Problems in researching e-learning as Archaeology

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Researching Dialogue and Communities of Enquiry in Elearning in HE

This presentation is basically about the problems that I have faced, in common with many other people, in doing online learning research. Before we get into the real problem, let me highlight here the key research question that I wish to address. **Can we see the evidence of peer to peer 'teaching' in online discussion?** … I'm using the idea of 'teaching' defined as **assisted performance** by Tharp and Gallimore (1988):

> "…assisted performance identifies a fundamental process of development and learning". Teaching occurs when performance is achieved with assistance and "assisted performance defines what a child can do with help, with the support of the environment, of others, and of the self"
> (Tharp and Gallimore, 1988)

Seven categories of means of assistance are used in this research and the details are as follows:

Means of Assistance Categories

Scaffolding	Refers to the help, guidance, assistance, suggestions, recommendations, advice, opinions, and comments that the instructor provides to help the learner master the materials and move to a higher level of understanding.
Feedback on Performance	It is used when the instructor or students provide information (positive or negative) on specific acts, performance, or situations or acknowledge a contribution in reference to a given standard or set of criteria. Often it includes grades.
Cognitive Structuring	It is a means of assistance whereby the teacher provides a structure for thinking and acting that helps the learner

	organize "raw" experience.
Modeling	This occurs when an instructor or more knowledgeable peer offers behaviour for imitation.
Contingency Management	It is used by the instructor to reward desired behaviours through praise/encouragement, or to control undesirable behaviours through punishment in the form of reprimand/censure.
Instructing	This occurs when the instructor give explicit information on specific acts (e.g., assignments, task, group processes, etc.) It is usually embedded in other means of assistance but is often identified when the teacher reassumes responsibility for learning.
Questioning	It calls for an active linguistic and cognitive response and is used as a prompt, to stimulate thinking and to provoke creations by the student. If the question is meant to provide assistance to the reader, then it is in this category.

Adapted from Kirkley, Savery and Grabner-Hagen, 1998

The metaphor of **archaeology** in my research methodology can be explained in the sense that I'm looking at the **evidence** of assistance in the records of online discussion. I am also interested in how messages appear to a reader of the transcripts, rather than looking at the **intention** of providing assistance by the writers.

In what context is this research placed?

Scope of Study
- Higher Education
- Adjunct mode
- CMC
- Asynchronous
- Task type – Discussion and Assigned reading

In this study, the focus is on CMC as used in the Blackboard Online Learning System. Specifically CMC in **asynchronous mode** as part of a Masters in Education programme, extending face-to-face, or classroom discussion.

Nature of data

This presentation discusses the problems encountered in facing a unique form of qualitative data: the texts of computer-mediated discourse in computer-mediated communication (CMC), which is analysed by quantitative means. Currently, most CMC in use is text-based; messages are typed on a computer keyboard and read as text on a computer screen, typically by a person(s) at a different location and time.

Computer-mediated discourse (CMD) is defined as 'communication produced when human beings interact with one another by transmitting messages via networked computers' (Herring, 2003: p. 612). CMD is a unique form of data, as it is written data by the authors themselves.

However, the texts are what Hodder (1998) called 'mute evidence'.

> …'mute evidence'… "endures physically and thus can be separated across space and time from its author, producer, or user. Material traces thus often have to be interpreted without the benefit of indigenous commentary. There is often no possibility of interaction with spoken emic 'insider' as opposed to etic 'outsider' perspectives. Even when such interaction is possible, actors often seem curiously inarticulate about the reasons they dress in a particular way…"
>
> (Hodder, 1998, p.110)

Of course, my data are something that been left behind by the participants. There's no link between me and them at the time the text was written, at that place (or as some people called it 'space').

Nature of Data

- easy to use
- mute
- historical
- partial
- socially embedded
- user have no access to intent

It's historical! Indeed, what happened in my research was I waited for 2 groups of masters students to complete the taught part of their programme and then asked for their consent as soon as the programme was about to end. Only then, I viewed the data. I did not want to interrupt their learning by 'being' there and more importantly is that I want to ensure that the data will be less contrived and artificial.

