Focus on methodology:
Observational studies in health professional education research

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Abstract

Observational studies are not uncommon in health professional education and are frequently associated with ethnography as a methodology. This article aims to provide an overview of how observational studies are used in health professional education research. Firstly, we explore some ways in which observational methods can be used in association with a range of qualitative research stances, and then we focus on the practicalities of undertaking observational research. Next, we use two case studies to illustrate some of the key decision points when designing observational research. Finally, we collate resources and consider the implications of contemporary world events on observational research.

Keywords: observational studies; qualitative research; methodology; research methods; ethnography

Introduction

Observational studies focus on phenomena as they occur within their natural setting. Data collected is considered a direct, rather than secondhand, interpretation of events (Merriam, 1998). Much like clinical diagnosis, which requires information not only from symptoms (the patient's description of the presenting complaint) or diagnostic tests but also from signs (what we can observe or elicit through examination), taking an observational approach to research problems can address questions that we cannot fully investigate through the conduct of experimental trials, surveys or interviews alone. Observational studies

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frequently adopt ethnography as a methodology, where the researcher is a participant-observer. They learn about the phenomenon of interest through participation. This approach comes from anthropological traditions, with the aim of learning about different cultures by spending an extended period (i.e., years) in a foreign place (Reeves, Peller, et al., 2013). Sociologists, including those working in health professional education, have since adopted ethnographic observation methods. Articles and books have long reported on ethnographies within medicine and medical education (Atkinson & Pugsley, 2005; Becker et al., 1961; Bosk, 2003; MacLeod et al., 2019; Merton et al., 1957; Pope, 2005; Reeves, Kuper, & Hodges, 2008). However, traditional ethnography is not always possible. Long periods in the field, a relatively unstructured approach and seeking to understand a culture is not always desired nor feasible within current institutional research paradigms despite the possibility for rich and useful findings.

This article focuses on observational studies as a method that might satisfy methodological approaches often adopted in health professional education research. We write this piece as three early-mid career researchers who have successfully conducted observational research studies. JT studied peer learning in undergraduate medicine clinical placements (Tai et al., 2017) and is now supervising JF, who has studied the learning practices of physics students. CN has studied pharmacy students' professional identity formation through their curricular experiences (Noble, Coombes, et al., 2014) and has also used video-reflexive ethnography (VRE) to explore learning in the clinical setting (Ajjawi et al., 2020; Noble, Billett, et al., 2019). We provide an overview of observational studies and compatible research paradigms, then outline key aspects of observational studies. We draw on our experiences in two case studies to illustrate some process considerations when undertaking the research. Finally, we make practical suggestions for readers' own work, including further reading and resources.

Observational studies

Observational research is usually situated in a qualitative research paradigm. Within this, observational methods can be adapted to different onto-epistemological orientations (i.e., the philosophical position of the research on the way[s] in which we are, and come to know about things) (Bunniss & Kelly, 2010):

- **Post-positivist:** The researcher as observer sees and describes the phenomenon, addressing the expectation that there is "one truth" out there but that different perceptions of that truth may exist.
- **Social constructivist:** Because knowledge and experience are understood as a coproduction between people, the researcher may adopt a more participatory approach and/or take a more interpretive approach to the researcher's findings.

- **Sociomaterial perspectives:** Here, the phenomenon is studied by emphasising the interactions between systems, materials, places, humans and non-human actors that do not easily respond to methods such as surveys and interviews (Burm & MacLeod, 2020; MacLeod et al., 2019).

Alignment between theory and method is important in observational studies (Reeves, Albert, et al., 2008). Explicitly declaring the premises from which the work is designed and undertaken helps readers and consumers of the research to make a judgement on its quality and trustworthiness (Patton, 1999; Shenton, 2004) and interpret the findings in light of the researchers' stance. We introduce a research problem—the transition of health professional students to learning in clinical settings—to briefly illustrate how adjustments can be made in light of different methodologies and theories to achieve this alignment.

An *ethnographic approach* to this research problem might have a research question such as How do students make the transition to learning in clinical settings? The researcher might spend time with groups of or specific individual students, and findings would describe what students do, who they interact with and what their experiences are of this transition, recognising the situatedness of the phenomenon studied.

