Abstract

Although video technology is now widely used by education researchers, characteristically for observation of teaching and learning environments, there has been very little use of video to illuminate the work of educational researchers themselves. In this paper we describe a novel use of ‘video diaries’ to illuminate the working practices of educational researchers working on projects within the UK’s Economic and Social Research Council’s (ESRC) Teaching and Learning Research Programme (TLRP). The specific purpose of this activity was to gather ‘user requirements’ for software developers employed to develop and evaluate a Virtual Research Environment for Education under the UK Joint Information Systems Committee (JISC) Virtual Research Environments Programme. A series of two individual and two collaborative structured and semi-structured tasks were developed which groups of participants undertook themselves, having been provided with digital video cameras, tapes and instructions. Our findings show a positive and enthusiastic response from the researchers who were willing to engage with the tasks. The videos provided rich contextual information which supplemented other data sources (surveys, interviews and routine data collected online) and offered insights into individual and collaborative working practices in diverse institutional contexts. We describe specific instances of data collected and discuss advantages and disadvantages of this data collection ‘at a distance’, comparing it with other reflective approaches. We also describe how the video data act as ‘boundary objects’ (Star and Griesemer 1989) that mediate the relationship between users and developers and move across disciplinary and professional domains.

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**Introduction**

Under the UK Joint Information Systems Committee (JISC) Virtual Research Environment Programme, we conducted our research to develop and evaluate a Virtual Research Environment (VRE) for educational researchers. Our target sample was constituted by ten large-scale education research projects part of the Teaching and Learning Research Programme (TLRP) financed by the UK Economic and Social Research Council (ESRC). These projects agreed to use the SAKAI VRE. Our organisation Centre for Applied Research in Educational Technologies, (CARET) developed the particular version to be used by the projects and provided full technical support. We recruited participants from four of the ten projects in the production of informant-made videos with a specific focus on collaboration among project researchers and their usage of the VRE.

Sakai ([http://www.sakaiproject.org](http://www.sakaiproject.org)) is an open source community development project initially developed in the USA by four leading universities (Michigan, Indiana, Stanford and MIT). It is now used as the basis of Virtual Learning Environments (VLEs) and Virtual Research Environments (VREs) in universities around the world. It offers an access controlled environment which provides users with a modular and customisable set of collaboration tools and services such as chat rooms, discussion boards, file stores, email list managers and calendars (see Figure 1). These are arranged into 'worksites' which may have different membership, access controls and combinations of tools; a user may be a member of multiple sites and some tools allow integration of content from across sites: for example, a user may choose to aggregate events from the 'calendars' of all the sites to which they belong. (See Carmichael, Procter, Rimpilainen and Laterza 2006, and Rimpilainen and Carmichael 2006 for further details of Sakai and its features).

The use of videos in education research has been gaining momentum over the last few years. The bulk of this research, however, is concerned with teaching and learning, in particular classroom observations (i.e. Armstrong and Curran 2006; Goldman 2004; Hiebert and Stigler 2000; Plowman 1999; Sherin and van Es 2003). Little or no research of this kind has been conducted on education researchers themselves. As reflexive practices are advocated by a growing number of researchers across all the social sciences, it is crucial that education researchers are provided with the opportunity to think about themselves, their role within and outside academia, and the social and organisational contexts within which they work. However, video methodology is still evolving alongside the associated technologies; there is no widespread consensus about the process and theorisation of video data analysis (Noyes
This paper is an attempt to offer some reflections about our experience with video methodology. The video study was part of a larger process of data collection under the JISC VRE project. It was devised to provide data to be analysed in conjunction with a number of other data sources (i.e. routine data, field visits and interviews, VRE worksite analysis). Due to the nature of the research design, it does not provide systematic substantive findings. Our main aim is to discuss the potential of video methodology as a tool for studying agency, context and practices in education research. Content and method will go hand in hand and we hope that the practical examples considered here will offer some insights into the everyday realities of collaborative education research projects.

‘Sending off the cameras’: research design

The video study was part of a wider multi-methodological approach which would characterise the work we conducted over the two years for the JISC-funded VRE research project. The rationale was the production of different data sets which retain their uniqueness (i.e. each methodology produces data that could not have been collected otherwise) while being comparable (i.e. the framework informing data collection and analysis is the same across data sets). The research objectives of our video experiment, therefore, reflected very
much the aims of the wider project within which it was inserted. The more ‘scholarly’ strand of our work concerned the study of the interactions between education researchers and new technologies (particularly the VRE) and of the VRE as a gateway into the dynamics of collaboration in education research. On the ‘applied’ side, our main task was the collection of user requirements for the development of future versions of the VRE. Our particular role as researchers of the VRE was to ‘translate’ user requirements as they emerged from the data collected from participants into an understandable format for developers (Burt 2005; Ludvigsen, Havnes and Lahn 2003). This took place in a variety of forms: formal meetings, informal conversations with developers, production of formal and informal written reports, among others. With the video study, we wanted to push this exchange further: the videos themselves were going to be used as ‘boundary objects’ that developers could see to understand better the realities of the VRE users (Star and Griesemer 1989).

