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‘I have a love–hate relationship with ATLAS.ti®: integrating qualitative data analysis software into a graduate research methods course

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While research on teaching qualitative methods in education has increased, few studies explore teaching qualitative data analysis software within graduate-level methods courses. During 2013, we required students in several such courses to use ATLAS.ti® as a project management tool for their assignments. By supporting students’ early experiences with ATLAS.ti®, we anticipated that they might continue using the tool in their future research work. Using a case study and reflective practice approach, we reviewed course materials, including student and instructor reflections, to understand what happened when data analysis software was integrated into an advanced methods course. We identified five major themes: (1) a needed push out of their comfort zones; (2) various forms of support working together; (3) keys to motivation; (4) a new generation educating the current one and (5) use of the software beyond coursework. Implications for practice include ensuring adequate access and support for learning the software, balancing methodological and technical instruction, and creating meaningful student assignments and feedback opportunities.

Keywords: teaching qualitative research; CAQDAS; QDAS; technology; ATLAS.ti®, transparency

Introduction

ATLAS.ti® – wow. I think about where I was almost a year ago with ATLAS.ti®, and the phrase ‘You’ve come a long way, baby’ comes to mind. I remember purchasing ATLAS and thinking ‘What in the world?’ when I opened it up for the first time. Now, I feel really comfortable with ATLAS.ti® and look forward to using it for my comps and my prospectus and my dissertation work. I even felt comfortable enough to show my classmates how I used ATLAS.ti® to code my lit review. (P77, 16)

While there is not yet a large body of research on teaching qualitative methods courses, recent studies have noted the many challenges that instructors, and learners, face in this area. Many universities offer only one course in qualitative research, making the first hurdle simply deciding how much can successfully be taught in one
semester. Students may enter the course not only unfamiliar with, but somewhat resistant to, new paradigms of inquiry. Previous scholars have recommended instructors focus not only on skills such as interviewing techniques or data analysis methods, but also on social foundations (Booker 2009; Delyser 2008; Preissle and Roulston 2009), epistemologies (Levitt, Kannan, and Ippolito 2013; Martin 2010; Ruckdeschel and Shaw 2002), methodologies (Shelby 2000), reflexivity (Kaczynski and Kelly 2004; Martin 2010; Preissle and deMarrais 2011), ethics (Hammersley 2004; Martin 2010; Ruckdeschel and Shaw 2002) and the art of ‘being a qualitative researcher’ (Carawan et al. 2011; Hammersley 2004; McAllister and Rowe 2003; Rowe and McAllister 2002). Cognitive apprenticeship (Breuer and Schreier 2007), transformative learning (Carawan et al. 2011) and communities of practice (Drago-Severson, Asghar, and Gaylor 2003) theories have all been used to describe the effective design of qualitative research courses, with recommendations to create a safe learning environment (Lapadat 2009; Levitt, Kannan, and Ippolito 2013; Li and Searle 2007; Lincoln 1998), incorporate opportunities for learning by doing fieldwork (Lareau 1987; Levitt, Kannan, and Ippolito 2013; Martin 2010; Preissle and Roulston 2009; Raddon, Nault, and Scott 2008), provide experience with collaboration (Lincoln 1998; Preissle and Roulston 2009) and offer mentoring throughout the learning process (Cox 2012; Hein 2004; Li and Searle 2007; Mason 2002; Preissle and Roulston 2009; Roth 2006; Shelby 2000).

In our review of the literature on teaching qualitative research methods, we found only four studies that discussed teaching qualitative data analysis software (QDAS) as part of a graduate-level methods course (Blank 2004; Este, Sieppert, and Barsky 1998; Kaczynski and Kelly 2004; Onwuegbuzie et al. 2012). Blank (2004) described his approach to teaching qualitative data analysis in a sociology methods course. He integrated Qualrus software because of its ease of use, flexibility and pattern-recognition features and reported that the experience was a positive one. Este, Sieppert, and Barsky (1998) compared the student experience of analysing qualitative data with and without NUD*ST software. Students reported mixed experiences, with some preferring to learn manual analysis first and others appreciating the early integration of software into the analysis process. The authors concluded that more time and training would be needed to fully support learning the software. Kaczynski and Kelly (2004) reported on their use of NVivo to teach qualitative data analysis online. They noted the frustrations and technical difficulties students encountered trying to submit their software files to the instructor and the need for better preparation on the front end. Finally, Onwuegbuzie et al. (2012) described the design of a qualitative research methods course which included a ‘technical phase’ in which nine analysis methods were illustrated using NVivo 9 and QDA Miner 3.2; however, no discussion of the successes or challenges of software use was included.