A *case-study approach* focuses on "contemporary phenomenon within some real-life context" (Yin, 2003, p. 1) and can lead to both illumination of the phenomenon and the generation or expansion of theories. Individual students making the transition might be "cases"; alternatively, cases might correspond to categories (e.g., all students starting allied health placements in a particular hospital or all physiotherapy students across many sites). These cases can then be compared. In addition to observational methods, case studies may involve interviews, focus groups and object/document analysis to fully explore a particular phenomenon.

Realist methodology, increasingly used in health professional education (Wong et al., 2012), seeks to determine what works, for whom, how and in which context (Pawson, 2013). The interaction of contexts, mechanisms and outcomes are examined to identify patterns. Theory(ies) are selected and continually engaged with to guide the research (Fletcher, 2017) and the analysis of findings. The goal is to generate and refine "middle-range" theories related to a particular phenomenon. A study on student transitions to clinical settings might seek to explore the connections between student characteristics, clinical site contexts and interactions with key staff members or systems to understand which combinations are likely to contribute to successful learning outcomes.

Specific theories can influence the shaping of an observational study. Communities of practice theory, itself generated from a series of ethnographic studies of learning in noneducational settings (Lave & Wenger, 1991), comes from a sociocultural perspective and sees learning as developing identity, where newcomers become central members

of their community by participating in legitimate but peripheral practices, not unlike apprenticeships. Members of a community are *mutually engaged*, coming together for a *joint enterprise* and *share repertoires* such as "language, routines, artifacts and stories" (Roberts, 2006, p. 624). Drawing on this theory, an observational study on student transitions might be interested in *if* and *how* students participate in clinical activities such as ward rounds and handovers, and how they gradually draw on the vocabulary and tools of the community in their activities.

The theory of practice architectures (TPA), developed in educational settings, adopts a more sociomaterial perspective on phenomena (Kemmis et al., 2014). TPA proposes that local human activity comprises forms of talking/thinking, doing things and relating to other people and objects, all of which are shaped by their discursive, material and/or sociopolitical context. Observations framed by TPA have been used to study partnerships between health professionals and families (Hopwood, 2014) and nursing simulations (Hopwood, 2017). This approach might consider how the use of language, spaces or places and the existence of social hierarchies within a hospital constrain or enable how students can learn from activities within the clinical setting. Thus, it would be important to observe not just the students but how others (including inanimate objects) impact on students' possibilities for learning as they transition to the clinical setting.

We have outlined how a few methodologies and theories might shape the focus of a particular study to illustrate their implications for the type of research question asked and which group, setting or aspect of the environment is important to study. After these considerations, it is possible to progress to designing and conducting the study.

Conducting an observational study

Seldom do we read about grappling with research design, ethical committee approval and the unexpected events that occurred while a study was being conducted. Journal articles tend to present research methods as a concise account of what was done. We now challenge this convention of "neat reporting" and cover some of these aspects in more detail as a form of intellectual candour (Molloy & Bearman, 2019). Some initial questions to consider in the design of the study are outlined in Table 1.

The researcher and their interactions with participants

Many researchers have described how their presence and participation may affect what they observe. The "Hawthorne effect", where participants change what they do or what they say based on what they think the researcher wants to see or hear is a common criticism of observational research. Paradis & Sutkin (2017) suggest that this phenomenon should be called "participant reactivity" and that longer engagement with participants (including developing interpersonal relationships) may mitigate this. The researcher is also

Table 1

Initial Questions to Guide Observational Study Design

Time	When does the phenomenon of interest occur? (e.g., every day, every week, monthly, two times a year) Are you interested in seeing the progress of people/activity over time? (longitudinally)
Place	Where does the phenomenon occur? (in one place or many?) Which site(s) enable clear observations of the activities and interactions? Are there particular places that lend themselves to observations? Are there barriers to accessing this location? (permission, safety, travel)
People & objects	Who/what will you focus on and, therefore, follow? What types of interactions are you interested in? Who might be more/less amenable to observation?
The observer	How will you interact with the research context/setting? Will you participate in activities? To what extent? How might you and what you bring influence the people and/or activities you aim to observe?
Data	What forms of data will you collect? How will they help to answer the research question? How much data will you require? How feasible is it to collect data in this way?

the instrument that collects the data, and so what is attended to, ignored or missed is an important part of this reflexivity. As Hammersley & Atkinson (2007) say:

> Data in themselves cannot be valid or invalid; what is at issue are the inferences drawn from them. The point is that the ethnographer must try continually to be aware of how his or her presence may have shaped the data. (p. 177)

Thus, the role, purpose, stance and biases of the researcher are important to consider and address through researcher reflexivity (Bradbury-Jones, 2007).