Then I got stuck as I have no idea what they were doing at that particular time. It's almost like piecing together small pieces of dinosaur bones and trying to figure out what the dinosaur looked like. I got a chance to go to Greece for a conference and met two of the students who participated in the forum I'm studying. I interviewed one of them. Every time she tried to answer, she'd look at the sky or into space, and took a few minutes trying to recall the events and sometimes she was not sure about the nature of events. So how can I be sure of the answer if she herself was not 'that' sure?

If you remember in the previous slide, at the end of the paragraph saying: “Even when such interaction is possible, actors often seem curiously inarticulate about the reasons they dress in a particular way…”(p.110). Indeed! In one other case, I met another student here in UK. I asked him for clarification of assistance that he gave and received during the forum. What made things more complicated was when he said what he’s actually ‘trying’ to do in the discussion rather than what was seen in the forum, he said he meant this and that by trying to do this and that. I was very confused at that time. Until I realised (this is where I have shifted my research question), it all depends on what research question one is trying to investigate. As my research intended to find the ‘evidence’ of assistance, there is no point asking the participants ‘what are they trying to show as the evidence of assistance’. Therefore it is crucial for me to draw the line between what I actually want to know and what available data could tell me. **After all, the reader will have no idea of the intention of the writer.**

The actual event has already past. What is left over are the data that are historically, mute and partial in nature. These data are socially embedded, i.e. different people might read and interpret them differently over time. For example, as I am seeking the evidence of assistance in the task in the communication through CMC, the data might not represent the whole process of learning in the task that took place. In addition, the evidence of assistance portrayed in the message texts are not the only means of assistance that could possibly exist. As Jones (1998) notes; “The transcript records only those activities that are entered into the conference software, and (are) therefore a partial record” (p.23). **And I think this is what PhD study is all about, it’s just a portion of something bigger, or a capture of a slide in a role of film**.

After understanding the nature of the data, now lets move to the real problems that I have faced in this study, the first one:

a. Methodology *Naturalism and experimental*

Usually research that has been done in a VLE is experimental in nature. There are two possibilities of experimental research usually being done. **First**, even though the researcher uses samples from groups of ‘real’ students in ‘real’ situation, they (the researcher(s)) have some degree of control over the system or the system itself has been set up in a particular way. For example, the system already has specific buttons with specific functions for the student to use as they plan their learning.

Secondly, experimental research also could be seen as research where the **researcher is experimenting with some new approach to teaching or learning with certain groups of people**. Even though both approaches to research are involved with qualitative or subjective data, the nature of the occurrence of learning is not natural. Possibly the data would change if the settings are more spontaneous. What if we reduced or added the number and types of functions in the system? Will the data be the same? Additionally, if the subjects knew that they were being ‘researched’ it is possible that their behaviour would change?

More importantly, **will the context and setting of a study be significant enough to deepen an understanding of the nature of learning and teaching through CMC?** In my research, I took the step of using groups of students that are not exposed to any experimental conditions.

For the purpose of this study, the participants **were not notified** that their conversation would be used in research until the communication session ended, so that the data would be less contrived and artificial. However, by the time all the permissions were collected, most of the participants had already left the university. I needed to collect as much information as possible in just a few weeks while they were in the programme. And there is nothing I can do if they did not respond within that particular time.

b. Exploring the data

In this part, there is the matter of how far I can go. Do I have the capability to do this? And how do I know I'm doing it right?

- Between description and interpretation
- Between manifest and latent meaning
- Between intension and extension

It is always important for me to keep in mind while exploring the data a range of tensions, between description and interpretation, between manifest and latent meaning and between intension and extension:

A definition related to this research i.e. involving analysing text as evidence was presented by Popping (2000: 6): "**description is a factual representation of what is shown and in analysis of texts, it implies that the investigator exclusively addresses questions about how often and in which way a specific word appears in a text. As soon as one begins explaining what the words means or why it is used in some way, one is involved in interpretation**".

He added that "the researcher's ability to empathetically understand text's sources and audiences become especially important when the latent context of a text is investigated" (p.7).

Manifest meaning of a word or expression refers to the surface meaning, where the **meaning is universally** known and accepted. This is in **contrast to the latent** character of a message where there is a **deeper level** of meaning. I'll show you some of the examples in my data.

