The Learning Pathways Grid: Promoting Reflexivity Among Learners and Researchers in Patient Safety Simulations

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Abstract
The interview is an important data-gathering tool in qualitative research, since it allows researchers to gain insight into a person’s knowledge, understandings, perceptions, interpretations, and experiences. There are many definitions of reflexivity in qualitative research, one such definition being “Reflexivity is an attitude of attending systematically to the context of knowledge construction, especially to the effect of the researcher, at every step of the research processes.” The learning pathways grid (LPG) is a visual template used to assist analysis and interpretation of conversations, allowing educators, learners, and researchers, to discover links from cognition to action, usually in a retrospective manner. It is often used in simulation educational research, with a focus on understanding how learners access their cognitive frames and underlying beliefs. In this article, we describe the use of the LPG as a prospective adjunct to data collection for interviews and focus groups. We contextualize it within a study among medical interns and medical students who were engaged in high-fidelity simulation exploring open disclosure after a medication error. The LPG allowed future optimization of data collection and interpretation by ensuring reflexivity within the researchers, a vital part of research conduct. We conclude by suggesting the use of the LPG has a reasonable fit when taking a social constructivist approach and using qualitative analysis methods that make reflexivity explicit and visible, therefore ensuring it is truly considered, understood, and demonstrated by researchers.

Keywords
hermeneutic phenomenology, qualitative evaluation, phenomenology, methods in qualitative inquiry, action research

What Is Already Known?
Despite the widely acknowledged utility of using interviews and focus group for data collection, there are challenges for qualitative research practitioners in maintaining reflexivity in both their learners engaged in an educational activity and their own reflexivity with evaluative data. Any useful tools that promote reflexivity would come from the same philosophical and theoretical paradigm taking account of the participants’ social construction of their reality, researchers reflecting on their own contribution to that construction, and reframing ways in which that construction can be reshaped. While tools that can facilitate this process have been described, there is a gap in empirical evidence of their utility.

What This Paper Adds?
The purpose of this article is to discuss the learning pathways grid (LPG) as a useful tool that allows optimization of data collection and interpretation by ensuring the reflexivity of the researchers, a vital part of research conduct. The use of the LPG as a prospective adjunct to data gathering can make reflexivity explicit and visible, therefore ensuring it is truly considered, understood, and demonstrated by researchers, and can inform their subsequent analysis and interpretation.

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Background

Principles of Interviews and Focus Groups

When conducting qualitative research, researchers need to define their methodology and methods. Kaplan (1964) defines methodology as “the study, the description, the explanation and the justification of methods, and not the methods themselves”. Method is the practical conduct and activities of research. It explains what actions were taken and what was done, for example, sampling and data collection. The method chosen to generate data to illuminate a specific research question will significantly determine the final research product. One of the most common methods of data generation in qualitative research is the interview.

An interview is a conversation with a purpose, which is usually thematic and topic centered (Kaplan, 1964). Data are gathered through the interaction between the interviewer and interviewee, allowing researchers to gain insight into a participant’s knowledge, understandings, perceptions, interpretations, and experiences. The interview allows the person to speak in his or her own voice and style and allows for dynamic and flexible data collection (Kaplan, 1964). There are limitations to interviews which can be lack of interaction from interviewees who find it difficult to verbalize their thoughts and ideas, poor rapport due to poor questioning by the interviewer, time constraints for both the interviewer and interviewee, and challenges in analysis (Kaplan, 1964). Most interviews start with simple questions to build rapport before approaching the specific topic that is intended to be studied in more detail. Specific forms of questions often used are mapping questions, which are perspective widening looking at a subject from different angles aiming to open up or focus on a subject, and mining questions, which are aimed at amplification and elaboration, looking for explanations and clarification (Burgess, 1984).

A focus group is a group of people interacting with one another around a predetermined topic or question for the purposes of research (Stewart, 1990). Participants are expected to have something to say, and the group requires a moderator. They are useful because they allow a focused data collection session and can often elicit topics that are difficult to discuss in one-on-one interviews. They can also explore the process of reasoning, allowing debate on a topic. Focus groups are interesting interactions, because not only may people agree with each other, they may also disagree with each other, misunderstand one another, question one another, and may try to persuade each other the justice of their own point of view. Limitations of focus groups are that they may not access detailed narratives, can become hijacked by members if the moderator is struggling, and the practicalities of getting people in the same place at the same time. The group should be allowed to run its own course, and the moderator should facilitate group discussion. A wind-down period at the end for everybody to “defuse” is recommended (Husserl, 1990). A focus group discussion is an helpful tool to use when there are many people undergoing a similar experience, since the different views that can be put forward often encourage reflections that people may not have had if they were reflecting alone (Stewart, 1990).

