Student Research Strategies

An Exploratory Study Using Cognitive Mapping and Interviews

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Agenda

- Background information and methodological considerations
- Description of study, including method and execution
- Coding within a grounded theory context
- Preliminary results
- Avenues for future research and discussion

Image Credit: Knopf, What We Talk About When We Talk About Love
Background and Methodological Considerations

Why this study?

Framework:


Grounded Theory:


(A list of related literature is available - link at the end of our presentation.)
Ethics Review

“One of the biggest lessons learned relates to consent for the sharing and reuse of the research data. We are unable to share any text or images from the research data outside The Open University as we did not originally intend to disseminate the research more widely and did not factor it in to our consent forms. We are very keen to be able to share our data more widely in future and shall adapt our approach accordingly.” - David Jenkins

→ We received Ethics clearance to disseminate images and text (anonymized).
The method
“The map is the starting point, a way to begin a conversation or anchor an interview around something concrete ... Any of these maps are not themselves the participants’ practices, but are representations of a recollection of practice. They make sense once they are talked about, once the larger context is revealed.”

- Donna Lanclos
What is Grounded Theory?

Qualitative research method

Exploratory - a framework of *discovery, open-mindedness*

Avoids using previous theories and concepts to make sense of data and thus is open to discovering new factors of relevance to an explanation of that area.

An interest in the subject’s worldview

Grounded theory is both a method and an outcome. The study leads to grounded theories or theorizing
A Simplified History of Grounded Theory

Glaser positivistic interpretation, or, there is only one potential interpretation

Strauss post-positivism, or, interpretation is inextricable from the researcher’s lens

Charmez constructivist Clarke postmodern Corbin and Strauss postmodern revised Straussian

Glaser and Strauss developed grounded theory (1967, *The Discovery of Grounded Theory*), and subsequently diverged in their interpretations. Grounded Theory has since been developed to include theories that allow for multiple interpretations (constructivism and postmodernism)

(see Denscombe and Seldén)
The Challenges of Grounded Theory

1. Developing the courage to let the research participants define the research problem, and
2. Letting go of your own interests and preconceived ideas to “trust in emergence.”

“Traveler, there is no path. The path must be forged as you walk.” (Spanish poet, Antonio Machado)

https://brenebrown.com/the-research/
Constant Comparative Method
Chapter 14 Qualitative Data
Grounded Theory Subheadings

- Explore the data
- Memos
- Code the data
- Categorize the codes
- Reduce the number of codes and categories
- Develop a hierarchy of codes and categories
- Check the emerging codes, categories, and concepts with the data
- Move towards key concepts
Best Practices: Grounded Theory Coding

- Staying close to the text: Repeated reading of transcripts and viewings of maps
- Identification of re-occurring and standalone themes
- Creating definitions for categorized materials, continually revising these, and noting observations separately and connecting these to evidence
- Categorizing and recategorizing, repeatedly moving in (to data) and out (to interpretation)
- Working with a partner to define codes and discuss analysis
- Being aware that interpretation is filtered through the researcher and being able to work with an open mind and sidebar observations that may be the result of bias
Codes

Process/ Cognition
Technology/Sources
People
Affect
Places
Time

Most difficult
Least difficult
Example subcodes

People

Direct interaction with family, friends, profs, etc;
Thoughts one has about other people eg. some people like to study that way but I don’t;
Thoughts one assumes the other to have eg. “profs don't want you to copy and paste, they want you to have your own input”

Time

Beginning and end times for assignments;
Session times eg. I can only work for four hours at a time;
Time squeeze eg. working and taking a full course load;
Time planning and time spent eg. I planned to do my assignment in 3 weeks;
Procrastination;
Use of calendars;
Structured use of time “let paper sit for a day then go back to it”
I just wrote down the main steps for an SLR from my memory and I also included things that I did on top of just following it systematically. So first and foremost it was just formulating the research question; we weren't really given any guidelines to find a topic so I did that by talking to my classmates, by talking to my professor, by doing some preliminary research with target populations that may have been interested in and just looking for gaps and questions that may arise. And I actually found that quite frustrating because there were so many different ideas and so many different topics that it was hard for me to choose, so we also had a librarian come in and we asked several questions on how to formulate a research question that's appropriate for an SLR and bounced ideas off of her and she offered examples of different SLR topics. From that we were able to create a research question following the PICO for Kerr (sic) and then I finalized my research question where I felt a lot of relief. [What was your research question?] Trying to show children with atopic (sic) dermatitis (like eczema) and see if they have different gut microbes than other children. So I finalized that, my partner and I, that was, very a lot of relief. So next we needed to develop a search strategy so we created an inclusion/exclusion criteria and the textbook and lecture notes, which actually give us instructions on how to create
Diane: It seems you're DIY in how you've developed this [research process], so you wouldn't particularly say that there were interventions that happened early on?