With an already packed curriculum, it is no wonder that Davidson and di Gregorio (2011) noted in the most recent Sage Handbook of Qualitative Research that ‘most senior researchers in the field of qualitative research, and many rising researchers, still lack exposure to qualitative data analysis software (QDAS) in their graduate training’ (635). Further complicating the matter is that there are still competing discourses around the relationship of qualitative research and technology, with some introductory methods textbooks discussing QDAS tools with scepticism and caution (Paulus, Lester, and Britt 2013). While a distrust of QDAS persists for a variety of reasons (Davidson and di Gregorio 2011), any new technology does indeed challenge the way things have traditionally been done. Rogers’ (2003) diffusion of innovations theory argued that the
way new innovations are communicated is important, noting that both early adopters of and resisters to the innovation can be highly influential to those who remain undecided. In the case of qualitative research, it is possible that the ways in which established scholars in the field, including methods instructors, introduce novice scholars to new technologies may shape how they adopt the tools in their own practice.

At the same time, members of the ‘digital native’ millennial generation are more comfortable than ever with pervasive computing environments and are actively seeking ways to use new tools for their research. Today’s students ask how to best integrate new technologies, such as smart phones, social media and QDAS, into their qualitative research practice. QDAS, like any tool, has its place to support qualitative work, and there is no better place to learn its affordances and constraints (Norman 1999) than during methods courses. Used in a meaningful way, QDAS has the potential to support reflexivity, make choices transparent and engage others in collaboration (Paulus, Lester, and Dempster 2014). For instructional purposes, we typically describe the most robust QDAS packages (e.g. ATLAS.ti™, NVivo and MAXQDA) as project management tools, as a way of demystifying software that in fact does a great deal more than analyze data (Silver and Lewins 2014). Others have framed QDAS this way, too. Muhr (1997) referred to ATLAS.ti™ as ‘the knowledge workbench’, Kono- pasek (2008) described ATLAS.ti™ as a ‘textual laboratory’ and di Gregorio and Davidson (2008) conceptualized QDAS tools as supporting ‘e-projects’.

For this reason, we decided to integrate one QDAS package, ATLAS.ti™, into our Advanced Qualitative Research courses. In this paper, we provide a detailed description of our course design decisions and outcomes (Paulus, Lester, and Dempster 2014) as well as findings from our systematic analysis of what happened during the course as students were required to learn ATLAS.ti™. We include implications for practice for others who may be contemplating similar instructional strategies.

Context
At the time of this study, the North American university at which this study took place had been offering a 15 hour graduate certificate in qualitative research methods in education for five years. The first author (Paulus) coordinated and taught courses in the programme since its inception. In January 2013, the university acquired a site license for ATLAS.ti™ along with 20 hours of dedicated graduate assistant support for qualitative research, provided by the second author, Bennett, and funded by the university’s research computing division. Bennett provided workshops, class visits and individual consultations for issues related to qualitative research design, including the use of ATLAS.ti™. These circumstances made it feasible for Paulus to begin to integrate ATLAS.ti™ into the Advanced Qualitative Methods courses. Table 1 is an overview of the courses in which ATLAS.ti™ was integrated in 2013.

In the spring 2013 class, students worked on individual projects through which they were required to demonstrate both methodological competence (by completing a methodological literature review) and data analysis competence (by analysing pilot study data). During this first semester of integrating ATLAS.ti™, students were required to submit one project file (called a hermeneutic unit or HU) to the instructor for feedback several times throughout the semester. The HU contained their project proposal, interim progress reports and a final project report. The instructor provided feedback as memos and comments on each iteration of the HU. The goal of this requirement was for students to become comfortable with and proficient in creating an HU, adding primary
documents, bundling and unbundling the HU for feedback and reading comments and memos attached to the documents. ATLAS.ti™ as a project management tool can be used to more readily document decisions (adding transparency to research work), work in teams for a more collaborative approach, and engage in reflexivity through writing regular memos throughout the research process (Paulus, Lester, and Dempster 2014). Students were encouraged, but not required, to create a second HU in which to actually conduct their methodological literature reviews and/or data analysis projects, and most did so. Students were also reminded throughout the semester that if learning ATLAS.ti™ became too much of a burden they could stop using it and switch back to more familiar tools. Everyone continued to use ATLAS.ti™ in the spring semester.

In summer 2013, the students in the special topics course Digital Tools for Qualitative Research, some of whom had taken Advanced Qualitative Research Methods in Education in the spring, were also required to use ATLAS.ti™ as a project management tool to submit their assignments for instructor feedback. These assignments included two ‘skill builder’ activities in which students chose any two digital tools (e.g. citation management software, transcription software, data analysis software, etc.) to master. Fourteen of 18 students chose to focus on a particular use of ATLAS.ti™ (e.g. for literature reviews, transcription, data analysis, etc.) as part of their skill builder assignments.