The researcher's degree of interaction with participants can vary (Creswell, 2013). As expertise develops, the researcher might comfortably switch roles whilst in the field, e.g., start as an observer and then become more engaged and adopt a more active participant role, or vice versa, depending on the context. Distinguished by the nature of the researcher engagement (i.e., participant or observer), these variations have been traditionally described as:

- **Complete participant:** fully engaged with research participants where they "disappear completely into the setting" (Angrosino, 2007, p. 53). This approach has been criticised for ethical reasons, because the researcher conceals their agenda from the participants. Thus, most observational researchers position themselves within the next two roles.

- **Participant as observer:** Whilst the researcher role is acknowledged, they participate in the activities within the study setting, and the researcher is "as much a friend as a neutral researcher" (Angrosino, 2007, p. 53). For instance, in CN's research where she observed pharmacy students, she actively engaged in their learning activities (e.g., pharmaceutics practical classes), participated in group discussions and had lunch with students.
- **Observer as participant:** Positioned as researcher only, the researcher will likely record data without directly engaging with participants or their activities within the setting. This approach, which may include brief observational periods, often sets the scene for other forms of data collection, e.g., brief interviews after observation of a learner undertaking certain clinical tasks.
- **Complete observer:** The researcher is a "fly on the wall", neither seen nor noticed by the participants. A parallel is the mirrored control room in simulation labs.

New approaches to observational research, such as VRE, are adopting post-qualitative approaches whereby the agency of participants is encouraged (Wyer et al., 2017). Here, the researcher shares control with participants, gradually enabling participants to take on the role of the researcher (Carroll & Mesman, 2018).

Establishing relationships with key stakeholders is important in all types of observational research. All stakeholders who might encounter the research should be informed and supportive of the study, even if they are not the focus of observations. After the relevant permissions have been gained (e.g., hospitals may need ethics approval beforehand; letters of approval from relevant department heads), and before beginning data collection, some time should be allocated to developing rapport, explaining the study purpose and process and seeking guidance on who else to contact and who potential participants might be. Further detail about the study should be freely offered for transparency and to demonstrate trustworthiness. This approach helps to guarantee that everybody is aware and supportive, ensuring no surprises when it comes to data collection.

Ethical research conduct

The review and approval by an ethical review board and the process of conducting research ethically should be considered as joint components of ethical research conduct. Which committee provides initial review and approval depends on local contextual factors—the organisational bodies involved (e.g., the university, a hospital, a local health district) may have agreements in place for streamlined approvals, so this should be investigated before drafting applications. Observational research may be familiar to some committees but not others. Some might consider it relatively safe (e.g., compared to trials for new drugs or surgical procedures), whilst others might consider it relatively risky (e.g., compared to survey research). The perceived risk may also be elevated if observation involves direct

patient care rather than distinct learning and teaching activities away from the patient. Discussing the project with an ethics advisor is a useful initial step to understand what is important to consider in the application process. Beyond the approval process, ethical guidelines must always be upheld. In Australia, the National Statement on the Ethical Conduct of Research (NHMRC, 2018) provides substantial guidance on these matters; other jurisdictions may have different guidelines, so local information and advice should be sought before commencing a study.

Specific aspects of ethical conduct in observational studies require further consideration. Firstly, consent processes throughout an observational study may be more flexible and ongoing than just signing and filing individual consent forms at the beginning of the study. Participants should have the ongoing opportunity to agree or refuse to be part of specific instances or periods of observation. Checking in with participants about their level of comfort within each new episode of observation is important. Within this, there may be some negotiation about methods of data recording/collection. Secondly, within clinical settings, the potential impact of the researcher must also be considered, especially to what extent they should have a role in patient care and what boundaries exist. For example, in CN's VRE study, despite the researchers being healthcare professionals, it was made clear to patients, either directly or via the medical team making the introductions, that they were researchers and did not have an active role in their care. Finally, analysing and reporting data also requires making ethical decisions. As Bosk (2003) reflected on in his 1979 ethnography, "What we tell from our field notes and how we choose to tell them has important consequences" (p. 230).

