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Video calling and desktop sharing (VCDS) as a research method in Education

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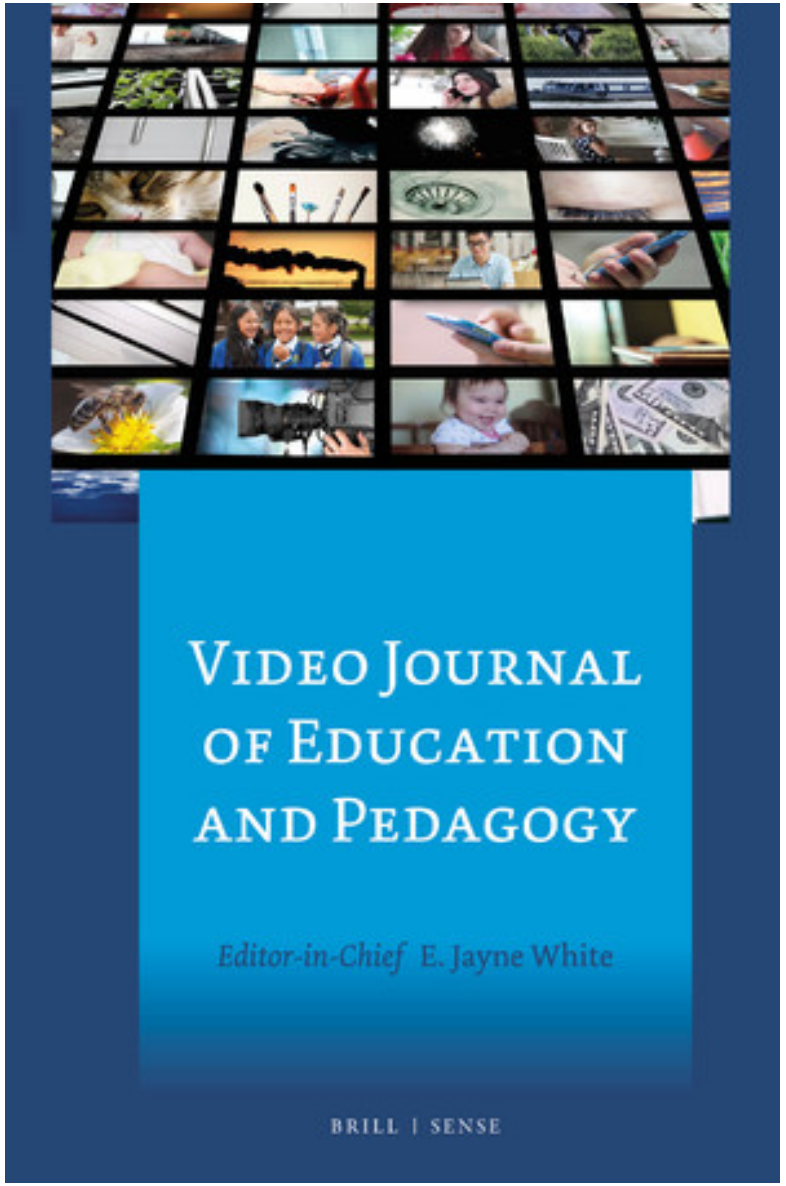

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Keywords: emerging research innovations; video calling; desktop sharing; digital research methods; pedagogical reasoning; lesson planning

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Background to the study

- 2014: Computing (inc. Computer Science) as a subject replaced former ICT as a subject in English schools.
- Teachers' relative subject knowledge deficits – 4600/18,400 with first degrees in related subject even in 2012 (Royal Society, 2012).
- Shulman's PCK construct (1986) – the 'teachability' factor – shared understandings of teacher knowledge.

Teachers' Knowledge Bases

...

Curricular Knowledge

Content Knowledge

Pedagogical Content Knowledge (PCK)

...

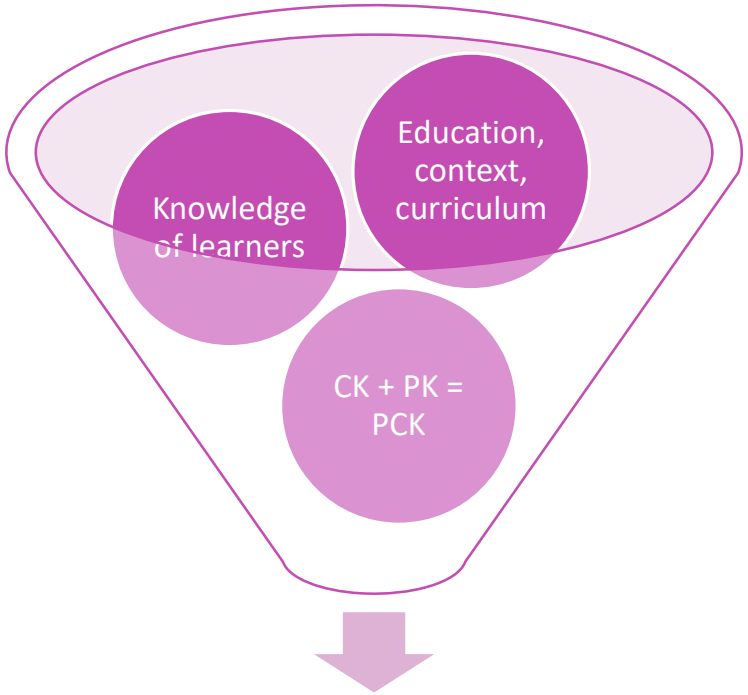
(Shulman, 1987)

Categories of the Knowledge Base

If teacher knowledge were to be organized into a handbook, an encyclopedia, or some other format for arraying knowledge, what would the category headings look like?[4] At minimum, they would include:

- content knowledge;
- general pedagogical knowledge, with special reference to those broad principles and strategies of classroom management and organization that appear to transcend subject matter;
- curriculum knowledge, with particular grasp of the materials and programs that serve as "tools of the trade" for teachers;
- pedagogical content knowledge, that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding;
- knowledge of learners and their characteristics;
- knowledge of educational contexts, ranging from the workings of the group or classroom, the governance and financing of school districts, to the character of communities and cultures; and
- knowledge of educational ends, purposes, and values, and their philosophical and historical grounds.