In fall 2013, students in Discourse Analysis in Educational Environments, some of whom had also taken the previous two courses, were required to use ATLAS.ti™ not only as a project management tool but also to conduct a mini literature review on the use of discourse analysis in their field, transcribe 30 minutes of recorded interaction, synchronize the transcript with the audio file and analyse the data. For various reasons, including that many students in the class were Mac users, this class struggled the most with their use of ATLAS.ti™. Two students, both Mac users, chose not to complete their projects in ATLAS.ti™ after numerous difficulties and setbacks throughout the semester (as will be discussed below).

As reflexivity is a key part of qualitative research (Watt 2007), students in all three courses engaged in reflective journaling. They did this on individual blogs (Harricharan and Bhopal 2014) in which they were to reflect regularly on course readings and their

<table>
<thead>
<tr>
<th>Semester</th>
<th>Class</th>
<th>Number of students</th>
<th>Course assignments</th>
</tr>
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| Spring 2013 | Advanced Qualitative Research Methods in Education | 14 | - Individual research project proposal to develop methodological and data analysis skills  
- Two research progress reports  
- Final research report  
- Individual literature review and/or analysed data |
| Summer 2013 | Digital Tools for Qualitative Research | 18 | - Two skill builder reports  
- Methods section of research proposal justifying technology use |
| Fall 2013 | Discourse Analysis in Educational Environments | 16 | - Mini literature review  
- Transcribed audio/video files  
- Completed data analysis |
learning experiences, including their use of ATLAS.ti™. These, and the instructor’s, reflections were valuable as formative evaluation data points throughout the course and served as an important data source for the current paper. The following research question guided this study: What happens when a data analysis software package is integrated into Advanced Qualitative Research Methods courses?

Methods
A case study approach (Stake 2007) grounded in reflective practice (Schon 1984) was used to investigate what happened during these three semesters. Institutional Review Board approval was received for the study, and all but 1 of the 33 students across the three semesters consented to participate. Data sources included students’ weekly reflective blog posts, instructor reflections, student course evaluations, course syllabi and communications (e.g. Blackboard announcements and emails), and Bennett’s consultation logs in her role as support specialist for qualitative data analysis software. Students in the spring and summer courses were also asked to respond to an email asking them to reflect specifically on the use of ATLAS.ti™ during their coursework. Fifteen students did so. Students in the fall semester class were asked to reflect on the same question in their final blog post for the semester.

We used ATLAS.ti™ to store, organize, and analyse the data for this study. For the initial phase of analysis, the auto-code feature was first used to identify and mark as quotations all parts of the data set in which ATLAS.ti™ was mentioned. These quotations were compiled into a new document for analysis, and the quotations were reviewed repeatedly in context during the analysis process. Guided by the research question, all data were read multiple times and analysed to identify recurring patterns and themes (Auerbach and Silverstein 2003; Boyatzis 1998; Gibson and Brown 2009).

Findings
We first report on five themes related to what happened during the course: (1) a needed push out of their comfort zones; (2) various forms of support working together; (3) keys to motivation; (4) a new generation educating the current one and (5) use of the software beyond coursework.

A needed push out of their comfort zone: being required to learn
One of the requirements for all three courses was to use ATLAS.ti™ at a basic level for project management. Students were told of this requirement prior to the start of the semester and provided with pre- and during-semester workshops and just-in-time technical support. At the same time, students were frequently reminded that the point of the classes was not to struggle with technology, but to learn methodology, and if at any point they felt the scales were being tipped too far towards struggling with ATLAS.ti™, they should feel free to stop using the tool. As noted earlier, two students did choose to stop using the tool during the fall semester.

In their reflections, students noted that ‘being required’ to use ATLAS.ti™ was something of a necessary evil in order to encourage them to use it — if it had not been required, most would not have taken the time to learn it:
Learning about ATLAS.ti™ as part of the course was really helpful. The program isn’t too complex, but there’s definitely a learning curve to it. If I hadn’t learned it in this course, I doubt that I would have taken the time to do so outside of class … Technology can be intimidating and time-consuming. Even though ATLAS.ti™ actually saves time in the end, it does take time to learn. By teaching the tool in a class, it doesn’t become extra work. (P4, 7)

As Kirschner and van Merriënboer (2013) have noted, students do not always know what is best for them. Knowing that learning the software would be a good idea and actually taking the time to do so are two different things – and overall students acknowledged that building it in as a course requirement was ultimately helpful.