Collecting, recording and storing data

Data from observations is usually recorded as field notes, which can contain descriptive annotations or more analytical memos (Glesne & Peshkin, 1992; Hammersley & Atkinson, 2007). Field notes can take different forms, from jotted, time-stamped notes to ticks and notes in prestructured thematic tables (where elements could be identified from a literature review, survey or interviews) to verbatim recollections of conversations and drawings. When multiple researchers are engaged in the observations, prestructured thematic tables are helpful to sensitise observations to the phenomenon being explored. Exhaustive capture of data is likely to be an unobtainable ideal, so decisions must be made about what information is most relevant to collect. When many things occur simultaneously, the researcher might take quick notes, or not be able to take any at all, if they are too involved in the activity or if taking notes is deemed inappropriate. Notes should be recorded as soon as possible and reviewed to add relevant details, since recollection can be greatly affected as time passes (Glesne & Peshkin, 1992; Hammersley & Atkinson, 2007).

Observational data can also be audio or video recorded. While this may capture greater or different detail than field notes, it may also be difficult in contexts that involve sensitive and personal information and/or vulnerable populations. Background noise, space configuration and decisions about where to locate recorders also mean that capture is imperfect, thus field notes are still important to generate rich data. Materials such as videos, photos, audio clips or documents can serve as prompts for interviews where participants and researchers can share their interpretations of events. This can elicit explanations about why people do or say certain things that may be taken for granted, how things play out differently than planned or how the material settings are relevant for people's activities (Iedema, Carroll, et al., 2019; Iedema, Mesman, & Carroll, 2013). One caveat with recordings is that in large quantities, they can be time-consuming to work through for analysis purposes. Marking important points in time for analysis may help with this.

Informant interviews can supplement observations. Interviews might happen before entering the field (to gain an orientation to what is happening or how participants are feeling or intending to approach situations) or afterwards (where witnessed incidents can be explored to gain further details and understand participants' responses). Cameron et al. (2019) point out that interviews also "granted access to other less visible virtual/physical spaces (private laptop screens, student Facebook groups, muted student conversations on the distant site screen) ... [outside] formalised, intended channels" (p. 200).

Data are commonly stored in an electronic format (e.g., scans or transcriptions of field notes and diagrams; audio/video recording files) for longevity, portability and analysis with qualitative data analysis software. This may cause logistical issues around the volume of space required for large video files and/or where data are to be shared amongst a team of researchers across institutions. Institutions themselves are also likely to have requirements and restrictions on how research data is stored and shared to comply with data protection and privacy laws. Consulting with research information technology support may be necessary to identify compliant solutions.

Examples of observational research

We now present two case studies from our own research experiences, which allows us to discuss some of the above considerations and processes in more detail.

Researching student practices in the classroom setting—JF

Context and study design: This study focused on undergraduate physics student learning practices across formal and informal learning settings. Data collection occurred over two academic semesters, involving interviews and observations of students' activities across the three year levels of the course.

Access: Access was gained through an academic, with whom I had worked in the past, who put me in touch with the program coordinators. They granted permission on the conditions that individual consent was gained from students and I did not interfere with classes. Recruitment and data collection occurred flexibly throughout the semesters. The project was introduced to the whole class, and students were able to express their interest in participating.

Process: Initial interviews mapped the main activities to observe later in the semester. Classroom observations and interviews were conducted as the semester progressed. Most interviews took more than 30 minutes every 2 or 3 weeks; others were short conversations after class, although students often needed to leave quickly.

Since students interact with tutors, some of whom change from class to class, I was prepared to quickly introduce myself, ask tutors if I could observe what they do (only in relation to my participants) and hand them the relevant consent form. My participants also helped me by asking their lab or study group partners if I could observe them during specific sessions. Then, Covid-19 disrupted the second semester of data collection, as Melbourne went into lockdown and students could not attend classes in person. I could recruit new students on the first day of class, but the rest of the data collection was based on interviews and not on-campus observations.