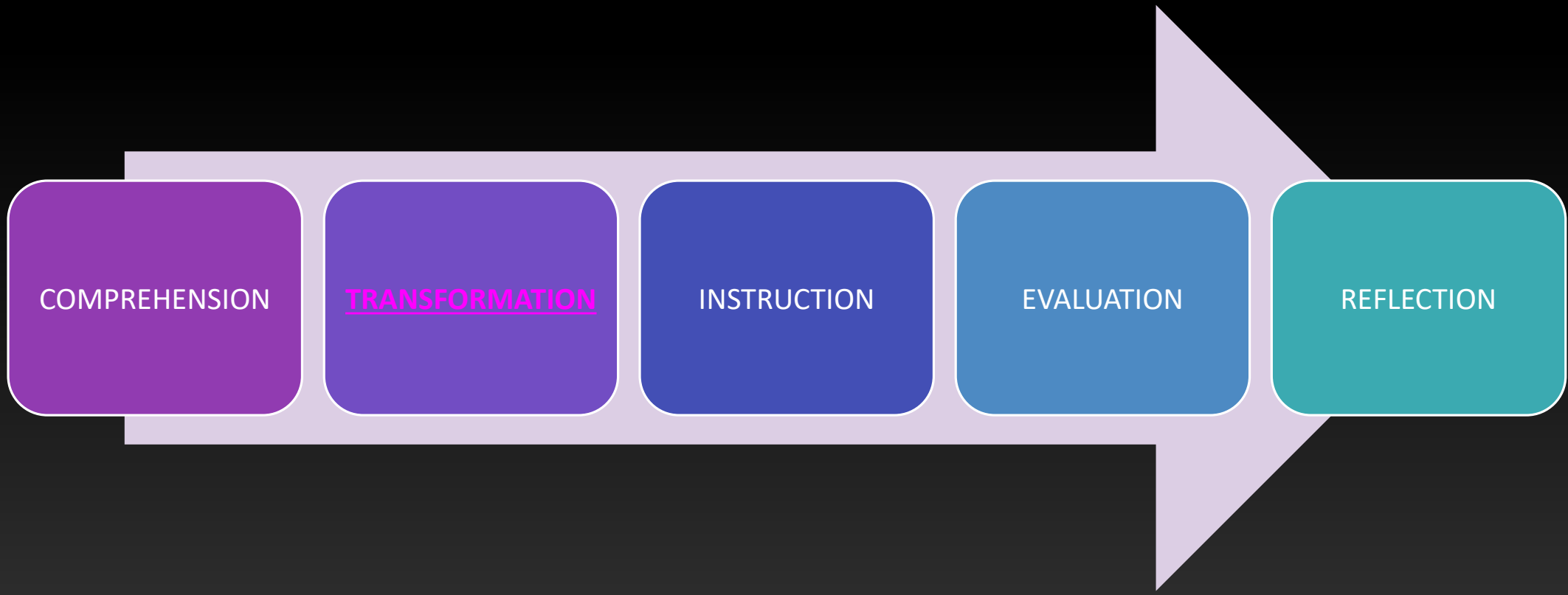
Among those categories, pedagogical content knowledge is of special interest because it identifies the distinctive bodies of knowledge for teaching. It represents the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction. Pedagogical content knowledge is the category most likely to distinguish the understanding of the content specialist from that of the pedagogue. While far more can be said regarding the categories of a knowledge base for teaching, elucidation of them is not a central purpose of this paper.



Pedagogical reasoning

(Shulman 1987)

Pedagogical Reasoning Process



(Shulman 1987)