Learning ATLAS.ti™ was, for some, extremely time-consuming, but they often framed this as an investment in the future:

Right now, it is taking considerable effort to work in ATLAS.ti™, as the process is not entirely natural to me, but I think in time it … won’t take as much effort – allowing me more resources for analyzing and interpreting the data. (P16, 67)

Students frequently described their learning with terms of pride, as hard work paying off:

After playing around with ATLAS.ti™ today I was able to import PDFs and then to code 2 articles … I was able to open a memo and input some notes into it. I felt like I was able to take some baby steps but felt really good about the direction I am going. (P18, 19)

The students’ hope was that by investing time into the software now, they could focus on analysis and interpretation more quickly later.

While some felt ATLAS.ti™ had an intuitive design that was easy to learn, others were initially resistant to the idea:

I would be lying if I said that I wasn’t at first very resistant to the idea of ATLAS.ti™ as a data analysis tool. First and foremost, the program isn’t available for my [Mac] machine, and second it would take away the kinesthetic maneuvering of data that I have become accustomed to. That being said, I am now glad that I was ‘forced’ to learn the program, and in partnership with the iPad application, I can see it being a valuable tool in the future. (P13, 11)

Changing the way that we approach data analysis is no small feat, as moving from paper-based to computer-based work, or, as this student describes it ‘taking away the kinesthetic maneuvering of data’, entails a shift in the way that we think. This should not be taken lightly and entails a process of change. Similar to what was described by Este, Sieppert, and Barsky (1998), those who were already comfortable with manual coding, familiar with other software programmes or whose advisors were not comfortable with using the software seemed to struggle the most:

The question of analyzing data with or without software is an interesting one for me … my advisor has never used data analysis software and is resistant to using it. In fact, my advisor instructed me to manually code and thematize the data for my final project before putting it into ATLAS.ti™. This puts me in a difficult place and I haven’t figured out how to negotiate this quite yet. (P61, 9)

We see here that students received conflicting information about the software and how it works, and this highlights the role that those in power can play in supporting or
limiting diffusions of innovation. The role of the advisor will be revisited in a later theme, when we discuss how the students eventually took on the instructional role, sharing what they learned about ATLAS.ti™ with their peers and advisors.

Initial resistance to the requirement was either overcome as the programme was learned, or deepened into frustration as the roadblocks continued:

I have a love–hate relationship with ATLAS.ti™ . . . I am still not sold on ATLAS.ti™, but I am renting. Old habits die hard, and I am not at the point of ease of use where I feel comfortable trusting or interacting with ATLAS. (P11, 17)

And, even though students were reminded that they could stop using ATLAS.ti™ if it became too much trouble, all but two students persisted. As one student noted:

I think that being forced to use ATLAS.ti™ was a good thing – we were gently forced though – many times it was stated that if it became too much we could let it go, but we were highly encouraged to keep at it. I am glad I did. I feel like I have a tool that will be really useful to me in the future with other projects. (P77, 17)

Building the requirement to use ATLAS.ti™ into the course provided students with the needed push out of their comfort zone and into the world of analysis software. While this was not easy for many of the students, most were able to succeed with our support.

Various forms of support working together: being supported to learn

Throughout their reflections, students repeatedly emphasized that their learning of ATLAS.ti™ would not have been successful without the high level of support that was provided. The importance of support for learning new technologies is a frequent finding in studies of technology integration (Davidson and Jacobs 2008; Mitchell et al. 2007; Roberts, Breen, and Symes 2013; Walsh 2003). Our analysis of Bennett’s consultation logs found that the most frequent request for assistance related to being able to import and transcribe audio or video files. This was no doubt related to the discourse analysis class requirement to transcribe and analyse interaction data within the software. Other support requests included general overviews of the programme (for students unable to attend the scheduled workshops), help gaining access to the software and assistance with importing data documents. Managing project files for teamwork and learning advanced features were also topics for consultations, as well as thinking through how to use ATLAS.ti™ for literature reviews and comparing the features of NVivo and ATLAS.ti™.

These student needs were met with a combination of assistance from Bennett in her official role with the university and also by the instructor (Paulus), classmates, online tutorials and books. One student nicely summarized how the various forms of support worked together:

It was really nice having Bennett for technical support. Paulus was able to teach the class and give use useful tips for how to utilize the functions of the software and Bennett was able to give technical support to the class. Bennett’s support added an extra boost of confidence, because she was able to assist with challenging questions about the software and troubleshoot technical problems in a matter of minutes. (P43, 10)

Most faculty, even those who are technically inclined, likely do not have the time to provide the level of support that will be needed for students to become proficient in
the software. It is not enough simply to have a faculty member willing to include the software as part of their course. For full adoption a variety of support mechanisms are needed – mechanisms that are supported by the institution such as the workshops and individual consultations provided by Bennett, much the same as the statistical consulting support often offered at research-intensive universities.