Data collection: Scheduled interviews were audiorecorded to be transcribed later, however observation sessions and short conversations were limited to notetaking since close video or audiorecording would become too invasive and might capture data from nonparticipants. Being present let me see and experience taken-for-granted practices as they occurred, which interviews or surveys would not allow. Although I took free notes (i.e., without a template), having TPA (Kemmis et al., 2014) as my conceptual framework helped me pay attention to certain elements within the classroom that I might otherwise ignore. This framework emphasised what people say and do with whom and with what material artefacts—for example, "John holds micrometre in his hands, rotates it, looks from different angles. John asks Jane, 'What do these scales measure?'"—where individual and collective activities involving material objects are visible. I also consulted document materials to complement my observations and as prompts during interviews, such as asking participants to talk me through how they wrote a lab report and how they would improve it. Thus, observations, interviews and document analysis fed into each other rather than being sequential stages.

Being an outsider: As a non-physicist, I could not always follow complex mathematical discussions. Nonetheless, I focused on how people interacted. Having "insider knowledge" may have resulted in me being more focused on the mathematical content and less sensitive to the social and material dimensions of the learning encounters. Interviews also allowed me to ask my informants about details I missed or explore why they do things in certain ways. My researcher role also made me an outsider among students, although I avoided

being too formal while staying respectful. For example, they would swear, apologise and joke about what I would write, showing that they were both aware and somewhat accustomed to my presence. While I always dressed casually and sat among the group, I was always an older guest in the room who did not speak "physics" or contribute to the task.

Lessons learned: My key learnings are: 1) always carry consent forms with me so I can seek consent from people who I could not predict meeting; 2) always be ready to collect data, as some activities may take place without much planning; 3) being flexible about ways of recording data (contrary to other researchers' preferences, I took better and quicker notes on my laptop, but busy spaces and activities made handwriting more practical); and 4) always revising/complementing notes after an observation session to have good final versions for analysis.

Enriching learning through practice using video-reflexive ethnography—CN

Context and study design: Our research aimed to critically examine how medical learning through practice occurs in hospital settings (Ajjawi et al., 2020; Noble, Billett, et al., 2019). Our theoretical framework—interdependent learning (Billett, 2006)—argues that learning is a process reliant on mutual contributions between *learners' agency* and the *social experience* (e.g., workplace practices). This meant that our study design should enable insights from the learner, the workplace context *and* their interdependence. We selected VRE as a methodology that aligns with our research aim and theoretical perspective.

VRE comprises three stages: 1) observation of practice, 2) videorecording of practice and 3) participant reflexive sessions, using the videorecordings, of practice (Iedema, Carroll, et al., 2019; Iedema, Mesman, & Carroll, 2013). Using these stages meant we observed and recorded the interplay between learner agency and the social experience, while reflexive sessions enabled collection of the learners' perspectives and the interdependence between the two.

Ethics: Because this was the first time that VRE was used in the health service, we wanted to ensure that our stakeholders understood its process. Before submitting our ethics application, we met with the ethics committee chair, which helped us to preempt the committee concerns as we wrote the application. We had generous project advisory committee members who shared copies of their VRE or other observational study ethics applications from their research. This greatly facilitated the process.

Setting and access: Our study was conducted in three settings within one healthcare service: emergency department (ED), internal medicine and surgery. These settings were selected because all medical students and junior doctors assigned to this healthcare service rotate through these departments. Once we had ethics approval to gain access, we met with each department head and described the study purpose and process. They recommended the best forums (e.g., team meetings) to invite participants. We spent several weeks meeting

with relevant stakeholders, describing the study at various meetings, accessing rosters and meeting with potential consultant participants to garner their interest. This took time, but once we had consent, things happened quickly! We had most success in gaining initial consent from consultants we knew or who had been recommended by the department heads.

Process: Our study followed the three stages of VRE (outlined above) in each setting. In Stage 1 (i.e., observation), we followed the medical team as they engaged in their usual practice. This served to ensure the team was comfortable with us and allowed us to observe and identify the activities and interactions relevant to our research aim, which would be recorded.