Transformation

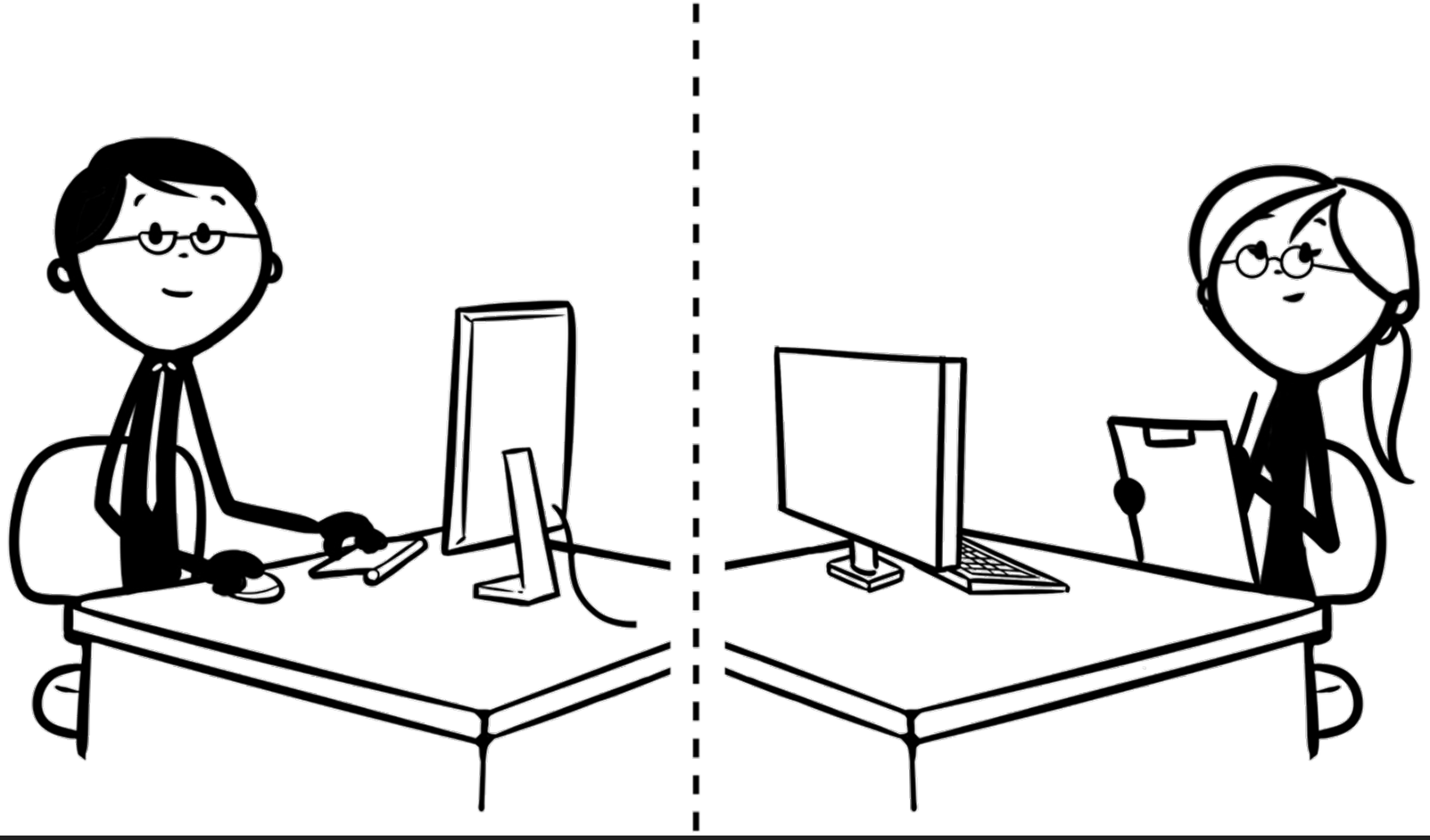
(Shulman 1987)

- Preparation
- Representation
- Instructional selection
- Adaptation
- Tailoring

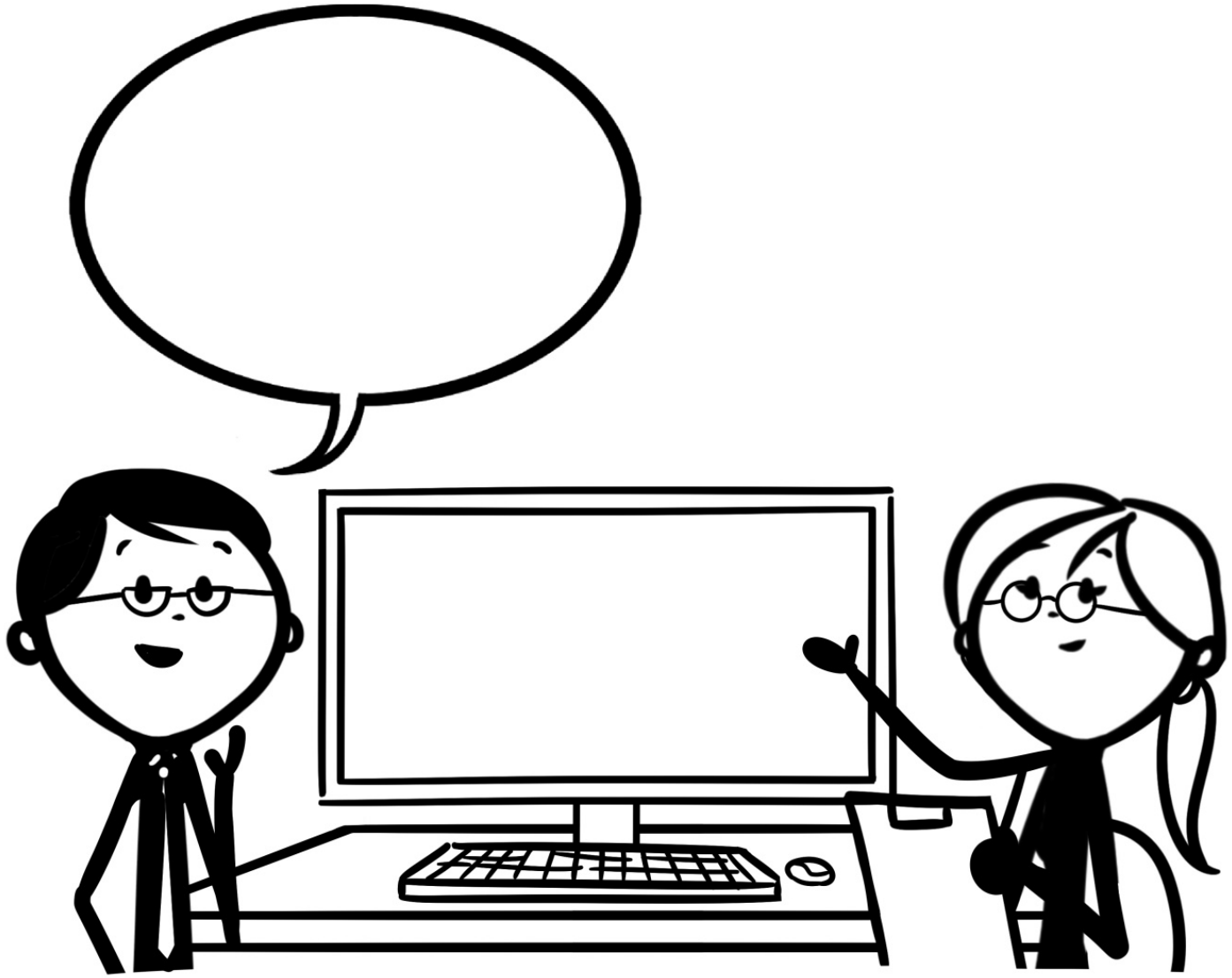
Research Questions

1. How are teachers **planning** Computing lessons?
2. How is pedagogical content knowledge (**PCK**) demonstrated in the planning process?
3. How is the Computer Science **subject knowledge** requirement being addressed by different teachers?