A few students set up weekly meetings with Bennett for guidance, in order to develop confidence in their skill development:

I feel very fortunate to have Bennett available to me for quick reference of technical questions and concerns with regard to using ATLAS.ti™. I am confident that my proficiency with using this software is much improved due to the weekly one-on-one sessions that I have had with her. (P40, 27)

Others realized that neither Bennett nor the instructor would be there forever, prompting them to seek out other forms of support:

The course helped to push me to utilize more online-forums, and website information rather than just relying upon Bennett. Although for anxiety, it helped knowing that Bennett was only an email away. I found the amount of support from the instructors to be so helpful in this course. I loved that we were exposed to other people throughout the university that use these tools, so we were exposed to multiple people that we could go back to later on if needed. (P2, 4)

Just-in-time resources for learning outside of the class, then, were an important component of supporting students. This growing awareness on the part of the instructor resulted in ensuring greater levels of support as each new course was offered. One faculty member on his or her own may not be able to support students to the level needed to be successful with the tool. It takes a village, as they say, to learn data analysis software, and the appearance of each villager at the right time makes a difference. That is, support needed to be provided at the time it was needed and for the specific features students chose to take up.

*Keys to motivation: choosing what to learn*

Allowing students to work on their own projects and choose which features to learn, with plenty of opportunity for hands-on practice, was key to their motivation to learn the software. Students were introduced to ATLAS.ti™ for project management first – required only to learn how to add documents to a project file, bundle the file and send it through a shared cloud folder to the instructor. They also had to learn how to access, read and respond to the comments and memos made by the instructor as feedback. From there, students could choose which features to learn. One student described:

As I continue to use the software I always find something new about it. I think the ‘go at your own pace’ and laying out goals for using technologies like ATLAS.ti™ allows the researcher to aspire to a realistic goal for learning how to use the software. (P43, 10)

Starting small, and being able to go at their own pace was a helpful approach for these students. Some did not feel compelled to go beyond these early uses of the tool – project management was enough.
Being motivated to learn the tool in order to support data management was mentioned frequently by students:

I am very committed to using ATLAS.ti™ as my tool for collecting, organizing, and managing my data as well as my analysis . . . the capacity to have all my supporting documents in one place, annotated with comments, alone is a huge plus. (P22, 26)

Since the students had the most experience learning the software as a project management tool, this finding, while not surprising, was encouraging in that they did seem to be motivated to learn ATLAS.ti™ for this purpose.

Also motivating for students was the use of the software for conducting literature reviews, as described next:

Although I am well underway in my literature review and near finished with content and organization, I need to do a better job of justifying its components for defense purposes. As I have begun using ATLAS.ti™, I have immediately been able to see the benefits of the program. By coding according to my literature review subheadings, I have been able to properly track quotes, points, and arguments throughout my literature and integrate them into the body of my work. (P10, 30)

Some students, then, were motivated to use the software for project management and for literature reviews, rather than for data analysis per se. This underscores that QDAS is useful for more than coding data. Positioning the tool in this way may eventually dispel the myth that QDAS is primarily a tool that can take control away from the analyst.

In addition to managing their data and reviewing the literature, students were most interested in learning the audio/video analysis and transcribing features; the code, memo and retrieve features; visual analysis through network views and keeping a research journal through memos. However, while the audio/video analysis features were ones students wanted and needed to learn to support their methodological approach, they were also the ones that were ultimately demotivating and caused the most frustration. Students encountered numerous difficulties when importing media files, transcribing and synchronizing the transcript with the recordings. As one student put it, ‘All in all, I felt like this was the most frustrated I have been with ATLAS.ti™. I plan on still using the software, but I will not use the transcription features and will use it only to code transcriptions’ (P78, 6). This steep learning curve for mastering ATLAS.ti’s™ transcription features was too much for many of the students. One student who was analysing recorded sign language interactions had to eventually stop using the programme. She described her decision in her journal:

ATLAS.ti™ and I had to part ways. I’m a bit bummed about that because I really did put a lot of time, effort, and money into trying to make it work. I am very much planning to try it out again in the future . . . but ultimately I had to make the decision that it wasn’t going to enhance my work on this project during this semester . . . ATLAS.ti™ wasn’t capable of playing my video. While it can play some mp4 files, it cannot import the specific kind I needed to use for my project. I didn’t mind converting my video. Unfortunately, I discovered that all other versions of the video diminished the quality. Because the visual quality was extremely important to my data, I felt that using the converted videos would negatively impact the transcription. (P75, 20–21)

Even with adequate support, then, researchers may find that ATLAS.ti™, or any new technology, is simply not the right tool for the job. This student made the right decision to stop using it, as the software was simply not able to support the kind of media files
and analytic work that she needed to do. Working out these issues now, as part of a
class, may have been preferable to making the discovery while in the dissertation
phase of her programme.