Hermeneutic Phenomenology: Interviews, Focus Groups, and Reflexivity

In advocating hermeneutic phenomenology for interpretive inquiry of qualitative data, we acknowledge that it does not prescribe action for use in clinical practice. However, it does influence reflexivity in practice by revealing the meanings of human experience in all its various aspects, and especially in terms of the things which matter to us, and which constitute our lived world (Van der Zalm & Bergum, 2000). Four philosophers have been most influential in the development of phenomenology: Husserl (Searle, 1995), Heidegger (Husserl, 1990), Merleau-Ponty (Heidegger, 1927), and Sartre (Merleau-Ponty, 1955). It was Heidegger, in his approach to hermeneutic phenomenology, who argued the understanding of people and phenomena cannot occur in isolation from the real world in which they live (Smith, Flowers, & Larkin, 2009). Heidegger also stated that the affective dimensions of existence are part of human experience in the “life-world,” maintaining that it is not possible to bracket one’s experience from “being-in-the-world.” This shift in perspective from the thinking of Husserl is that knowledge is seen as being embedded in everyday activity. Heidegger’s student Gadamer further emphasized that language is the medium of hermeneutic experience (Smith et al., 2009). Gadamer answers the problem posed by Husserl’s concern that researchers are not able to completely free themselves from all prejudices and traditions. He argues that these prejudices are fundamental to understanding, and the point is not to eliminate them but to reflexively examine and declare them, attempting to alter those that disable understanding, adding depth to the analysis.

Since language is the medium of hermeneutic experience, interviews, and focus groups are often chosen as the method of data collection (Smith et al., 2009), as they allow deep exploration around a phenomenon, and with the depth of data gathered, one can illuminate the experience of the interviewees. The approaches of Heidegger and Gadamer reinforce the need for reflexivity when establishing data collection and the need for reflexivity closely aligns with the approach of hermeneutic phenomenology. We now turn to the study on a particular form of apology for a medical error, which provides the context for these methodological reflections.

Reflecting on an Educational Intervention

Context. Open disclosure is a policy that states that doctors should apologize for errors and discuss them with the harmed parties. The process is part of state and national policy in Australia (Piper & Iedema, 2008) and around the world (Piper & Iedema, 2008). The specific discussions in open disclosure are around an incident that resulted in harm to a patient while receiving health care. The elements of open...
disclosure are an expression of regret, a factual explanation of what happened, the potential consequences, and the steps being taken to manage the event and prevent recurrence (Gallagher, Studdert, & Levinson, 2007; The National Open Disclosure Standard, 2008).

We conducted our study of medical interns and medical students involved in open disclosure in three parts. Firstly, 10 medical interns were interviewed illuminating their clinical experiences of open disclosure. Secondly, eight final-year medical students underwent a high-fidelity simulation session followed by focus-group discussions illuminating their experience of the education session. Finally, eight medical students were interviewed 1 year later during their intern year, illuminating their experiences of open disclosure, their further reflection on the simulation session, and how they had incorporated their learning into their clinical practice. Data were coded and analyzed using interpretative phenomenological analysis.

There are linguistic semantics in this study that need to be outlined. In qualitative field research, “debriefing” occurs after a focus group where the intent is for the group to discuss all aspects of the session. This is a specific terminology for qualitative field research. However, the debriefing that occurs in simulation education is more aligned with the intent of a focus group where a group of people interact around a predetermined topic. Therefore, the analogous term for debriefing in qualitative field research would be the defuse in a simulation education session. This is an important distinction, since what occurred in the simulation education session was the use of the debriefing aspect to act as the “focus group” for data collection.

The LPG as a tool for facilitated reflection with learners. The LPG assumes an awareness of the relationship between learners’ frames, their actions driven by their frames, and the results they achieve because of their actions. In the context of simulation education, Rudolf, Simon, and Reamer (2007) argue that the debriefing after the simulation provides the most critical part of the learning process in moving from awareness of a problem to future action. In suggesting that “simulation is there to facilitate the debrief,” Rudolf states that reflection is a critical part of the learning process, and debriefing is where this begins to occur. The educational challenge is to create a debriefing environment that is psychologically safe but also cognitively challenging. The aim is to answer the facilitator’s dilemma, which is “How can I deliver a critical message and share my expertise while avoiding negative emotions, preserving social face, and maintaining my relationship with the learner?” (Rudolf, Simon, & Reamer, 2007).

To answer this dilemma, Rudolf et al. employed a method of debriefing based around what they described as “frames, actions, and results.” The concept of frames is that people make sense of external stimuli through internal cognitive frames, which are internal images of external reality. People do not passively perceive an objective reality but engage in sense making which they actively filter, create, and apply meaning to their environment. These frames, in turn, shape the actions people take. Both clinical frames and social or interpersonal frames can play crucial roles in medical decision-making. Results come from the participant’s actions (Rudolf et al., 2007). The relationship between frames, actions, and results are shown in Figure 1.