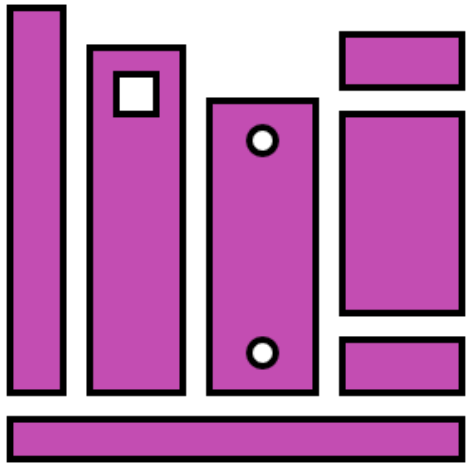
Data Collection Methods



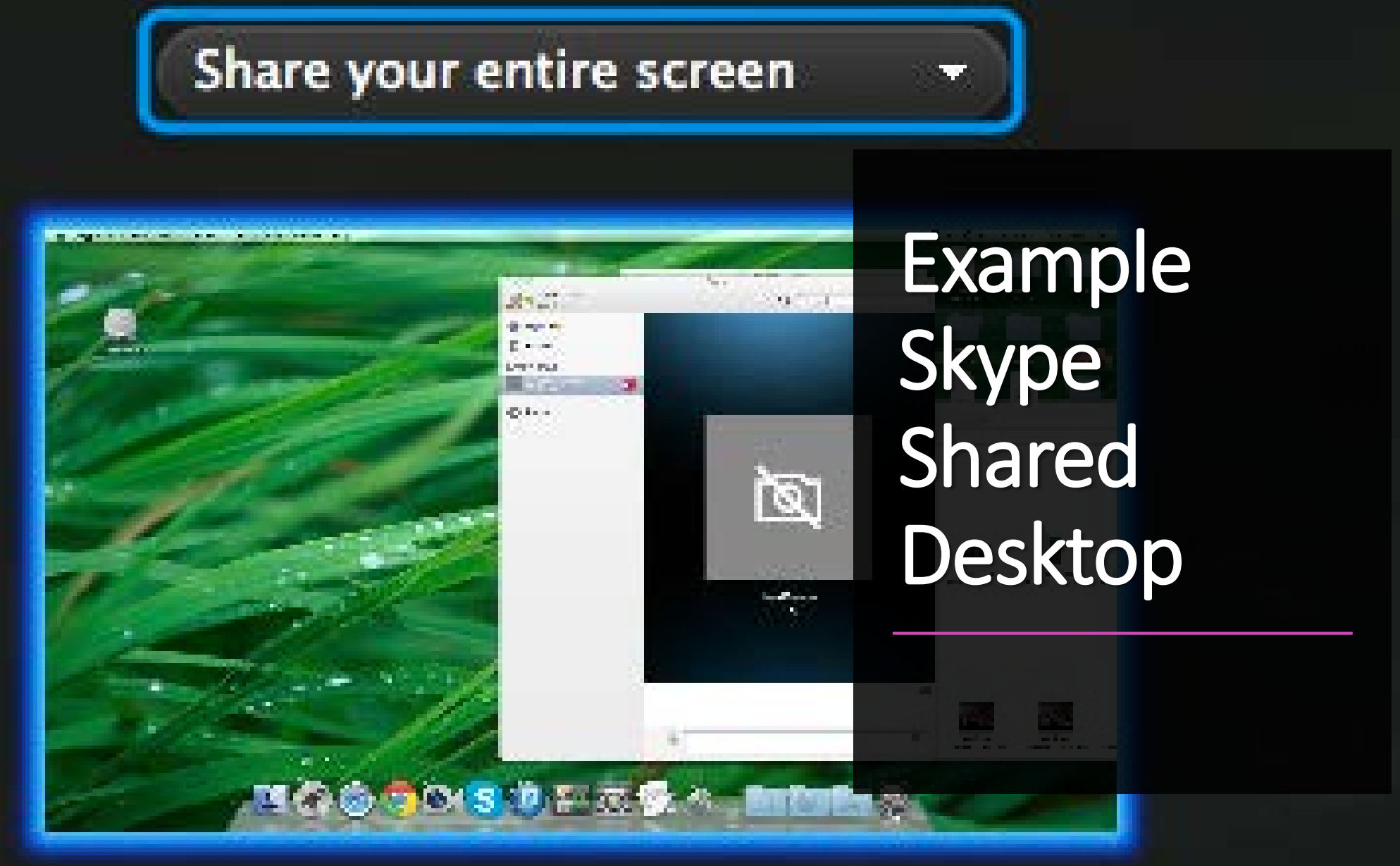
Video-Stimulated Interviews



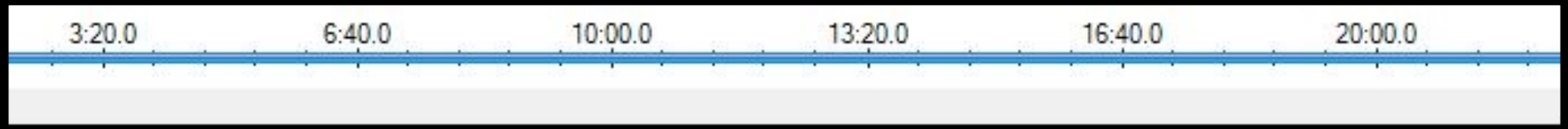
What does the literature say?