As we engaged in the design of the study, we became increasingly aware of the novelty of the practice and that made us extra careful in the consideration of practicalities. We were also aware that the very process of conducting the research would provide valuable insights into a relatively new methodology. This, combined with the fact that we were not going to shoot the video ourselves, made us realise that the chances of ending up with an incomplete, non-standardizable data set were indeed rather high. In order to minimise such risks, we ran a pilot using our research team members as participants (the fact that two of them were themselves involved in the past in a TLRP project that used the VRE increased the validity of the pilot).

The idea of the study was to send a digital camcorder to each participating project and a set of instructions that would guide them in the production of the videos. We also identified an informal referent in each project to whom the cover letter with the instructions was addressed; this would guarantee efficient communications about potential problems, delivery issues, etc.

We devised four tasks for the participants. The first two tasks were to be carried individually. The other two were group tasks. We suggested that the individuals involved in the first two tasks should also carry on the last two. We did not expect all the researchers to take part in the study. We expected between two and five participants per project. This would have contained the burden in terms of time on the part of the project researchers; also, we were aware of our own limited time resources and did not want to end up with more than we could handle.
Task 1 was an individual semi-structured presentation of about 20 minutes in length. The instructions provided only a few vague prompts about the topics of the presentation. This was an opportunity for the participant to express her own views on collaboration and communication tools (including but not limited to the VRE) with the minimum interference possible from the researchers’ side. Our idea was to end up with a coherent personal narrative that would expose the individual’s conceptual frameworks and experiences with regard to our research objectives.

Task 2 was a structured questionnaire that the participant was supposed to answer on video. There was no suggested time limit as such, the task would take the time required to answer the sixteen questions. These questions were at times very specific and definitely carried with them the researchers’ bias towards particular frameworks and particular research questions. Task 2 was developed to complement the free-flow structure of Task 1 and to make sure that no important data went missing. What we came to realise at the data analysis stage is also that the comparison between the two tasks provided some interesting insights about the comparison of video methodology with audiotape interviews.

Task 3 was a collective task. The individuals who completed Task 1 and Task 2 would get together and film a video that was to represent a typical day in the workplace. Participants were left free to structure the content of the video and the sequence of the shots, however some prompts were given as to what should be included: the physical environment within which work takes place; the main research tasks carried out in the workplace; the ways in which collaboration among researchers takes place; the ways in which the VRE and other communication tools are used. We suggested that all references should be to project work and that the video be 20 minutes in length. As we expected, this turned out to be the most interesting piece of data we extracted from the video study as a whole.

Task 4 was also a collective task. Participants were expected to sit together and to be filmed in a group discussion about the same topics touched on in Task 1 and Task 2. We gave time estimates for different numbers of participants, varying from 15 minutes for two participants up to 30 minutes for five and above. We devised this task to get yet another perspective on the research topics. We also thought that seeing the participants conversing about the issues they discussed individually in the first two tasks would bring out interesting differences, underlying tensions and shifting views that could not be easily pinned down in the more
coherent personal narratives.

All suggested time limits across the four tasks were indicative and not to be considered as rigorous constraints. In actual fact, one reason for providing suggested time limits was to reassure the participants that the video study was not too time consuming. Our package also included a set of camera tips to maximise the quality of the tape, both in terms of image and audio.

**Brief overview of the participating projects**

A brief overview of the participating projects is provided here. This will help the reader understand the essential features of the educational research projects in the study.

Project A is a four year project which is now based within a single institution. This study tracks students over three years to generate rich longitudinal data with the aim of developing student learning. Although this project is based in a single institution they are now collaborating with researchers in twelve countries. The video study was conducted by four participants: the principal investigator and three research fellows (who also performed administrative tasks).

Project B was a four-year research project which involves researchers from four geographically-distributed university departments, with research activities distributed across five teams. Four teams (one based in each university) have as their primary task the collection of detailed biographical data through open-ended interviews. The fifth team (which is co-located with one of the qualitative teams) had a focus on quantitative research and used a national survey as the basis of analysis and in order to contextualise qualitative data. The video study was conducted by staff based in one of the university departments. It included four participants: the project principal investigator, another researcher, the project administrator and another member of the project administrative staff.

Project C research team was based in a single university department. The project lifespan was 18 months. A variety of other organisations are involved in the project as research participants and project advisers. The research was structured around three separate but interconnected sub-projects, two of which focused on classroom practice and one on teacher development. The video study was conducted by three researchers: the project principal investigator and two
other researchers (one of them was also entrusted with administrative tasks).

Project D is a two years research project involving a team across two universities and its partner institutions. The project aims to encourage critical self-reflection and reflection on policy, practice and theory to facilitate changes in conception and development of new knowledge. The data the project gathered will be analysed by both the researchers and participating teacher-researchers in partner institutions. The video study involved five participants from both university departments collaborating in the project: the principal investigator, a research fellow, two research associates and an administrative staff.

‘Secret images’: confidentiality, trust and ethical dilemmas

The packages with camera and instructions were sent between end of February and end March 2006. Although we fixed a tentative deadline for the delivery of all videos by mid-June 2006, we actually finished collecting the materials in end of July 2006. The response was overwhelming. In total 9 hours of video were produced. All tasks were completed; Task 4 from Project C was delivered on a damaged mini-disc and could not be retrieved. Not all tasks were completed by all participants, but it was clear that this was due to time and organisational constraints; after all, most of the researchers involved had multiple work commitments and the collaborative nature of these large-scale education research projects was in itself a challenge. All in all, we had an enthusiastic response.