Thus we can see that choosing which features of the software to focus on, for example,
supporting project management, literature reviews or multimedia analysis, can simult-
aneously serve as a motivator and demotivator, such as when the very features that
draw you to the tool turn out to be the ones that are not easily mastered. Focusing on
first using the software for project management seemed to work well for all students,
whereas requiring use of the multimedia features was ultimately demotivating for some
when the challenges encountered were too great. This pointed to the need for balancing
student choice of features to learn with more scaffolding for advanced functionality.

A new generation educating the current generation: helping others learn

We found that students not only learned to use the software themselves, but they took
this newfound knowledge back to their colleagues – both peers and faculty advisors –
which ultimately helped to create a community of ATLAS.ti™ users across campus.
Their understanding of what the software can and cannot do (e.g. take control away
from the researcher), combined with insights into how software can make their research
processes more transparent, positioned the students to become the teachers – with the
new generation of researchers taking action to educate the current generation. For
example, one student was invited by her committee chair to share her knowledge
with others in the programme:

This coming Saturday, I will present the basics of ATLAS.ti™ to students in my cohort. I
am doing this at the request of my dissertation committee chair. I will be focusing on how
the program can aid in writing the literature review. (a huge thanks to Paulus and Bennett –
I could not have done that without your help/resources). (P63, 18–19).

Another student shared a story of showing ATLAS.ti™ to her chair in such a way that
previous misconceptions were addressed:

My chair and I have been working on a project together, and I uploaded all of our readings
into ATLAS.ti™. When we had our first discussion, I had coded all of the readings
and could quickly reference a quote or a memo to elaborate on our conversation. I
think she was pretty amazed at the tool and she could see how the program wasn’t
‘coding’ anything for me – this was an assumption she came to the table with, and
actually seeing ATLAS.ti™ in use showed her that it simply was not coding the data
for me. (P77, 17)

Misunderstandings of how data analysis software works has been credited as one
reason few senior researchers use it (Davidson and diGregorio 2011). As introduced
earlier, students reported some resistance from faculty towards their use of software,
often due to such misconceptions. Advisor resistance will naturally affect student
views of the software, and this was a point of discussion in each of the three classes
as the topic arose. One reason that so many qualitative researchers remain resistant
to using software is the fear that the software somehow does the analysis for you, or
takes control of the analysis (Garcia-Horta and Guerra-Ramos 2009; Roberts and
Wilson 2002). It was clear that students had thought a great deal about the relationship
of software and data analysis. As one student described it:
Perhaps more important than the functions is the ability to choose among them without compromising the effectiveness of any particular one . . . [and] without negatively impacting the overall analysis. I can use the annotating tool, or not, or the network view, or not, and I do not sacrifice the overall effectiveness of the tools within ATLAS.ti™ that I do use. (P22, 24).

Understanding that choosing which features of the software to use is ultimately up to the researcher can help break the cycle of misconceptions. For example, ‘Although it does not have the “magic” button so famously discussed in class, to automatically do our analysis for us, it definitely affords more visual ways of coding and analyzing qualitative data’ (P6, 6). The relationship of the tool to the analysis has always been a contested topic in the qualitative research literature (Roberts and Wilson 2002) and it was heartening to see the students working through these issues in their own projects and passing this learning on to their faculty members.

Similar to showing their mentors that the software would not take control of the analysis, students also showed their mentors how software could make their analysis more transparent. One student connected ATLAS.ti’s™ visualization features with transparency: ‘Networks are compelling visual diagrams that add transparency to the researcher’s process, and I am now considering how I might incorporate them into the write-up of my own research findings or my dissertation appendices’ (P66, 100). Understanding the affordances and constraints (Norman 1999) of the software helped students make informed decisions as to whether or not to use it beyond the course (discussed in the following theme) and to share these decisions with their peers and advisers.

For example, several students noted the transparency that the use of the software could afford, for example:

the capacity to link across multiple data sets and create networks showing relationships [to] strengthen my warrants and allow my committee and others to see exactly what I discovered about my participants’ experience of reflective practice out in their lives. (P22, 26)

Here the student emphasizes the ability to share what she is doing more transparently with her committee members. Similarly, another student emphasized that she had:

attempted to demonstrate rigor and high quality in my research by documenting my research process each step of the way through my blogs, field notes, and project reports while conducting the interviews, and in memos and comments in ATLAS.ti™ as I conducted my data analysis. (P40, 24)

Transparency has long been seen as a benefit of software use, even though researchers do not always effectively define the term (Jackson 2014). By encouraging reflection on software use during early research training, this strength of the software can be experienced firsthand and passed on to others in their community of practice, with increased transparency ultimately helping to address persistent misconceptions about the software.

These examples of faculty mentors welcoming new expertise and providing opportunities for students to share their learning represent the ideal outcome of a technology innovation.