- collect, collate and interpret the practical knowledge of teachers (Shulman, 1987)
- a methodology capable of generating insight into intrasubjective processes (Dempsey, 2010)
- ‘see’ things more clearly through a visual methodology, allowing a ‘new view’ with the luxury of meta-analysis and reflection (Lyle, 2003)
- rich focus on the minutiae (Weller, 2015)
- reflection-on-action; reflection-in-action (Schön 1991)
- shared reflective, dialogic experience between researcher and participant (Jones et al., 2009)
- read the pedagogical environment critically (Nind et al., 2015)

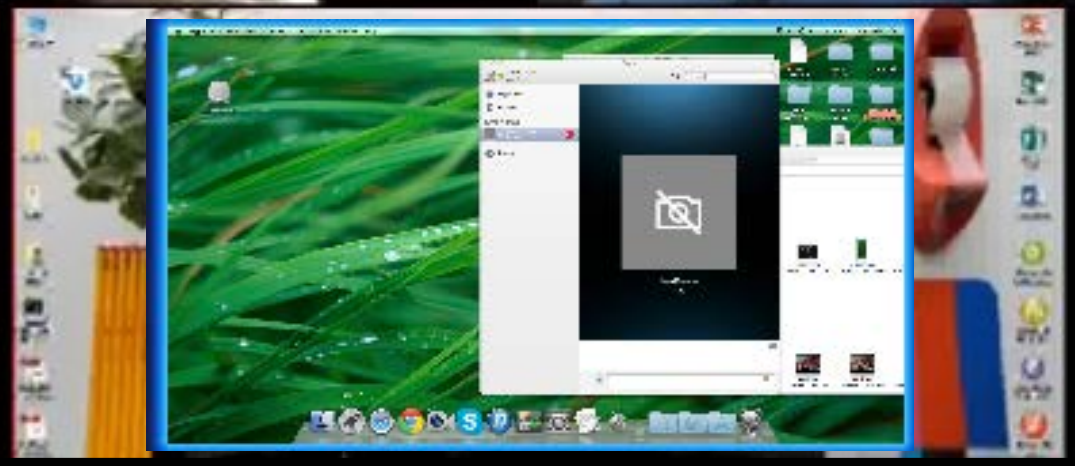


Example Skype Shared Desktop

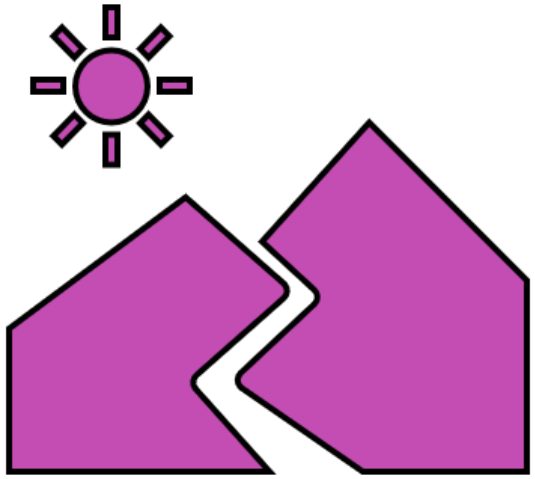


1. Researcher
Video Stream

2. Participant
Video Stream

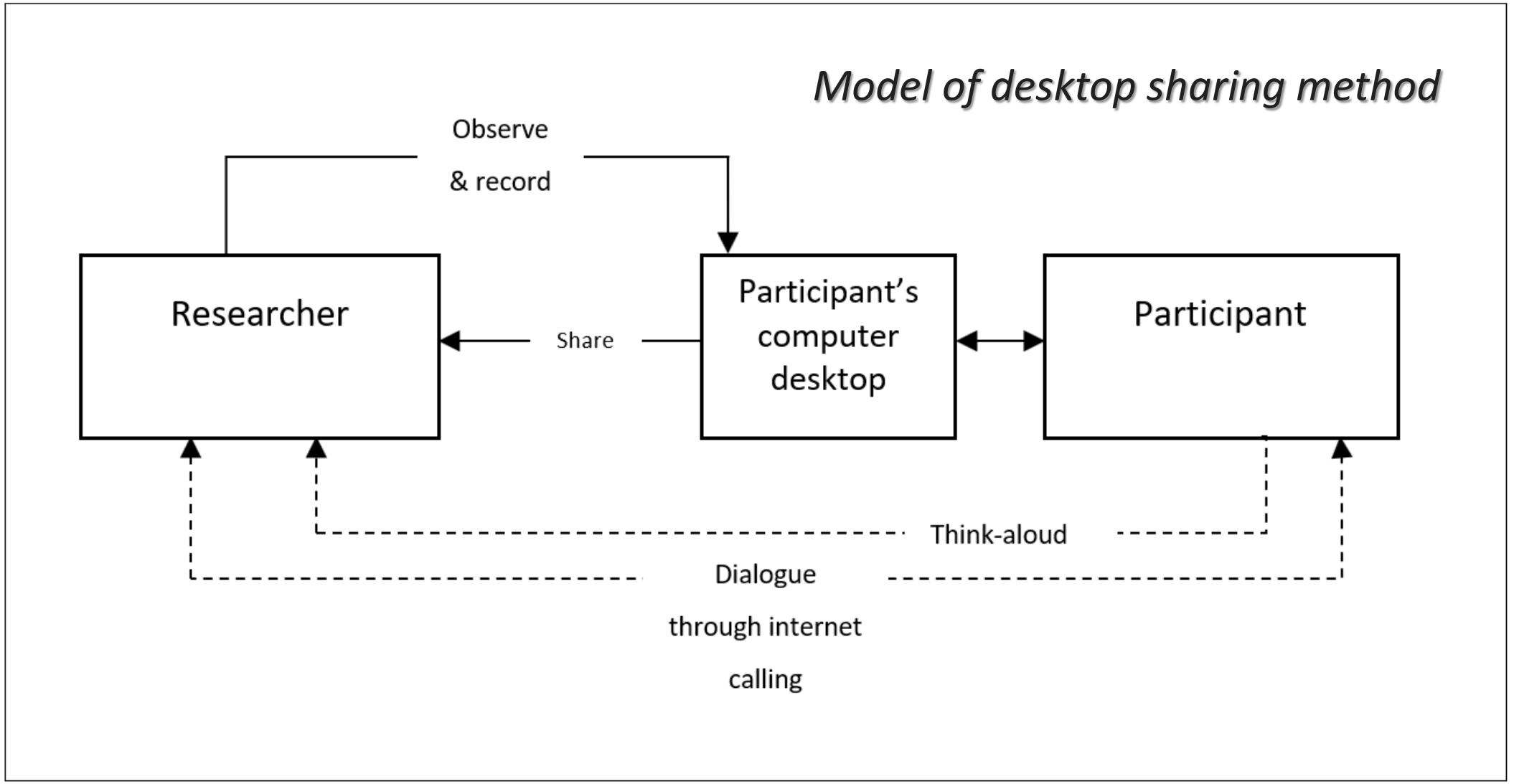


3. Participant Desktop
Stream



“A methodological frontier…”