Once the team felt comfortable, in Stage 2, we filmed activities and interactions related to learning. Before filming, we checked with each team member that they were happy for us to proceed. Given most medical staff regularly use their mobile phones, we found that using a phone was the least intrusive way to gather video data.

In Stage 3, we created a video montage summarising the main themes observed. Before showing the video, we sought permission from each person in the clips. Finally, we arranged times for the reflexive session. Again, we sought consent from each participant and asked who they would feel comfortable having in the room (we were mindful of the strong hierarchy within medicine). In some instances, the junior doctors preferred to participate in the reflexive session without their seniors present.

Lessons learned: In observational research, all of one's senses are on full alert, and this, combined with feeling like an outsider (certainly initially) and not wanting to impose, means that the experience can be quite draining. This was particularly apparent in the fast-paced and noisy setting of the ED. Thus, there was value in scheduling short periods of observation in the first instance and then gradually building up time in the field (Merriam, 1998). Another benefit of initially scheduling shorter observation periods is that I formed habits such as a daily post-field reflection, whilst becoming accustomed to the reflective process. It was impossible to write down everything while in the field, hence this reflection time allowed a more holistic analysis of what had occurred in relation to the research question (Creswell, 2013). The written reflections were initially scaffolded with prompts, however as we developed a more nuanced understanding of our research phenomenon, the reflections tended to become free writing. These post-field reflections form an important part of the data collection, as they lift the data from description to synthesis.

VRE was a new methodology to most of our research team, so we engaged an advisory group, including methodology experts and senior hospital leaders. The insights from the methodology experts were invaluable guides to the practicalities of the research. The senior hospital leader members assisted us in making connections with potential participants.

Finally, conducting the study sometimes felt a little isolating. Arranging regular chats with the research team alleviated this sense of isolation and was also a great opportunity to reflect on what happened and focus subsequent observations.

Concluding remarks

We set out to provide an overview of observational studies, focusing on practical aspects, including difficult decision points in the design and unexpected features in the field that we found either challenging or enabling. The astute reader will note that we have not focused on analysis. This was intentional, as depending on the chosen approach to the research and the researchers involved, analysis may look very different. Throughout this article we have suggested the researcher who chooses to do an observational study must be flexible, adapting to the situation they find themselves in. This is no truer than in present times, where we navigate the uncertainty of a global pandemic. COVID-19 is unlikely to be the last significant impediment to conducting observational research, but it raises several considerations.

When designing your observational study, it is well worth the time and effort to design contingencies into your plan. For example, if you cannot enter the field, what other strategies could you adopt that would still enable you to answer your research question? Could you invite health practitioners who are already in the field to record their interactions, e.g., use a GoPro? If interactions occur online, it can be useful to familiarise oneself with the platforms the participants use and the content that is shared there. Interviews may be the best way to explore how people use these platforms and what is involved in working with them beyond what can be observed.

Your ethics committee will be able to provide guidance on expectations and strategies for safely conducting your research. When in clinical settings, mirror the infection control practices of the healthcare team you are observing (also a good strategy to ensure you easily integrate into the team) and maintain physical distancing. In present times, you would need to ensure that you enter the field with clear strategies on how to engage in a COVIDSafe manner.

Lastly, we have not exhaustively surveyed the literature on observational studies, and so we encourage researchers to consult broadly since the field is evolving and different disciplinary traditions support different practices. Methods textbooks, reports of empirical work and the advice and guidance of other researchers can aid understanding of what could be done in observational studies. To this end, we leave the reader with some recommended resources as a starting point (Appendix) in addition to the reference list of this article. Consulting resources and exemplars of observational research in adjacent fields, such as education and health services research, may also be helpful. We hope that this article has revealed some of what goes on in (and what sits behind) the doing of observational studies and can serve as a helpful guide to those embarking on their own observational research.

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Appendix

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Nick Hopwood's research blog: Posts about research methodology. https://nickhop.wordpress.com/blog/

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OBSERVATIONAL STUDIES IN HEALTH PROFESSIONAL EDUCATION RESEARCH

Examples of Observational Studies in Health Professional Education

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