to level and characteristic of a specific subject. Finnish schools and teachers are obliged to follow this statutory time plan.

My interest in time has a somewhat different approach. I believe, discussing teaching, that there is more to say than "time is money", accepting the fact that time, and preferably more time is a prerequisite discussing outcome of teaching. In my research I watch teaching focusing other relations between time and teaching, if there are such to be discovered. I put the question if there might be time in

teaching, and not only for. If so, teachers and students could be those in power doing time together instead of just consuming it. What possible time aspects can then specifically be related to how teaching is carried out and what experiences of time are standing out as a result of teachers' planning and realization? These are most interesting questions.

In early, everyday discussions with teachers I had noticed difficulties in expressing and describing time dimensions of teaching. I got a strong impression of time as something quite tricky to put down in words - spoken or written. I needed to find a way where this was not necessary to do and that was why video became my choice. My phenomenological approach could have led me to interviewing respondents but I believe using video was a better choice. The teaching practice will now speak for itself and the actions going on in the classroom will hopefully give me some answers. I also feel confident about the possibility to "return" to the classrooms even long after leaving them. I think this will be necessary for me as my understanding of teaching and classroom work certainly is affected by years of experience of teaching. Returning to the material time after time will probably help me get around prejudice.

The work of catching teaching of four Swedish Finnish teachers was conducted last autumn ending up in tapes preserving about 40 hours of classroom teaching. Two males and two females representing somewhat different background were chosen for the project. The fieldwork was carried out as a one researcher enterprise and it lasted for three months with a break for Christmas. This far I have used the video material as a way of taking/reading field notes and I have not yet decided how to move on from the point where I now am, i.e. rather roughly describing what I see and hear - adding reflections on the subject time-teaching. For this the software programme Transana turned out to be a useful aid. A vast material needs to be organized and sorted in order to get hands on what there actually is to be found in it and the programme does precisely that.

My presentation will focus on one aspect of time that my material points out even if the aim of my research is to pave the way for a pedagogical discussion about time, not only in terms of a condition for teaching but also as an outcome of it. I will pay little attention to my theoretical approach but look forward to discussing insights and challenges according to my video research.

1. Since 1983 (with a few breaks) I have worked as a class teacher in Swedish Finnish primary schools and as a specialist teacher in a Secondary High school. For the time being, since 2001, my teaching experience is gathered at Åbo Akademi University in Vaasa.
2. The research described is carried out as a work for my doctoral grade.

Presence of camerapersons affects the participants - and may challenge your whole project

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The access to the occasions of gathering naturalistic data can have a strong impact on the form the study will take. I shall introduce how I came to explore a novel pedagogical activity that was rehearsed in fully naturalistic circumstances. The course of events brought about some unexpected boundary conditions for using the data - when taking ethical concerns seriously. I found that the benefits of using video equipments as a tool for observing are invaluable. However, using video

technology may train the study on to unforeseen paths. Much of trouble could be avoided with technological improvements that render remote camera steering, but there are still wild cards left.

Technology enhanced co-construction of design products in an engineering course

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Introduction

Education should provide students with competencies that are important in creating new knowledge, not assimilating existing knowledge. Knowledge-creation approach (Paavola & Hakkarainen, 2005) characterizes learning as a collaborative advancement of shared knowledge objects like documents, practices, and product designs. At the same time, modern educational technology requires and enables novel practices of working with knowledge objects. The present study focuses on technology's role on facilitating knowledge creation in a collaborative design process. The educational technology under investigation - Shared Spaces Environment (SSE) - was especially developed to afford collaborative development of knowledge objects.

Research questions

The present study aims at answering the following questions. First, how do SSE's tools afford reflecting on the knowledge objects - i.e. product designs and project documents - and working practices of the design team? Second, how are the different versions of knowledge products actually used, developed and shared among the team members? Generally, how was SSE actually used by engineering students in a process of designing a multimedia product?

