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Contending with the unforeseen "messiness" of the qualitative data analysis process

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Abstract

Qualitative data analysis (QDA) is often depicted as a linear process that employs an organised structure to derive themes inductively or deductively. However, I realised the "messiness" of the process during my doctoral studies on primary teachers' use of digital technologies in ESL classrooms in Maldivian schools. My own experience revealed that QDA is a nonlinear, iterative and recursive process. Adopting a phenomenological research design to capture my nine participants' "lived" experiences, I gathered data from various sources over eight months. Shared through this paper is a selection of my experiences that exemplify the nonlinearity of QDA, including the emergent need to develop an NVivo-enhanced Spiral-QDA process to accommodate my unforeseen data analysis experience. Therefore, reflections from my doctoral research experiences may be edifying and helpful for postgraduate students and supervisors in their own QDA process.

Keywords

Nonlinearity; qualitative data analysis; Spiral-QDA process; doctoral studies; reflective narratives

Introduction

"How will you analyse your qualitative data?" I ask my postgraduate students at the beginning of a Researching Education lecture.

> "By coding," one of the students replies.

> "What does coding involve?" I prompt.

> "Coding involves identifying themes in the —"

> "Isn't it sorting data?" another student interrupts.

> "Don't you need to read through your data first?" yet another student responds with a chuckle.

"Of course, reading is the very first step," I reply and continue my lecture on the five steps of framework analysis outlined by Ritchie and Spencer (1994).

As I recall the above teaching moment, I think that, as a lecturer, I felt relieved that some of the most increasingly used qualitative data analysis (QDA) processes have clearly defined steps or stages that I thought simply needed to be followed. Therefore, with my limited knowledge as a novice researcher, I believed that explaining what each stage entails would enable my students to do data analysis neatly and smoothly. Hence, the characteristics or nature of the QDA process were rarely a focus of my lectures. However, surprisingly, neither my students nor I had ever had any issues perceiving or following QDA in a linear fashion. At least not until now.

My understanding of QDA comes from the knowledge and experience I gained as a postgraduate research student during my Master of Education programme. Later, as a teacher educator in the Maldives, I taught research modules, supervised postgraduate research students, and worked with more experienced researchers on small research projects. However, none of these experiences prepared me for the unforeseen "messiness" of QDA that I experienced during my PhD journey. My doctoral research was a phenomenological study on primary teachers' digital technology use in English as a second language (ESL) lessons in Maldivian schools. Aiming for an in-depth understanding of the phenomenon, I gathered data from a variety of sources, including lesson observations, lesson plans, interviews, conversations, mini-surveys, school documents and field notes. In this short article, I reflect on my journey to make sense of the messy nature of the QDA process.

How it started

I did extensive reading and reflection on various QDA processes during the first year of my doctoral studies. Among others, I read up on framework analysis (Ritchie & Spencer, 1994), thematic analysis (Braun & Clarke, 2006), qualitative content analysis (Elo & Kyngäs, 2008), and qualitative data analysis (Seidel, 1998). However, it became clear to me that although QDA is claimed in some frameworks as nonlinear, iterative and recursive, it is often explained or illustrated as a linear process moving through phases in a single direction. Unlike other QDA frameworks, I felt an instant connection with Seidel's (1998) QDA process for two reasons. First, I could relate to its three constituent parts: *noticing*, *collecting* and *thinking* about interesting things (see Figure 1). Second, I was fascinated by how Seidel depicted the QDA process.
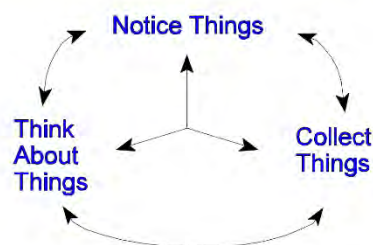

Figure 1. Qualitative data analysis.

Note. The basic processes in qualitative data analysis (QDA). From "Qualitative Data Analysis," by J. V. Seidel, 1998 Copyright 1998 ([qda (qualisresearch.com)](qualisresearch.com)) by Seidel.