Ideally, the more qualitative researchers who have experience with software, in conjunction with methodological conversations around the affordances and constraints that
they provide, the more fruitful conversations can be – both with others who use the tools and with those who do not. While it was encouraging to see the new generation modelling to the older generation their own control over, and transparency in, their analysis with software, there is still some way to go.

Use of the software beyond coursework: putting the learning to use

One of the primary goals for integrating the use of software across the qualitative courses was to encourage students to become familiar with the tool early, in a safe environment, so that they would then continue to use it for their dissertation research. We thus paid particular attention to places in the data where students mentioned their intention to use ATLAS.ti™ in the future.

Students noted that if they had not started the process in class it would have been harder to adopt the software. For example, one student who was planning to use Photo-voice (Catalani and Minkler 2010; Wang and Burris 1997) for her dissertation discussed her plans for ATLAS.ti™:

One of the things that I enjoyed the most about [learning ATLAS.ti™] was having the opportunity to engage in some brainstorming about ways to upload, analyze and code images vs. videos . . . it is great to have time now to think about all of this rather than when I am already into my dissertation. (P65, 17)

As mentioned in the previous theme around the use of the video analysis features, learning early what works and would not work can help students decide how they may want to use the software in the future. Others, though, were not so sure:

For me, the jury’s still out on this technology. Some parts of it, I love. I also felt as though I spent an inordinate amount of time fiddling around with the program when I should have been analyzing my data . . . There’s still so much I don’t know! (P74, 3)

While this student did go on to say that she was not giving up on the software quite yet, for Mac users especially the requirement to use ATLAS.ti™ was asking a lot. These students had to learn new software while using an unfamiliar operating system (Windows), often on an unfamiliar machine.

Other students tied their plans for future use to their faculty advisors, unsure of what their reactions would be, such as the student who reflected:

I plan on using ATLAS.ti™ from this point on in my studies, and, although I have not heard anything ‘negative’ from my committee . . . especially my chair, I hope they will be on board and not become frustrated when I want to show work . . . . (P12, 52)

Even more challenging to future use were professors who actively discouraged students from using the tool:

I was recently in a qualitative methods class with a professor that was very adamant about how using coding software is frowned upon because it takes away from the qualitative experience. I felt like everything I learned in advanced qualitative research methods was being undone and it was very frustrating to being in that class. (P20, 55)

This again highlights, as outlined by diffusion of innovations theory (Rogers 2003), the power that faculty have to undermine the students’ explorations of software use.
Despite these misgivings, however, most students felt it was worth the effort:

I can’t even begin to imagine what it would be like trying to sift through mounds of high-lighted paper for a quote or to synthesize all my codes. One way or another I will be using software to analyze for the rest of my professional career. So, I am super appreciative to have been taught to use ATLAS.ti™ even if it was a huge pain in the rear trying to learn. (P81, 8)

While this study did not go so far as to track use of the software beyond the coursework, it was heartening to at least see a number of students state their intentions to do so. Systematically following students like these over time is an important area for further research.

Discussion
Our goal was for the ATLAS.ti™ requirement to be viewed as an opportunity to learn a QDAS tool in a safe space (Lapadat 2009; Levitt, Kannan, and Ippolito 2013; Li and Searle 2007; Lincoln 1998). Early research experiences are crucial, because analytic methods and processes are developed during this time – practices that become difficult to change later. By introducing ATLAS.ti™ during coursework, we hoped to demystify its functionality early in their scholarly learning. Like Blank (2004), our experience doing so was overall a positive one, though students had a range of experiences and preferences around how best to learn the software (Este, Sieppert, and Barsky1998). Coursework is a lower stakes environment than the dissertation itself, and if enough support is available, this could be an ideal environment in which to invest the time in learning a tool that will have a great pay-off down the road. Our approach encouraged uses of the software for phases of the research process other than data analysis, such as conducting literature reviews, transcribing data and keeping a research journal. Learning how to use a QDAS tool early on, we hope, will result not only in continued use of the tool but also support collaboration in a more transparent and reflexive way. This may have the effect of creating future senior researchers who, indeed, are not only able to use the software, but also actively dispel the scepticism and distrust of QDAS.

Our findings suggest some implications for practice for others who may want to integrate QDAS into methods courses. These recommendations are not specific to ATLAS.ti™ – they would work equally well with other major packages like QSR NVivo and VERBI GmbH MAXQDA. These major packages offer quite similar functionality, though these functions are designed in different ways (Silver and Lewins 2014). First, we recommend integrating QDAS only when there is easy access both to the software – such as through a campus-wide site license – and to hands-on, just-in-time support. Lack of time, lack of access and lack of support have consistently been identified as barriers to technology adoption of any kind, as illustrated not only in our second theme but by other scholars (Este, Sieppert, and Barsky 1988; Kaczynski and Kelly 2004; Rogers 2000). By ensuring these were in place we hoped to maximize the possibility of student success. Reassuring students that if they get too overwhelmed learning ATLAS.ti™ they can opt out of this requirement is critical. This reassurance seemed to provide enough comfort that it prevented students from becoming so wrapped up in the functionality of ATLAS.ti™ that the quality of their learning suffered.