Research setting and methods

The investigated course was an higher education course, "Multimedia Product", conducted in the EVTEK University of Applied Sciences during Spring 2008. The goal of the course was to learn collaborative design practices and project-based working methods in the context of designing multimedia products for real customers. The data collected from the course includes videotaped sessions of students using the SSE tool, database materials, and observations of the meetings. In addition, two teams' combined "stimulated recall" and interview sessions were videotaped after the course. Team's Shared Space view and its content was used as a "mirror" stimulus for the session, which focused on the student's experiences with the SSE tool. Stimulated recall means having an interactive session, lead by researchers, with the student team where videotapes of their group work and the database content of their groups virtual spaces are discussed and evaluated. These sessions themselves will be videotaped and analysed to find new interesting issues and phenomena concerning the co-construction of design products through the technology. The data will be analysed by mixed method approach combining various data sources. We hope to get methodological ideas and suggestions from the workshop for analysing the videotaped stimulated recall sessions.

References

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Designing assessment tool as organizational change intervention

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Evaluation actions in working life are often carried out as functions of their own, separated from the work practices in institutional settings. Evaluation actions are usually conducted by quality department of the institution, typically by using quantitative techniques and electronic databases. This can easily provoke difficulties among employees in trying to make sense of what evaluation really means and why is it conducted? A need for a new kind of qualitatively oriented assessment/management tool emerged during the course of an organizational development project based on activity theory. The new electronic assessment tool was created towards the ending of a large scale project carried out at Surgical Operating Unit in university hospital in Finland.

Quality controller in the hospital initially designed the electronic database or 'platform' of the assessment tool. Quality department functioned as a separate function in the hospital, physically far away from the Surgical Operating Unit and quality controller did not usually see the employees of the Surgical Unit in person. This case made an exception since the design process of the tool finally involved the operations manager of the Surgical Operating Unit, four staff nurses, two head nurses, all working in Surgical Operating Unit, a visiting consultant and me and another researcher. The design process of the assessment tool can be described as an organizational intervention in itself. Design process of the assessment tool required crossing of organizational boundaries between quality department and Surgical Operating Unit. The process also involved collective, innovative decision making, negotiation and also high motivation from the different parties.

I was present at the hospital when the quality controller was rather spontaneously invited the Surgical Operating Unit to meet the staff nurses she planned the new tool for. The visit led to a 'training' session which gave the staff nurses an opportunity to contribute to the design of the new tool. I videotaped this training session which lasted approximately an hour. The training involved collective negotiation and collaborative design of the assessment tool. Before implementation of the tool the end users did reflexive modelling collectively and re-formulated the new tool to better suit their local, practical needs. After the adjustments to the tool the staff nurses started to feed information daily to the electronic assessment tool about the daily activities of the Surgical Operating Unit and specially reported the disturbances that occurred at work. The results were sampled by the quality controller and daily reported by e-mail to operations manager, head nurse, surgeons and anaesthetists responsible.

I feel that the analysis of the videotaped training session has been conducted rather intuitively looking at speech actions containing suggestions for improvement of the assessment tool. I would like to conduct another more systematic analytical 'round' of the videotaped data. There is a lot of interaction and overlapping speech actions in the videotape as the participants of the training session are trying to make sense of the new tool and simultaneously suggest improvements for it.

I would very much appreciate comments and suggestions from colleagues conducting video research on how to proceed and make my analysis less descriptive. How to approach the data in more depth and how to define manageable units of analysis? As an additional data I have interviews of the parties

involved in the creation process of the assessment tool and I also have e-mail conversations concerning the creation process of the tool.

Reliability in Video Research: A Practitioner-Oriented Guide to Understanding, Calculating, and Reporting Interrater Agreement using Kappa

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There are strong practical and methodological reasons for establishing interrater reliability in the quantitative analysis of video data. In this paper, I give a practitioner-oriented introduction to the often used, but more often misused, *kappa* family of interrater reliability statistics. I try to simplify the issue by presenting two variations of *kappa* that can be used in any interrater agreement situation, regardless of the numbers of raters, categories, or cases. For the math-shy, an online kappa calculator accompanies this paper. The reader can also find information on which interrater reliability statistic to use in a given situation, the interpretation of *kappa*, and how to report the *kappa* statistics presented here.