There are a number of reasons worth considering for such success. Certainly the fact that the camcorder was given as a gift to the project participants was an incentive. In the case of Project D, there was a clear intention to use the camera in later stages of their own project for classroom observations. But there was another factor which proved to be decisive: we belonged to the same community of practice; we, like them, were conducting education research. This shared ground allowed for the building of a relationship of mutual trust. The participants were well aware of the dangers of a potentially invasive methodology like video. The power of the visual aspect of video data posed serious problems for the maintenance of confidentiality and anonymity. Yet, the negotiation of ethical issues in our video study was surprisingly trouble-free. We included a code of practice in the instructions which stated that the videos were for the fruition of the CARET VRE project team only and that prior consent would have been asked for any other possible re-use of videos. No issues concerning the code of practice and confidentiality were raised by the participants. However, when asked about
this in the feedback interviews we conducted after the videos were delivered, some participants confirmed that they did not worry about confidentiality because they assumed that we were working on the same established grounds they shared as education researchers. Others also added that the fact that they had a working relationship with CARET due to the other research activities under the JISC-funded VRE project definitely helped in granting us access to such sensitive information.

Pirie (1996) notes that the usage of video in research poses a number of ethical dilemmas. The major tension she identifies is between the wish to share the data with other researchers outside the scope of the research project who could contribute insights and suggestions for analysis and the need to protect the anonymity of informants as stipulated in the ‘ethical contract’ with the research participants. We too have been tempted to share excerpts of the videos with a wider audience of researchers. However, the presentation version of this paper will not contain any video extracts. The reflexive nature of this endeavour does not allow us to show inside information about the everyday realities of the researchers involved without danger of identification. Part of the reason for such decision depends upon the surprising honesty with which the participants led us into their working lives. There was no attempt at hiding project internal dynamics, conscious and unconscious ‘politics’, tensions and contradictions. This made the resulting data even more valuable.

‘Excitement and damnation: they’ve been too good…’: some notes about data analysis

The initial excitement as we were collecting the videotapes soon faded away replaced by frustration and uncertainty. The responses were almost too good, rich multi-layered data that could hardly be systematised and separated into neat categories. We encountered here a common problem shared by many researchers who employed videos in their methodology (i.e. Noyes 2004). The unique richness of video is also what makes it difficult to unpack it and use it as ‘data’. How is one supposed to incorporate into the analysis body language and physical settings? Can one do this with any chance of success in producing relevant and meaningful observations? Should the verbal be separated from the visual?

These are just some of the methodological doubts we had to tackle. For the purposes of analysis, the first choice to be made was whether to use transcripts or not. Following other researchers (Beatty 2005; Pirie 1996), we decided to focus on the viewing of videos as main
activity for data extraction and analysis. After all, if we were to explore the potential advantages of video vis-à-vis other data collection activities, we could not reduce our data to the same format in which audiotaped interviews are usually analysed.

After a few preliminary collective viewings which we conducted without any systematic method, we realised that the data contained so many different layers that one framework could not exhaust the analytical potential of the data. We started then developing different routes for data channelling. Priority was given to the objectives of the JISC-funded VRE project. At the simplest level, we treated video data like any other verbal data: we extracted bits of information which were relevant to the overall framework under which we were researching factors and context for the implementation of the VRE in collaborative research projects. This information fed in the general loop of multiple data sets we constructed through the two years. Most importantly, this information was also used to develop future activities of data collection with the same projects: when we devised the protocol for the final field visits and exit interviews (which in some cases took place shortly after the videos were delivered to us), we tried to build upon the knowledge provided by the video data, in order to avoid repetitions and to clarify ambiguities.

Another data reduction activity was carried out for the extraction of user requirements. On one level, we treated the video data as verbal data to extract all instances of users’ difficulties and problems with the VRE. These were then communicated to developers in order to stimulate improvements in the future versions of the VRE.

Another avenue for data analysis was that of reflexive research: aware of the novelty of this kind of data collection activities, we started to systematise our knowledge about the process itself. The main provisional findings are presented in this paper. As we proceeded with the collective viewing, our notes became gradually more systematic. We developed some themes for viewing as we proceeded, but we purposefully did not carry out any kind of structured coding. The material we were working on was still too ‘pioneering’ to allow for an established and rigorous coding framework. As soon as we applied to the analysis our provisional codes, we would find inadequacies and new spin-offs. As we added our new notes to the old (in this, our method is similar to Towers 1996), recurring themes started to emerge. These themes were initially inspired by critical incidents (for a similar methodology see Noyes 2004). For critical incidents, we mean nothing more than particular video extracts that attracted our attention for
their unusual and innovative (from the point of view of traditional data collection methodologies) features. With repeated viewings, we looked out for comparable instances of these themes throughout the videos. However, in this too we realised that a too rigorous structure would have ultimately killed the innovative potential of the video data. Certainly, all videos presented comparable features that provided some coherence to the overall context under study. On the other hand, we soon discovered that each group of participants unconsciously negotiated a certain style of ‘seeing’ and crafting the sequences that made for very different results and in many cases different ordering logics. On another level, differences in presentation styles and symbolic frameworks were evident even across participants of the same project. Following the insights provided by Actor-Network Theory (Latour 1999; Monteiro 2000) and Social Studies of Technology (Avgerou, Ciborra and Land 2004; Ciborra 2002), we were more interested in relationships among actors and between actors and material artefacts than in ‘quantifying’ the characteristics of each single actor or artefact. As we will show in the following sections, one ‘critical incident’ often presents enough information and layers of complexity to illuminate whole constellations of data. Like in a Latourian ethnography (Latour 2004), description is analysis and the thicker the description, the richer the analysis. In this sense, video data provides seemingly infinite layers for description and, as each layer is unveiled, a new and deeper understanding of the object of study (or the dissolution thereof if one finds that her own analytical categories were not in fact substantiated by reality). The following examples are some of the critical incidents which we encountered in our viewings and they are discussed in conjunction with the analytical themes they inspired.