As described by Kaczynski and Kelly (2004) as well as our own experiences, it is important to inform students about prerequisite skills and tools they will need to be successful well in advance of the course to give them time to prepare, such as access to a
computer with administrator privileges and a cloud-based shared folder system such as Dropbox or Google Drive for the purposes of sharing QDAS project files with the instructor. All of this preparatory work is important so as to avoid spending valuable class time trouble-shooting technical difficulties. Finally, if it is possible to integrate software into more than one course, students can develop their proficiency over time, and eventually serve as a resource for others hoping to learn the software. In this way, the on-campus community of users can be expanded.

It is also important to balance methodological instruction with technical instruction. Discussing ATLAS.ti™ in the context of affordances and constraints is particularly important to keep the focus on research methodology rather than only on the technology. Clearly there are trade-offs whenever new tools are adopted, and the ability to discuss these in an informed manner can go a long way towards encouraging the adoption of the best tools at the appropriate time. As illustrated by the fourth theme, learning how to provide a justification for the use of a tool, including its affordances and constraints, prepared students to talk in an informed manner with their committee members who may not be as familiar with the tools or understand how QDAS could contribute to the transparent, reflexive and collaborative nature of their study. This is particularly important when senior faculty are sceptical and even resistant to the use of QDAS tools.

Finally, having students determine their own goals for and the balance between their own research and the use of software is also recommended, as illustrated by our third theme. Students often come to qualitative courses from a variety of programme areas (e.g. sport studies, teacher education, nutrition, communications, educational leadership, English and business) and with a variety of preferred research approaches (e.g. ethnography, phenomenology, case study, etc.). Thus, assignments need to support the students’ own research agendas and, better yet, help them make progress towards their dissertations. Creating an environment of exploration permits students to discover new ways to use technology in the context of traditional qualitative approaches and methods. Beginning by first requiring students to submit assignments within the software not only models the use of ATLAS.ti™ as a collaboration tool but also lets the instructor provide feedback on how best to organize a project file for effective data management, collaboration and transparency. From there, students can explore the features and functions of most use to them. More complicated features, like transcription and video analysis, however, may require more scaffolding and direct support by the instructor.

Conclusion

Qualitative methods instructors are faced with a wide range of topics to cover, one of which is the use of technologies to support our work. While senior faculty who teach methods courses may not be comfortable integrating QDAS into their curriculum, students today are expecting to learn these skills, and rightly so, given the benefits that tools can offer. Creating a stand-alone course in QDAS or expecting students to pick it up on their own may not be the most efficient or effective approach. With adequate access to and support for learning the software, QDAS can be integrated into methods courses. For this to be successful, however, we cannot emphasize enough the importance of having robust technical support and training. This remains particularly true in contexts with a mix of Windows and Mac users. While ATLAS.ti™ released their Mac version in late 2014, the design differences between the two
versions of the software present their own set of challenges for teaching to a mixed audience.

Providing adequate support for QDAS reflects an institution’s commitment to the value of qualitative research. Ironically, since the completion of this study both authors have left their positions with the institution, and the access to ATLAS.ti™ has subsequently been withdrawn by the university. This ‘one step forward, two steps back’ state of affairs unfortunately contributes to the likelihood of continued reluctance on the part of researchers to adopt QDAS. As Davidson and diGregorio have pointed out, institutional support ‘remains uneven within and across institutions … on many campuses, support for QDAS lags far behind support for basic quantitative technologies … QDAS implementation does not fall under any unified policy direction of the institution’ (2011, 635).

For those students we were fortunate enough to support, however, we hope that they continued their use of the software beyond the coursework — whether or not this happened is a focus of future research. Another potential area for future research is to explore in what ways integrating QDAS is similar to or different from the integration of quantitative data analysis software such as R or SPSS in quantitative research methods courses. Research methodologies and research technologies inform and influence each other in important ways, and more scholarly conversations on this topic are needed.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes

1. Parenthetical numbers refer to ATLAS.ti™ primary document and quote number.
2. At the time of this study ATLAS.ti™ had not yet released their version for Mac computers. Students who were Mac users were provided with Windows netbooks on which to use ATLAS.ti™. This presented an additional layer of difficulties for students trying to use ATLAS.ti™ on an unfamiliar machine.

References