Also words have a meaning related to their **intension and extension**. Lyons (1977 in Popping, 2000) stated that: "The intension of a word is the set of essential properties which determines correct and incorrect usages of the word in conjunction with other words… A word's extension is the class of empirical things to which it is correctly applied". **So sometimes**, a specific word may not be found during the coding but if there is some quality that can be found that matches to the same category, then the case is coded according to that particular category.

These pairs are sometimes interrelated to each other. As Graber (1989 in Popping, p 6) pointed out ‘Senders and receivers routinely interpret messages in ways that go beyond the manifest content. They extract additional information such as the intentions and mood of the source…” Popping pointed out that the quality of the investigation of messages depends on inferential interpretation of the context of a conceptual system which serves as an ordering principle for the observation.

These are the examples:

Current Forum:

Read 37 times

Date: Tue Oct 29 2002 6:46 am
Author: M12
Subject: Re: Proposal for a learning situation

I can't pick up the attachment at home. Can you send it in the body of the text

---

Current Forum:

Read 40 times

Date: Tue Oct 29 2002 7:11 am
Author: M12
Subject: feedback to S2

I was wondering whether the learning situation could be the preparation of a high-school group in the class before visiting an exhibition of modern painting. The objectives of such preparation would be, firstly, to arouse pupil’s interest for their visit. Secondly, such preparation would bring pupils in contact with the artist and his work so that is not everything new and strange to them and that they can make the most of their visit.
THIS SOUNDS LIKE A GOOD IDEA. IN WHAT WAYS WOULD YOU USE ICT FOR THIS?

Moreover, I have some questions concerning the framework. More specifically, I am not sure whether I have understood what exactly is meant by the framework. Can the framework be a combination of different learning strategies, that is to say, can I develop a framework which is based, for example, on the affordances of technology and on collaborative methods or should I focus on a specific one?
YOU COULD DEVELOP A FRAMEWORK BASED ON SEVERAL PERSPECTIVES. IT DEPENDS ON WHAT IS RELEVANT TO THE LEARNING SITUATION WHICH YOU ARE FOCUSING ON.

Furthermore, may literature concerning this proposed learning situation be general learning theories which I consider appropriate for the situation as well as more specific ones, which treat the subject of teaching art history ?

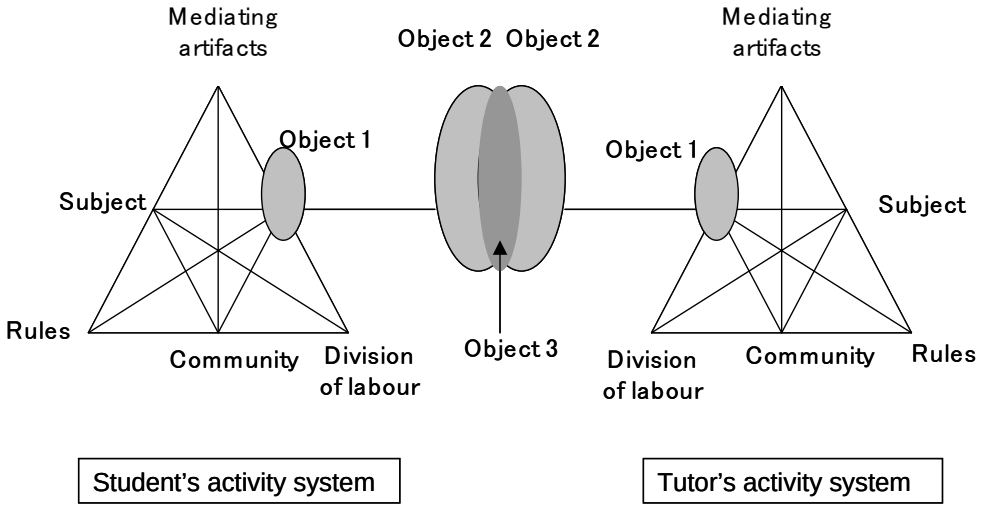
YES..READ DAVIS AND SUMAR ENGAGING MINDS WHICH IS A GOOD GENERAL BOOK. BUT ALSO YOU WOULD NEED TO FIND SOME LITERATURE ON THE USE OF ICT FOR ART EDUCATION.
I am looking forward for your answer