Holistic narratives and the emergence of participants’ conceptual frameworks

The video data produced under Task 1 are the closest to what Noyes (2004) calls ‘video diaries’. The individual performing the task finds herself confronted with the camera and a few vague prompts on paper. Overall, the participants responded well and produced what we expected: long personal narratives where they consciously or unconsciously set the structure and the transition between points of view and the information provided. What is striking about these narratives is their coherence despite in most cases the lack of any ‘script’ or previous preparation for the task.

On a wider theoretical level, participants’ free-flow narrative contained their individual interpretations of the themes under analysis and their conceptual frameworks through which
they saw their work and the life of their projects as a whole.

Let’s consider for a moment the following excerpt. It is a 2 minutes transcript from Task 1 performed by the principal investigator of Project C.

My view is that everybody in the project would see the nature of what collaboration is in research quite differently and their experiences would be very different. [pause] Clearly in the TLRP project we have five members plus additional support people, so for everybody to keep abreast of what everybody else is doing is actually extremely challenging in itself. [pause] Now we do attempt to have a monthly team meeting but actually even getting all the members round the table for a team meeting is more than a challenge for our project officer when she needs to actually make that happen, to find a date. [pause] Also, even in those collaborative team meetings, time tends to be quite short to make sure that all the issues that should get addressed do get addressed. [pause] So, for example, one of the things that happen is that it’s always business that directs the team meetings rather than how we are actually communicating as a research team. [pause] This is because there are so many tasks to do and so many things to catch up with. Sometimes I think that’s been a real challenge that we haven’t really managed. [pause] We kind of managed because we also come into contact with each other inadvertently through everyday work. [pause] So I can catch up with what’s happening for example in *** where *** is the researcher in charge, but sometimes that happens on the stairs rather than us finding an easy method to do it. [pause] So even at the level of the team it’s a challenge. But by and large we are all relatively positively predisposed so we do have a sense of being a team.

Sitting in front of the camera, speaking fluently but with a few pauses during which she recollects her thoughts and thinks through the next sentences, the participants offers us in two minutes a detailed overview of how she came to perceive the main challenges encountered by her research team in the conduct of project work. The picture that emerges is that of a group of researchers working under pressing time constraints and without formalized procedures for collaborative work, but whose personal ties with each other allow for filling this gap effectively by conducting communications and exchanges informally. These insights proved to be very useful to us in the overall theoretical process of synthetising our own observations.
about this particular project within the JISC-funded VRE research (see general findings presentation for an in-depth discussion of these issues). The unidirectional quality of most of the questions posed in Task 2 (questions that in most cases where translated ‘codes’ for data analysis) could not allow for such answers, lest by accident.

On a simpler level of analysis, a large amount of very specific data was provided concerning project history, members involved, connections among people within and across institutions, previous histories of collaboration within and outside the project, the everyday running of the project. Surely, this information was in large part retrieved through the structured questionnaire of Task 2; but presented as a single free-flow narrative, it provided links between different parts of the data which would have otherwise been lost.

For instance, in Task 1 a researcher from Project A discusses the crucial role that collaboration with two other TLRP projects has played in her work. She provides a detailed history of the collaboration with two other projects and a description of the nature of these exchanges. In Task 2, the same information is retrieved when the participant answers the following question from our questionnaire:

Are you aware of any form of collaboration taking place between your project and other TLRP projects?
   a) What is the nature of such collaboration?
   b) Have you been directly involved with this / how?

Nevertheless, there are interesting differences between the two pieces of data. In Task 2, more details are provided about the content of the collaboration between hers and the other two projects; the role of her principal investigator is also mentioned (while no mention is made of her in the previous extract in Task 1). Overall, the institutional dimension of the collaboration is emphasized. In Task 1, the emphasis is on the significance of such collaboration for her own growth as an early career researcher. The following statement from Task 1 closes her views about the role the collaboration with these two projects has played in her research work:

The effect of those meetings and that interaction with my work as a young researcher coming straight out of university has been absolutely invaluable; the chance to meet with those people and get their ideas and to use those ideas to feed them into [the project], to
take [the project] forward in new and exciting ways, it’s all been fantastic.

This shows how the same piece of information has been filtered through two very different conceptual frameworks. From the evidence brought forward by other videotapes, there is no doubt that the influence of our research framework on the respondents’ answers has been much greater in Task 2, which contained a structured questionnaire, rather than in Task 1, where participants were encouraged to provide their own interpretations of the vague prompts provided.