However, in my attempt to gain more clarity regarding what *noticing*, *collecting* and *thinking* were in Seidel's (1998) QDA process, I ended up expanding it to four processes and assigning new labels to each process: *recording*, *noticing*, *categorising* and *reflecting* (see Figure 2). I learned that *noticing things* in Seidel's QDA involved data gathering (recording what had been noticed) and coding (noticing interesting things in the record). Thus, I felt it would make more sense if I separated the two parts within *noticing things* and labelled them *recording* and *noticing*. In addition, as *collecting things* meant sorting and categorising data, I labelled this element *categorising*. Finally, I chose *reflecting* instead of *thinking about things* because QDA requires a conscious effort and deeper engagement with data than simply "casual" thinking.
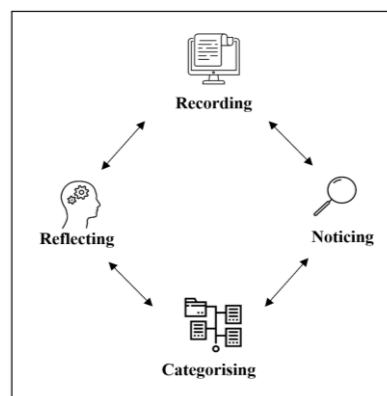

Figure 2. Qualitative data analysis process.

Note. The four processes in qualitative data analysis is adapted from Seidel's "Qualitative Data Analysis" (1998).

At this point, I think it is important to briefly explain *recording, noticing, categorising* and *reflecting* in my QDA process. *Recording* means gathering data, such as recording interviews, making observations, writing fieldnotes and conducting surveys. It also includes preparing data and saving them in a secure location. For example, I saved all my documents on my Google Drive, personal laptop and the NVivo project and gave these specific file names that helped me locate the data easily. *Noticing* includes noticing interesting findings or patterns in data gathered and coding them. I did this by reading and rereading my data several times. Then I used NVivo to label or code whenever I noticed something interesting in the data. *Categorising* involves sorting, sifting, classifying coded data to reassemble them in a meaningful way. Being a visual learner, creating mind maps helped me understand the relationships among my coded data at that point. *Reflecting* is thinking about patterns in coded and categorised data to make sense of them.

The messiness

I travelled to the Maldives and spent eight months collecting data. As I was interested in capturing the technological pedagogical practices of both urban and rural teachers, I gathered data for four months at each of the two schools I studied. On the basis of my preconception about the QDA process, I thought data collection and analysis were two separate processes, with analysis beginning after data collection was completed. However, I came to realise that data collection and analysis did run in parallel. I also learned that considering data collection or *recording* as an integral part of the QDA process (see Figure 2) created opportunities to gather additional data when required. For instance, as I began *recording*, I started *noticing* interesting pedagogical practices with digital technologies in the lessons I observed.

Therefore, I gathered additional data using conversations and mini-surveys with teachers and students to clarify what I *noticed* from the observations.

A few months after I returned to New Zealand, many schools around the globe moved to online learning because of school closures due to the Covid-19 pandemic. As my participant teachers also adopted online teaching during the lockdown period in the Maldives, I saw an opportunity to capture their technological pedagogical practices in online classes. Thus, even though I had already started writing my findings chapter, with further ethics approval, I conducted interviews with three of my participant teachers via Viber, a secure Voice over Internet Protocol (VoIP). I then realised that I had to begin a new "loop" of the data analysis process with my newly collected data.

I also recall my short-lived feeling of accomplishment the day I shared my preliminary findings with my supervisors at one of our regular meetings. The thought-provoking questions of my supervisors made me realise that my participant teachers were using digital technologies most frequently to enhance their "set inductions" (Aubertine, 1968, p. 363). Instantly, I felt I needed to revisit my data to explore what purpose these technology-enhanced set inductions served in their ESL lessons. Hence, I reread the observation notes, did additional coding and learned that teachers used digital technologies mainly to gain students' attention.

Once I began writing my discussion chapter, I thought I was done with data analysis. However, on one particular day I realised that my data analysis was far from over. I remember having an aha moment while I was boiling eggs for lunch. I wrote the following status on my Facebook page:

> I was boiling eggs, and all of a sudden, something very interesting in my data crossed my mind. It took me a few seconds to realise that I poured oil instead of salt into the pot … Oops. 🤭

I had already discovered that my participant teachers used various digital technologies to teach grammar explicitly. However, it was on that particular day that I realised that their approach to grammar teaching was mainly teacher-centric. With this in mind, I reread the data in the sub-category labelled grammar within pedagogical practices to confirm my realisation. Considering QDA as a recursive process allowed me to learn that all nine of the teachers in my study used digital technologies to teach grammar deductively rather than inductively.