Weller (2015)


Model of desktop sharing method
Observe
& record
Researcher
Share
Participant's computer desktop
Participant
Think-aloud
Dialogue
through internet
calling

Hidson (2018)

VJEP_5.1_Hidson_Video 1.wmv (22.4 MB)

Case Study 1

The dialogic interview

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Case Study 2

The think-aloud interview

Affordances

creating lesson artefacts and resources

locating saved materials for re-use or review

use of internet **search** engines to locate text or multimedia information

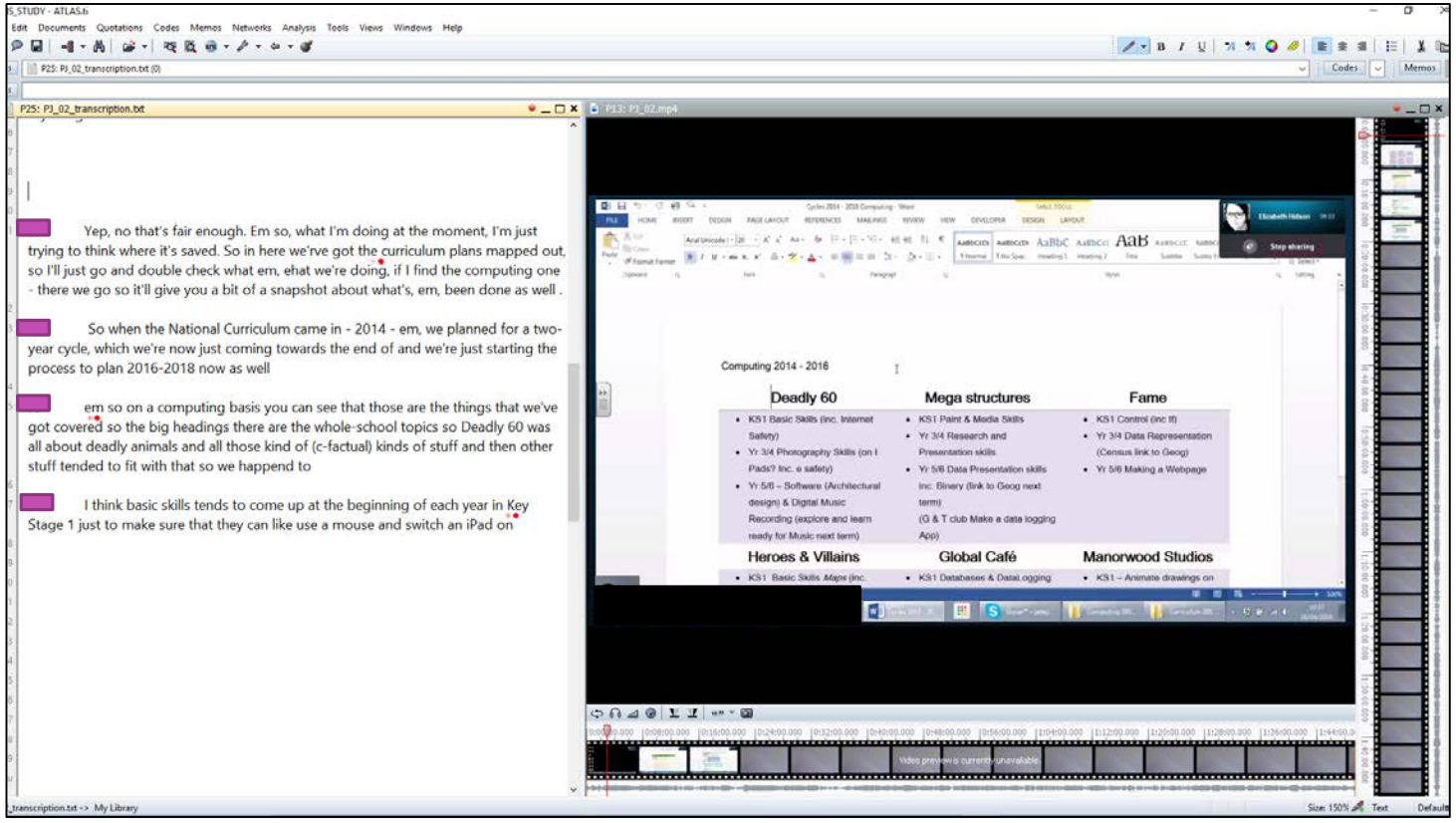
trialling methods for use in the classroom: developing programming techniques in advance of teaching

illustrating something referred to by locating it in their own archives or on the internet

What did this research environment and shared digital space offer us access to in this study?