The characteristics of the data collected through Task 1 have emerged in great measure due to the absence of the researcher in the research process. Not only were we ‘physically’ absent, but we also tried to minimize our ‘theoretical’ presence. Task 2 resembled more the administration of a traditional structured questionnaire. But here too some interesting methodological features emerged. First of all, inserting the questionnaire in the context of the video study, de facto pushed the participants to complete it. The response rate for the participants who took part in the individual tasks has been 100%. Also, the answers provided were not limited to ‘yes or no’ or to unsatisfactory single sentences. This success may have well have been a result of the ‘pressure to perform’ that the presence of the camera put on the participants. The possibility of verbalizing the answers could have been another contributing factor. Writing answers to questionnaire is often perceived as a much more burdensome task than answering orally.

**Multiple voices and power dynamics**

The ‘physical’ absence of the researcher allowed for individual voices and multiple perspectives to emerge more easily. In our specific case, participants felt freer to provide critical views of different aspects of the VRE. We were not just perceived as ‘neutral researchers’ but had been involved in the support and implementation of the VRE in each project since the very start. The overall tone of the exit interviews we conducted during our field visits is much more compromising and ‘polite’ about the relevant criticisms of the VRE. In the videos, without our interference, it seems that participants are left freer to express their emotions and their moods about VRE usage. When discussing the theme of body language in video data later in this paper, we will analyse one such instance.

The minimisation of the ‘tyranny’ of the researcher on her subjects of study did not however
mean the disappearance from the stage of power dynamics. Multiple voices we heard, but often in an interesting dialectic with each other determined by personal and organisational factors.

The group tasks were crucial in this respect. By observing group dynamics on video, we were able to discern a number of explicit and hidden tensions and contradictions which would have been hard to uncover through individual interviews. Task 4 was particularly helpful in uncovering these complex webs of multiple perspectives and differing voices that constituted the reality of the education research project.

For instance, the group discussion on collaboration and communication technologies carried out as part of Task 4 by Project D shows how the two senior researchers speak for most of the time. The two research associates who are also involved in the task speak for a very limited amount of time. Yet, from what emerges from the group discussion and the conscious utterances of the senior researchers, there seems to be no explicit intention from the part of the senior researchers to practice some form of ‘authoritarian’ management. During the conversation, research associates are often encouraged to contribute their views. Part of the reason for such reticence might be due to internalised mental frameworks of the associates who expect the senior researchers to exert their ‘authority’ and their ‘managerial prerogative. This is a common occurrence in research projects where young researchers clearly do not feel on an equal footing with those who ultimately are employing them.

In terms of video methodology process, videos of group interactions possess a quality that makes them invaluable tools for research: complex as the interactions may be, the researcher can view the videos several times. This allows for different layers to be uncovered each time; often something that was not ‘seen’ in a viewing, will become evident at a later stage. In this respect, the ‘ethnographic’ potential of the camera surpasses the ‘being there’ of the ethnographer participant. We could have studied the same group interactions by observing the team meeting in person. It’s very likely that a huge amount of data would have been lost due to changing levels of attentions and the particular analytical frameworks we would have employed in that moment. With videos, we can review our observations as many times as we want. We can also ask other researchers to help us corroborate or confute our analysis by showing them the data (although, as we mentioned earlier, this might not be always possible due to ethical reasons).
User requirements ‘in action’ and workplace practices

The videotapes produced under Task 3 constitute without doubt the most interesting part of the data collected under this study. They are also the most challenging data to be analysed, due to their richness and the existence of manifold layers of signification. Although common elements emerged (a level of standardisation was somehow guaranteed by our explicit requests contained in the instructions), this was the data set that showed the highest degree of variance among the different groups of participants. Despite differences in styles of presentation, scene sequences and visual content, all the tapes presented in some form or another the following elements: scenes where participants were involved in the performance of some routine research or administrative tasks; scenes where participants were involved in the usage of the VRE; representations of the physical setting where all or part of project work activities took place. Three of the four tapes also presented commentary of some sort to guide the ‘spectator’ through the viewing of the video content.

In all cases, this was the task that stimulated more than the others the ‘ludic’ aspect of the education researchers involved in the study. It would probably have been impossible to undertake such an experiment – going around filming the workplace, workplace activities and providing some commentary to some ‘imagined’ audience, for instance – without some degree of self-irony.

The filming of project activities involving the usage of the VRE proved a rather powerful way to capture user requirements. Video extracts of this kind were what we wanted to show to developers. They provide realistic representations of workplace situations where human actors are actively interacting with technologies, with the physical environment and with themselves in their work capacities. This is a far cry from what can be deduced through *a posteriori* reflective accounts (i.e. through questioning respondents) or observation of routine usage data (i.e. analysis of user logs, frequency of log ins, number of sessions, nature of the virtual task performed). Our object of study was there, in its entirety. Surely, one must be aware that what was captured on video was not ‘unfiltered reality’, but representations of some aspect of it (Banks 1995). Yet, these representations proved useful insofar as they were performed with a clear intention of remaining truthful to the represented reality. Participants’ honesty, once again, proved crucial for the crafting of everyday work situations which we were going to dissect and analyse.
The potential danger inherent in letting participants ‘free’ to produce their own data for what was ultimately our analysis, turned out to be a blessing. In the design stage, our will to experiment and explore new avenues for data collection was counteracted by a fear that we would end up with a mass of incoherent and irrelevant data that did not match our research objectives. Far from this, we actually discovered that we had put our participants in a situation where they had to make their own ‘theoretical’ choices: they had to select particular ‘typical’ instances from the ‘chaos’ of their work realities in order to show us in a very limited span of time what their project everyday life looked like. This stimulated an interesting reflexive process whereby participants offered us their newly found framework for analysis of situations they had given little thought about before.