Reflecting on my overall QDA experience has also made me realise that my data analysis was both theory-driven and data-driven. For instance, exploration of contextual factors affecting my participant teachers' use of digital technologies was, to a great extent, guided by my conceptual framework. Conversely, the answer to how and why teachers used digital technologies in their ESL lessons was driven by what was in the data. Immersing myself in the data by studying observation notes, listening to audio lessons and reading the transcripts opened opportunities for me to encounter and discover findings that I did not initially expect or imagine. I sometimes wonder, had my supervisors not advised me to keep an open mind during data analysis, whether I might have literally "looked for" answers to my research questions in my dataset.

Making sense

I must admit that I did not give much thought to the nature and characteristics of the QDA process when I was writing my proposal. However, as I started my data analysis, I realised the complexity of the process. It was then that I started making sense of the nature of the QDA process. Seidel's (1998) QDA process has three main characteristics. First, it is iterative and progressive because it is a cycle that keeps repeating. Second, it is recursive because it allows going back to the last part. Third, it is holographic in that each step in the process consists of the entire process. Although my initial interest was in the parts of Seidel's QDA process, I realised the importance of these characteristics halfway through my data analysis. I felt that visualising QDA as a spiral process aligned better with the iterative nature of my

own data analysis experience. In response, I modified my initial QDA process depiction and developed the Spiral-QDA process (see Figure 3).
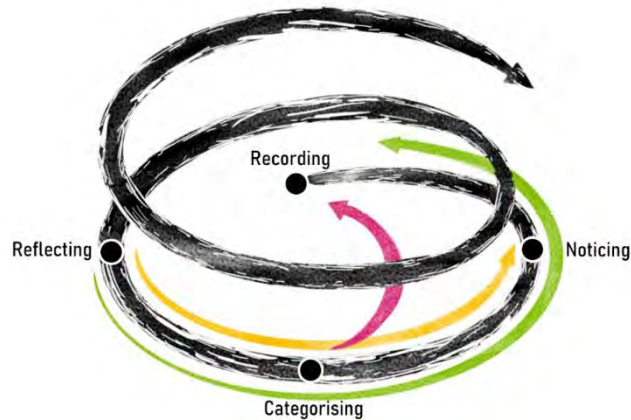

Figure 3. The Spiral-QDA process.

Note. The iterative, recursive, nonlinear nature of the QDA process is adapted from Seidel's "Qualitative Data Analysis" (1998).

I included black, green, yellow and pink arrows in the Spiral-QDA process to denote various characteristics of the QDA process. One of the most critical features of data analysis in qualitative studies is its iterative nature (Fetterman, 2010). The black arrow winding upwards in a continuous curve depicts the iterative and progressive nature of the QDA process. The ability to repeat the process also makes it suitable for research where data are collected and analysed in phases. For instance, during the Covid-19 pandemic, I recorded additional data through semi-structured interviews, and I went through the data analysis process all over again. The green arrow illustrates the recursive nature of the process that allows moving back to a previous phase or phases. For example, while *categorising* data, I sometimes had to go back and start *noticing* new things to add to the themes that emerged. The yellow and pink arrows show that a phase can be skipped when moving back. For instance, while trying to make sense of the themes at the *reflecting* phase, I sometimes had to look back at the coding I had done at the *noticing* phase. The pink and green arrows also indicate that, if need be, moving back to *recording* is possible from any phase, be it from *categorising* or *noticing*.

I could have used the Spiral-QDA process to analyse data manually. However, having generated such large amounts of rich qualitative data, I almost drowned in my own data. It was no wonder I was cautioned about data management by the panel of examiners at my PhD confirmation. I can also see flashbacks of astonished faces when I presented my methods section at conferences. Understandably, I knew that managing and manually analysing data was next to impossible. Therefore, I used NVivo, a computer assisted qualitative data analysis software, to enhance my data analysis process. I must acknowledge that NVivo simplified the complex nature of the QDA process to a great extent. However, it is beyond the scope of this short article to share my experiences of using NVivo to enhance my data analysis process.

Conclusion

Certainly, I have unlearned and relearned much about QDA from my doctoral journey. At this juncture, I believe the lessons learnt from my iterative, recursive, nonlinear QDA experience need to be a critical component of my future lectures on QDA. More importantly, I need to not only warn my students that QDA may be "messier" than the explanations given in the textbooks but also draw their attention to the

nonlinearity of the process. While the QDA experience may differ for each researcher, aspects of my journey may resonate with others. Therefore, I hope my reflections contribute to understanding the complex nature of the QDA process.

Acknowledgement

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