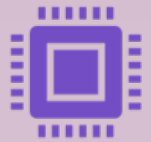
Limitations and implications

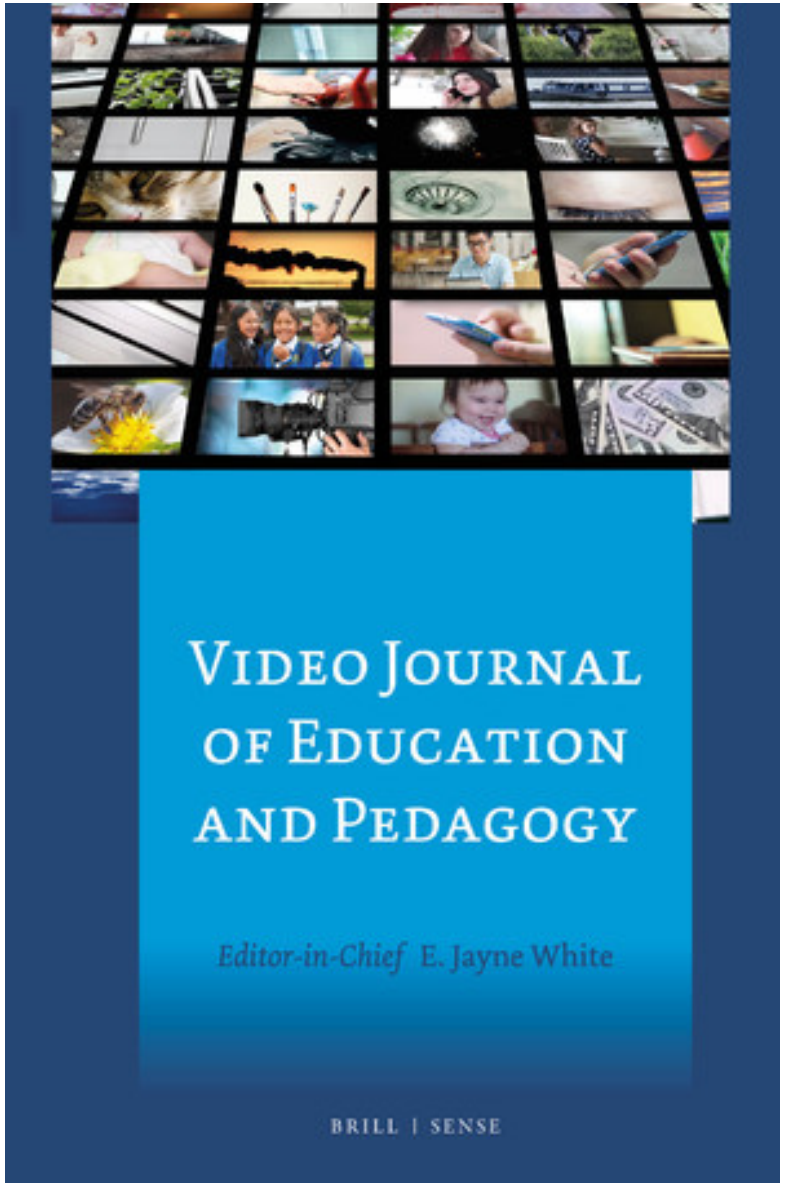
- Transcribing complexity: multimodal versus orthographic
- Small and intense research space
- A ubiquitous tool being used widely but perhaps bluntly
- Limited attention in the literature to this specific approach – a few references in more recent online research methods
- Technological competence of researcher and participant



Building a framework for using VCDS

Purpose	Technology	Affective	Methodological
• What can be discovered through this research experience? • What can be achieved in this session?	• Technical considerations • Affordances – what can the technology do? • Software features	• Roles • Rapport • Etiquette • Ethics	• Relate methodology to purpose • Research design issues • Can methods be neutral?