Let’s consider the following example. Project B Task 3 contains a 22 minutes long scene where the project administrator and her administrative assistant sit down at the computer in the latter’s office working together through the main hurdles of uploading and updating the project research interviews’ data on the VRE. They discuss the technical issues with uploading interview transcripts and with editing new versions of the same transcript. They go through the difficulties of collecting the transcripts from the researchers across the departments involved in the project and of keeping the right versions in the VRE. They discuss practical solutions to the problems they encountered. The chance of communicating in their own terms their views of the interaction between project work and the VRE allowed them to bring to the fore their knowledge and to transform it into a ‘ready-made’ object of analysis. In these 20 minutes, we get a condensed full-rounded picture of Project B experience with the VRE and its interaction with the reality of large-scale education research inter-departmental collaboration.

Our other data collection sources corroborated what the administrative staff (which in this case was the most active in the management of the project VRE) already knew and decided to show us through the camera. Project B experience of the VRE was largely confined to the usage of the ‘Resources’ tool (a virtual file store where all kinds of documents could be uploaded and shared among VRE users); Project B management saw the VRE mainly as a central repository and delegated the responsibility for the everyday running of this repository to the project administrative staff. The central repository was to contain all the research interviews carried out by the project researchers across the four departments. The administrative staff functioned as the central interface between the VRE and the researchers.
Whether the filmed interaction was ‘constructed’ or ‘spontaneous’, whether it was ‘fictional’ or ‘real’, does not really matter. The video camera and the instructions provided for Task 3 stimulated a process whereby the actors’ everyday practical knowledge of project work and the VRE emerged as a particular instance of a ‘situated action’. The constructed nature of the representation is not in the end more ‘artificial’ than the constructed nature of the reality behind the representation.

**Visual data: added value or theoretical impossibility?**

Everything we have discussed so far with regard to the potential of video as tool for research in some way or another presents viable solutions for video data analysis. Surely some of the instances we have mentioned require thorough and sophisticated methods of observation and, most importantly, a considerable amount of time on the side of the researcher. But ultimately our discussion so far hopefully shows that such analysis is indeed feasible and, given its potential results, desirable.

Ironically enough, none of the kind of data we presented above is purely ‘visual’. Even where we visualise the interactions among individuals and between individuals and technologies, we still do not extract any unique bit of information from the images themselves. When we observe the two administrators of Project B working on the VRE, we do not actually extract any special bit of information by recording the specific physical features of the computer they work on, the desk upon which this computer is placed, the physical set up of the room, and so on. Our mind processes this information by abstracting types and standardised features out of real contexts. On a very unconscious level, seeing the two actors sitting at the computer and in their real physical context helps us to think about the particular situation we are studying. But ultimately our mental framework reduces that computer to any computer and that room to any ‘typical’ working room for administrative staff in a university environment.

How are we supposed to analyse the complex visual representations of the physical environment which are captured on video? If they constitute ‘data’ at all, what kind of data are they?

In the performance of Task 3, participants are keen to consciously show us features of the physical environment they work in. Through the camera eye, they show us their offices, the
corridors, the meeting rooms, and so on. In most cases, we literally get a ‘guided’ tour with the improvised cameraman walking around different spaces and commenting upon what she is capturing on video.

In two cases, participants go a step further. A researcher from Project A starts Task 3 by showing the surroundings of the main building where project staff works. The tube station close to the workplace and the adjacent buildings and streets are captured as if to re-enact the experience of walking to the office in the morning. The space represented here supposedly has an impact in shaping that very experience and the improvised cameraman / director wants to share that experience with the spectator.

Along similar lines, the principal investigator of Project C films excerpts of her car journey to some of the research sites where she conducts data collection activities. We get the driver’s view of the road, framed by the front windscreen of the car seen from the inside, and the music in the background, coming out of the car stereo. Here too the features of the picture and the accompanying audio background are meant to convey the experience of driving to the work site.

Social scientists have always been wary of interpreting non-verbal data, especially where these imply a knowledge of inner mental states. How can we enter the mind of the participant to understand what she is going through when she walks every morning to the office? How can we study the impact that the particular disposition of corridors and rooms in her workplace has on her moods and work attitudes?

A number of theorists have emphasised the importance of the material environment (which includes the features of physical settings) in the shaping of agency, attitudes and actions in the everyday life of individuals and organisations (Latour, 1996; Lefebvre, 1974). But we still lack well established techniques to map these interactions and to interpret this special kind of data.

Video data presents the observer with these visual elements in a compelling, almost forceful way. It is something that should be taken into account and that should be explored further to provide an additional layer of understanding to the study of agency and organisations. In our specific case, we will try to explore the significance of these data for our research endeavours.
further in the future. One difficulty, among others, is the need to explore relevant social scientific literature in the field, which has often been put at the margins of established paradigms (see, for example, the experiments of the Situationists in the 60s with what they called ‘psychogeography’, the study of the impact of material landscapes on human consciousness).