Participant: both my parents are academics and my mother is a librarian, so,

Diane: That's where it came from

Participant: Yeah, she taught me how to use the boolean search engines and what there's like 9 or 10 or so. And so I got that advantage as someone who can tell me how to look through journals which universities to call if you need something really obscure, which has happened a couple of times...
Sample Observation: Evidence

Important people:

Mentions of parents were important, including the number of participants with a parent or sibling in academia/education/libraries. 5 out of 14 students mentioned having a family member in academia. We did not specifically ask them for this information.

Eg. Participant was influenced by family members who are in academia: father is a historian that she discusses research topics with, and mother is a librarian who taught her research tactics such as boolean
Map

Samples
1) Talked to my friend about my topic.

2) Check if there was enough info on my topic/argument (Google, enough data sources).

3) Met with my teacher.

4) Researched new sources to backup thesis (RULA ...).

5) 2 week before due date

- Working on gathering good data sources to verify with teacher.
- Started introduction

6) Asked g's about essay's requirements

7) Finished working on essay.
Some Preliminary Results
“And I remember getting to this exact note-taking process. It was second year and I was writing a paper about queen Elizabeth and Ireland [speaks about methodological approach] And so I honed this one and I've actually found it extremely effective for pretty much anything.”

“Now for writing, I actually don’t use Ryerson’s stuff. I did my undergrad at Trent and I actually use the Trent website [citation style guide] for that...I don't know if I just got into a habit of it during my undergrad and it just worked for me? And so I just always used it and I used it in my other undergrad program and I’ve used it in my first semester here at Ryerson.”

“I usually pick not books because I don't want to pick ebooks - I just find them not great on the computer, so I look for topic references, department specific, and then I just always check JStor because they usually have something interesting. I just find it's a reliable database.”

“I think if I didn't have that going to that movie and I didn't have that person at the end I don't think I could have gotten to like the point I am at today.”

- The importance of “learning events”
- “Always, usually”
- People: family, friends, professors
- Habits
- Serendipity and scaffolding
“[my] emotions are just a roller coaster!”
“We ended up with a lot of papers so that’s us being overwhelmed.”
“... I stayed at the library typing frantically all the information that I have learned from all of these articles and even like news articles... and then I frantically realized oh wow there is a lot, what do I do? Where do I start, there was a lot of information and I loved every second of it but now I have 40,000 people telling me 80,000 things and I am like, now where do I go? So that [picture] is me just being stuck and leaving it at that and I was like well I have two pages of just absolute nonsense so my next part is waiting till the next day and that day actually I was sick, I had a cold.”
“I had to revise some of my symbols [and] ... that was frustrating because I couldn’t find exactly what I was looking for. ... I spoke to classmates ... and I revised again. I wrote another draft on paper. I typed it out, I added references. I went back again and I changed the order of paragraphs - it was very stressful - it took me about 3 days to do that.

Changing the order of the paragraphs “... so they could flow that was hard ‘cause I tend to be all over the place so then when I put everything in order it was so difficult.”
“The part where I’m reading is definitely overwhelming because I’ve got a million and one sources and I’m not sure if I’m going to use them all ... It’s huge and it’s a massive file on my computer but at least I know where everything is ... and it’s like my bed and my desk and it’s paper everywhere. It does get overwhelming, just the reading part. Not the research part, just the reading. The research part I find really interesting.”

(Graduate student participant)
Thinking about Affect

Sample words in order of most used:

- Overwhelming
- Procrastinate
- Stressed
- Frustration
- Confusing
- Exhausted
- Happy
- Relief/relieved
- Fun
- Avoid
- Flow

Areas where confidence dips and/or “difficult” emotions are present:

- Topic Selection
- Synthesizing and reading
- Writing

Sample phrases that need context to interpret:

“... I finish this paragraph before I go to work and it was the hardest thing ever. I remember that I was so frustrated people were like, are you okay”
Literature Support: Affect

The Information Search Process:


Library Anxiety:


Tabbed Browsing

Unexpected observation mentioned unprompted by 4 out of 14 students, with other students exhibiting the same related behaviours of searching across platforms.