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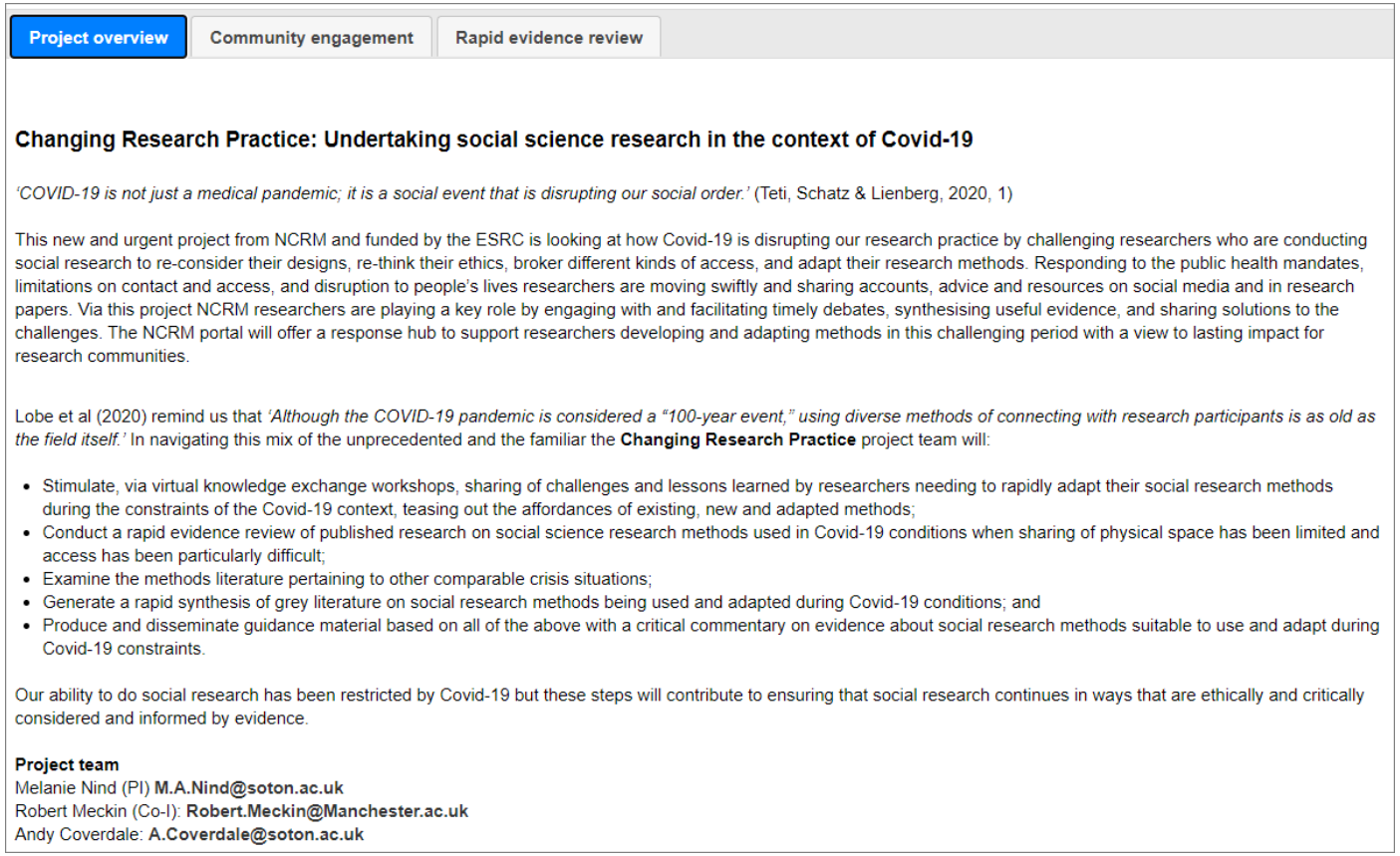
Research in the time of Covid-19

For further reading on online research methods, see the NCRM / ESRC project currently underway: "Changing Research Practice: Undertaking social science research in the context of Covid-19" https://www.ncrm.ac.uk/research/socscicovid19/



Project overview | Community engagement | Rapid evidence review

Changing Research Practice: Undertaking social science research in the context of Covid-19

'COVID-19 is not just a medical pandemic; it is a social event that is disrupting our social order.' (Teti, Schatz & Lienberg, 2020, 1)

This new and urgent project from NCRM and funded by the ESRC is looking at how Covid-19 is disrupting our research practice by challenging researchers who are conducting social research to re-consider their designs, re-think their ethics, broker different kinds of access, and adapt their research methods. Responding to the public health mandates, limitations on contact and access, and disruption to people's lives researchers are moving swiftly and sharing accounts, advice and resources on social media and in research papers. Via this project NCRM researchers are playing a key role by engaging with and facilitating timely debates, synthesising useful evidence, and sharing solutions to the challenges. The NCRM portal will offer a response hub to support researchers developing and adapting methods in this challenging period with a view to lasting impact for research communities.

Lobe et al (2020) remind us that *'Although the COVID-19 pandemic is considered a "100-year event," using diverse methods of connecting with research participants is as old as the field itself.'* In navigating this mix of the unprecedented and the familiar the **Changing Research Practice** project team will:

- Stimulate, via virtual knowledge exchange workshops, sharing of challenges and lessons learned by researchers needing to rapidly adapt their social research methods during the constraints of the Covid-19 context, teasing out the affordances of existing, new and adapted methods;
- Conduct a rapid evidence review of published research on social science research methods used in Covid-19 conditions when sharing of physical space has been limited and access has been particularly difficult;
- Examine the methods literature pertaining to other comparable crisis situations;
- Generate a rapid synthesis of grey literature on social research methods being used and adapted during Covid-19 conditions; and
- Produce and disseminate guidance material based on all of the above with a critical commentary on evidence about social research methods suitable to use and adapt during Covid-19 constraints.

Our ability to do social research has been restricted by Covid-19 but these steps will contribute to ensuring that social research continues in ways that are ethically and critically considered and informed by evidence.

Project team
Melanie Nind (PI) **M.A.Nind@soton.ac.uk**
Robert Meckin (Co-I): **Robert.Meckin@Manchester.ac.uk**
Andy Coverdale: **A.Coverdale@soton.ac.uk**

Questions/comments?

For you: examples where you could see added value through the use of VCDS as a selected research method? In my case, exploring pedagogical reasoning in action, suddenly a topic of interest for the EEF Teacher Choices trials:

- we have identified that teachers and headteachers are also keen for EEF to answer research questions which can more directly feed into existing teaching practice. These questions are often not related to the impact of manualised programmes, which require schools to purchase particular resources or training, but are instead about the everyday choices that teachers have to make when planning their lessons and supporting their students.

Questions for me?

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