Participants’ body language is another significant visual feature that stood out through our viewings of the videotapes. In many cases, participants’ facial expressions and hand movements showed some degree of discomfort and nervousness due to the novel situation they were going through. In some cases, though, body language expressed emotional states and individual views about the topics under discussion.

One case definitely stood out. One researcher from Project C repeatedly showed through Task 1 facial expressions suggesting weariness and frustration; her speech was also often interrupted by sighs reinforcing the message sent through her facial expression. While we were immediately tempted to interpret this within the framework of the topics under discussion, we realised that while the message was clear enough, the reasons for such weariness could not be taken for granted, but themselves needed evidence and analytical thinking. Did she just have a bad day? Was there something else on her mind that distracted her from the task ahead and made her body language communicate irritability and tiredness?

The evidence provided by her views expressed in Task 1 suggested otherwise: this participant’s experience with the VRE was not a particularly happy one. Alongside research, she performed a number of administrative roles in the project. She took on the management of the VRE and put lots of effort in inserting research data in it and developing other sections of the VRE in order to stimulate participation from other team members. However, widespread VRE usage among the other researchers never really took off and on top of this, technical problems with the VRE itself and the university network, increased the participant’s sense of frustration. The participant’s views expressed in Task 1 were consistent with her views (and body language) captured in Task 2. The following words from Task 2 well summarise her feelings:

I am very critical of the VRE because I had to live with it for some time and sometimes I was the only one living with it, nobody else, it can be frustrating and lonely, also you feel that a lot of work you’ve
Her emotional reaction to VRE usage emerges once again in Task 3. The participant is describing the procedures she goes through to upload document files. She is browsing the VRE in the process and she wants to check whether the recent upload of a bulk of files has been successful. Suddenly, she interrupts her commentary, and with an irritated and puzzled look on her face, she shifts her attention to the operations she is performing on the computer screen. She feels some kind of technical failure has just occurred. The participant has one of those little outbursts we all experience when we deal with new technologies that somehow do not seem to submit themselves to our control:

Why? I don’t know why it does this…

The cameraman (in this case, the principal investigator), with a tone of reproach, utters the following words:

It just needs patience, I think.

With a good dose of sarcasm, the participant replies:

Ya, you need to have a lot of patience with the VRE, and in these days patience is not my strongest point.

This seems to further corroborate that the sense of frustration and irritability we recorded in the participant’s body language in Task 1 is connected to her experience of the VRE within the context of project work. It also shows the ‘psychological’ potential of video methodology: the video assumes here almost a ‘confessional’ role (see Noyes 2004). However, as we tried to collect more evidence to rule out other explanations for the signals expressed through body language, we encountered other layers of meaning that we were not aware of. When she says “in these days patience is not my strongest point”, the participant is hinting at a whole deeper realm of experience where other personal issues might be interacting with her own work and her dealings with the VRE. So, in some sense, it might as well be that she has been filmed in a period of her life when other issues are piling up and interfering with her work activities. The deeper the description, the more complex the picture that emerges. The situations captured on video lend themselves to seemingly infinite layers of analytical depth. This example also
warns us of the danger of misinterpretation, body language can be as telling as it can be misleading. A potential source of data can also distract us from our research objectives and lead us into the formulation of misleading and unsubstantiated conjectures.

**Crossing disciplines: videos as ‘boundary objects’**

In this final section, we would like to discuss a further innovative use of the videos produced under this study. We decided to feed video extracts to VRE software developers working with us in the JISC-funded project in order to provide them with a more holistic perspective of the users they so seldom met in real life situations. In this instance, videos became objects inserted into a wider constellation of intricate relationships across different disciplinary and professional domains.

The development and implementation of the VRE for Education included at its very core the establishment of a relationship between two separate and bounded domains: that of the education researchers and that of the software developers. In order to make the necessary bidirectional exchange of information and perspectives possible, we acted as brokers between these two worlds. As individuals with two-world experience Wenger (1998), we were able to understand the language and the theoretical paradigms of both disciplines. Our experience in social research and IT usage and development allowed us to develop a third space where the individuals of the different domains came together (virtually or physically) to communicate and transfer information across disciplinary boundaries.

Figure 2 shows the two activity systems (Ludvigsen et al., 2003) of the software developers and the educational researchers. In the middle between these two groups there is the space of the brokers (i.e. us as VRE researchers) that, although a cloudy area, has its own activity system.
The videos provided us with yet another avenue for brokerage and transfer of information across boundaries. While our role with other data sets had been one of constant translation of user requirements for developers in the form of reports, informal conversations, team meetings and email exchanges, we now had the opportunity to present developers with bits of unfiltered data. The videos produced by participants came to act as ‘boundary objects’. According to Star and Griesemer (1989),

This is an analytic concept of those scientific objects which both inhabit several intersecting social worlds [...] and satisfy the informational requirements of each of them. Boundary objects are objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use, and become strongly structured in individual-site use. These objects may be abstract or concrete. They have different meanings in different social worlds but their structure is common enough to more than one world to make them recognizable, a means of translation. The creation and management of boundary objects is a key process in developing and maintaining coherence across intersecting social worlds.