Coding: Information resources and the technology used to access it were coded in the same category due to the difficulty in distinguishing between them.
“Having multiple tabs open at the same time lets me see, okay, these are my options and these are the articles that I think are going to be the most relevant...I would be reading through an article, skimming it, not actually reading it, and finding parts that I think would be beneficial to my point of view and I would copy and paste it into a Word document in bullet point”
“So then I start to build and this is just me. There are no sources just yet. Then I get into a day where I start opening up tons of tabs, a lot of tabs that I can't even keep track. I open the tab and take the URL and I put it into a word document. Any information pertinent to me I put under that URL.”
Maps

Memes

CLICKING ON "SUBMIT ASSIGNMENT"
AND CLOSING ALL OF THE TABS
“tab switching [is] the second most important navigation mechanism in the browser, after link clicking.”


“The number of browser tabs opened during the task was significantly higher for complex tasks than for simple ones”

Transliteracy

Transliteracy is defined as “the practice of reading across a range of texts when the reader seamlessly switches between different platforms, modalities, types of reading, and genres” (2016 Sukovic). Transliteracy is an essential skill for netchaining which occurs when a reader follows links, citations, and ideas from one resource to another (Sukovic). Digital resources encourage transliteracy and netchaining through their interconnectedness.

Cognitive Maps as a Teaching and Learning Tool

“We do not learn from experience. We learn from reflection on experience. Reliving of an experience leads to connections between information and feelings produced by the experience.” (Dewey, J., 1933, quoted in Erasmus, 2012. See bibliography)

How did you find the map making?

“When I was trying to think of it beforehand I was kind of imagining this kind of weightless well it's less text-based in my head, but that's kind of how I communicate. This is actually very accurate to how my brain would interpret this entire process, though. You will notice there are a lot of arrows, because a lot of steps get repeated until I finally get that full grasping of the subject. Because usually at this point the subject is so vague and I know I don't know anything about it, so it's me trying to grasp that I know nothing about this subject, and I know a little bit about it which means I know nothing, which is why I have to keep repeating all of these...different...steps.”

“Fun ... I love writing things out, so it is really cool and when I talk I usually get flustered so okay now I can totally walk you through everything so yeah it’s a really good help actually.”

“... it's even fun to just look back cause in the moment it's awful, but just looking back i'm like hey hey here's a little cartoon.”
Cognitive Maps as a Teaching and Learning Tool

“It was nice to reflect back to it because now I understand why it was important for me to work on that essay because I learned more about finding scholarly articles to use in my assignments rather than just searching up articles on Google because it's not always reliable.”

“It was pretty good. I didn't mind walking through my whole process, my thought process, it's actually pretty enjoyable to do. It helps my recollection of what I did and how I do things. This is pretty much how I do most projects (the template?) yeah the template. It's nice to see how I did it.”

“It was really reflective, [the map represents] ... every step like where I was who I was talking to and how I felt and it kind of just made me realize how complicated things can be even if the instructions were so simple.”

“I liked how reflective it was cause I tend to reflect a lot and I kind of, I loved how I felt as I was writing I remembered where exactly I was at each point and what I was doing and how I was feeling so I really love how I can kind of like go back and like remember those things.”
At one level the mapping process is a discussion starter. In mapping exercises, we can make visible all of the messy real practices, how people are actually getting on with what they are doing. Engaging in this kind of mapping also helps break down assumptions that being ‘good’ with technology or just ‘owning’ technology translates directly to knowing what one is doing. It also provides an opportunity for individual reflection, for sharing practice, and informing the design of inductions, curricula, institutional services and policies.

Potential Avenues for Further Research

- Emotion/affect are an important consideration. How do shame and anxiety impact the research process?
- Procrastination - avoidance continuum - the role it plays in process. Where does it play a positive function?
- The map itself as an important organizing principle and an extension of mind - helpful as a depiction of process that might reinforce confidence in a system the individual has developed - “method to the madness.” How is reflective process enabled by an awareness of process / mapping / physical objects?
- How is tabbed browsing reflective of different modes of thinking? What barriers to tabbed browsing exist within the library?
- The idea that students are “resourced” or have resources apart from the expected eg. family. How do resources like this affect the research process? Tie in with privilege.