In the example above, the student posted a proposal through email. The tutor gave feedback using 'copy' and 'paste' in the Discussion Board so then the other students could learn something from her feedback. She's using capital letters between student's texts. For this context, the tutor is 'modelling' her behaviour of how we learn in this environment, and one of the other students has copied this technique. People who did not read the whole discussion thread might perceive the coloured sentence as falling into the 'Questioning' category in the coding, but actually, as the researcher understood the whole context of this writing, she perceived the sentence as 'Cognitive structuring'.

c. Analysing the data

- Availability and resource
- Between computer assisted methodology and manual coding
- Quantitative vs. qualitative

It is always a problem for PhD students to find data that is available to them for the kind of study they are interested in. Compared to big research where the contributions may be expected to influence policy. In a small research study like mine which is small in terms of the scope, the sample and the impact, it's a problem of how you put your study in the 'map'. It is difficult to infer either inductively or deductively to establish a theoretical framework and analyse the data accordingly.



Two interacting activity systems as minimal model for the third generation of activity theory

(adapted from Engestrom, 2001, p 136)

For example, I'm studying the nature of a task by taking Activity theory as my descriptive lens. As the object of the activity is what Engestrom stated as "a moving target which is not reducible to a conscious short-term goal", and expansive cycles are the possible form of transformation in activity, the activity systems undertaken by the

students and the tutor create the 'third space' that can be observed in the production of their collaborative and cooperative work.

In this space, (through Blackboard) the production of the discussion among tutor and students can be seen as the 'third space' as well as a psychological mediation tool. In the student's activity system, the students advance their learning through communication among themselves with the assistance or mediation of physical and psychological tools. This/these activity system(s) of students interact with the tutor's activity system to form the 'third space', which is where the individual or group development takes place.

It's obviously problematic when the data available in the online environment covers only a small part of the whole description of the activity in the task.

Another difficulty is whether to analyse the data manually (meaning to read them one by one and do the coding) or to use computer software to do the coding. As the data I have is already 'shallow' in nature, to get 'somebody' else to do the job will not give me any means of usefully understanding it in much a better way.

The last part of the issues arising in doing my research that I would like to share is when **you need to shift your method of analysis in the middle of the process**. I think this problem is quite common when you're working with statistics. It is when you have the 'outlier' in the dataset. Where it will be useless to employ any kind of SPSS analysis. In my case the outlier is too 'good' or useful to be thrown away completely. It is a group discussion which is extremely active compared to the others so it skews all the numerical analyses, but to get rid of it is a wrong move as it contains a lot of information for the study. This is the point where the **outlier becomes an indicator of a special case** where **I need a special magnifier to look through** by **shifting the analysis to a qualitative approach.**

Intercoder reliability

Intercoder reliability is generally used to see how much the independent coders evaluate the transcripts and arrive at the same conclusion. In this research I am referring to 'Interrater agreement' as the process of employing intercoder reliability.

In my research, the data are divided into two groups according to year group. The first data group is the messages posted by all the participants in the first year and the second data group are the messages posted in the next year. Each of the groups of data were collected at the end of the year and therefore, I need for at least two interraters for both years, one for each year for the purpose of reliability. As soon as I have done the coding, about 20% of the transcriptions were passed to the interrater to be coded.

Interrater agreements were achieved by employing Cohen's Kappa (κ) that is available in the SPSS programme. Approximately 20% of the data were used for this purpose as it already contains a huge number of messages from the whole data. If the value of κ is between .7 and above, it is enough for me to proceed with the coding and analysis.

Unit	Coder 1	Coder 2
Case 1	A	A
Case 2	C	D
Case 3		E
Case 4	C	C
Case 5	C	C
Case …	C	

A=Scaffolding,
B=Feedback,
C=Cognitive Structuring,
D=Contingency management,
E=Instructing and
F=Questioning

Group 1, κ=.764
Group 2, κ=.706

Above, are the example of coding data input and the result of κ value for both groups.

To sum up, this presentation covers things that I have put into consideration when doing e-learning research. First, the justification of my stand in this study, basically the selection of methods that suite the data available and the nature of data I am dealing with. Second, the struggle of shifting in some of the research stages: determining research aims, data collection and analysis. This presentation also addresses some ethical issues faced during the research process. Some examples of coding and how Interrater agreements were achieved by employing Cohen's Kappa (κ) are shown.

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