The informant-made videos in our study constitute natural ‘boundary objects’. In the era of mass media and of a booming film and television industry, members of both domains have come into contact with the idea of a filmed interaction and will share some general abstract
notion of what a video is. At the same time, VRE users as participants, producers and education researchers develop their own specific views of what these videos are about, how they interact with their lives and what level of participation is required on their behalf. The camera eye itself became a connecting and at the same time dividing line between the education researchers and the developers, between performers and spectators.

For the education researchers involved in the study, the imagined audience was embodied by us, the research team. A number of times, the filmed participants addressed us directly, showing that they were aware of who was going to watch these videos. While they could picture the VRE researchers clearly and mention their names due to the crucial support role they performed since the beginning of the VRE implementation in their projects, they did not have an image of the developers. When technical improvements were suggested, no mention was made of who was going to practically operationalise them. We were seen as gateway to another world of which the education researchers had only a vague idea.

The sections of video that were mediated to the developers opened up the world of the educational researcher. It was one of the most important brokerage roles to be able to choose the parts of the video that would be of most use to the developers, as they would not have time to view the whole video. When selected pieces of video were shown to the developers their reaction was recorded. The following examples are of the types of responses that were gathered:

This is like with Access forms where people write their own forms to sort out a particular problem, and these are ad-hoc ...they do a job, but it’s only a job they understand ... basically they want a report ... on their filestore ... it won't make sense to anyone else ... (initial assessment of situation)

In the above quote the developer is making an assessment of how the education researchers work and how other tools that they would not have considered using could be used to help with their problems.

They have a lot of people doing similar tasks and want to keep a watch ...a bit like assignments and gradebook ... lots of people doing the same thing and you want to chase them up and get an overview. So the system ... the filestore ...needs to be like assignments {the
assignments tool in Sakai] and have a reporting tool. They might not appreciate this being set as an assignment though! (analogy with established process)

In the above quote the developer uses analogy to talk about how other tools could be repurposed to deal with the problem shown in the section of video.

This is useful because they talk about their problem and that helps you understand what it is they really want to do ... how they want to work.

(reflection on process)

The developer in the above quote was able to reflect on how useful the video had been and how it could help in her work. This will have been the first time that the developers had actually seen these particular users of the VRE. The developer also realised the importance of seeing how people want to work and not to impose what they think are the ideal work practices on the work of others. This last point is very important for developers working for people outside of their own discipline, employing unfamiliar methodologies or having particular commitments or ethical concerns.

**Emerging thoughts: videos versus interviews**

Throughout the discussion, we have shown some dimensions of the potential of video methodology for education research. In this final section, we would like to summarise some of the findings and make the comparison with an alternative reflective methodology more explicit. The closest alternative option to us would have been that of audiotape interviews – as a matter of fact, we did carry out interviews with members of the projects involved in the videos. However, it should not be forgotten that it is not possible to completely abstract the virtues of a method from the context within which it is applied. Many of the insights provided here are the result of complex interactions between method, objects of analysis, and research context.

One of the major differences of our study with the hypothetical equivalent carried out through audiotaped interviews is the physical absence of the researcher during the data collection process. This has allowed for the emergence of holistic personal narratives where participants’ conceptual frameworks came forth more freely than in a context where the lead stimuli for data collection are constituted by the interviewer’s questions. Participants were also freer to
express their criticisms about the VRE without our physical presence.

The videos also allowed for the capturing of group interactions which could not have otherwise been recorded in one-to-one interviews. Through repeated viewings of these interactions, we have been able to uncover interesting organisational dynamics which emerged from the verbal and non-verbal manifestations of participants’ opinions, attitudes and moods. The filming of work practices ‘in action’ also offered new avenues for the study of education researchers. Rather than reflections about realities not directly accessible (i.e. interviewees speaking about their work), we observed video instances of situated actions.

The power of images and the possibility to capture bits of organisational life as it happened made the videos a powerful boundary object to bridge the gap between VRE users (the education researchers) and VRE developers. Audiotaped interviews could not exhibit the same compelling force and could not be easily edited into extracts for the fruition of software developers.

The visual data contained in the informant-made videos gave us access to additional layers of information that could not have been made available otherwise. The material environment is an important, though understudied, factor in determining the specific structural configurations of research organisations and their workplace practices. The participants’ body language also offer another separate but interconnected source of data to understand moods, feelings and states of mind.

On the other hand, the researcher is confronted with the lack of well developed analytical tools to make sense of these visual data. Much more work is needed to produce viable analytical frameworks that meaningfully connect these sources of data to the objects of study. Another potential ‘downside’ of video analysis is the co-existence and coevalness of these multiple layers of data. The acts of cataloguing and categorising bits of data into structured frameworks are thus made much more difficult. Audiotaped interviews are a much more established method for data extraction and a wider and more rigorously defined range of conceptual and practical tools is available for data analysis. For the same reasons, video analysis can prove exacting and time-consuming for the researcher.

We hope our discussion shows that video methodologies are an effective tool for studying
agency and context among education researchers. At this stage, more video studies of this kind are required to explore the full potential and the limitations of this method. Further research will also provide a wider sample for systematic theorisation.
References