Rudolf et al. state that the stance of the facilitator is crucial in debriefing, and this includes them “identifying and examining their own frames, since without this they cannot illuminate trainees’ frames.” What this refers to is that if the facilitator enters the debrief with a very rigid opinion or template for what should occur, it is very unlikely that they will have enough cognitive openness and flexibility to consider the potential for perceiving the situation another way, that is, the trainee’s perspective. Facilitators draw on their own experience and frames that they might have held in a similar situation, and can disclose these to the participant, and ultimately facilitators must be willing to test the validity of their own frames.

Rudolf argues the traditional methods of debriefing are either judgmental or nonjudgmental, which each have their own advantages and disadvantages. The judgmental approach places truth solely with the facilitator, and error in the hands of the trainee, as it presumes that the error is due to the failure of the trainee’s thought process. It can lead to humiliation but leaves the trainee in no doubt of what the facilitator believes. With the nonjudgmental approach, there is a quandary between working out how to deliver a critical message without avoiding negative emotions and defensiveness, preserving social face, and maintaining trust. It can come across as the “sandwich approach,” where a good point is followed by a bad point, and then followed by another good point, which can lead to filtering out criticism or avoiding the problem altogether. If they choose silence and express no critical thoughts, important insights or feelings related to the trainee’s performance remain murky or unexpressed. This deprives the trainee of a learning experience. The Socratic approach where trainees are eased into the answer with a certain tone of voice can also backfire, since the trainee can become confused or suspicious of the facilitator’s questioning or unexplained motives. Rudolf et al. point out that in the Socratic approach, hints of one’s views from a nonjudgmental approach are often on display with certain body language, and overall it is not nonjudgmental since the underlying assumptions are the same “I am right.” Rudolf et al. suggest that this can give the impression that mistakes are not discussible or possibly shameful.
They therefore proposed a different way to debrief, which they called “debriefing with good judgment.” This method was employed by making a statement as an expert as to what you have observed, and then to state what questions you have based on this observation, and then allow the trainee to give their thoughts. Rudolf et al. call this approach of questioning “advocacy–inquiry,” with the advocacy that is an assertion, observation, or statement being paired with inquiry that is a question. The advocacy and inquiry form the basis of the conversation, and it is a hypothesis from the facilitator that they then test with a question. By pairing advocacy and inquiry, the facilitator also shows they are respecting and listening to the trainee’s opinions.

Moving on from the frames, actions, and results model, one can then fit these into the LPG to look at actual versus desired frames, actions, and results. The LPG is a visual template for which helps professionals discover links from cognition to action, to the effects of action and makes those links explicit; it then supports a pragmatic redesign of action. It allows professionals to develop reflective practice skills in a rigorous, structured, and collaborative way, in which their espoused beliefs and actual actions conflict or are coordinated, a key reflective practice skill (Rudolf et al., 2007). LPG analysis begins with a situation where actions failed to yield the desired outcomes. The focal behavior is excerpted from an interpersonal interaction, which might be a teaching or education session. The blank LPG is shown in Figure 2 and is filled in as the conversation analysis develops.

To use the LPG, the analyst begins in the bottom right corner at the box labeled desired results and move anticlockwise around the grid. A person can start in the bottom right and document what the desired results were. Next, they document what the actual results were. Then work out what actions they took, that they feel led to the actual results, and what frames (personal views) forged those actions. It can then reveal if any of the frames a person holds may be compromising them from getting the results they desire. If these frames are undesirable and leading to poor actions and results, and they have been highlighted, it is possible to change them. If the frames are changed, then subsequent actions should change allowing the desired results to be achieved. As a principle, the LPG is useful when a recurring problem is possible, and therefore when doing interviews or focus groups, this is extremely likely.

**Reflection on Research Methods**

**Methods of inquiry.** The LPG also has utility within research methods, and we describe the context in which we applied it. We explored our own reflexivity and that of participants during a larger inquiry into the social construction of apology by senior medical students and medical interns, in the context of a medication error in simulated clinical practice. In both face-to-face interviews and focus groups, we explored their discussion of both preparation for and current clinical practice of open disclosure arising from adverse events related to junior doctors’ actions or inactions. Our interpretative approach created the opportunity for us to reflect on the critical elements of their social construction of open disclosure. Through critiquing that social construction, and understanding our role as educators within that construction, there was opportunity for reframing it through more effective preparation for practice as a medical student and beginning work as a medical intern. We articulated this framing through the provision of an educational framework for learners and teachers in which to promote the development of professional values and reflective clinical practice.

The LPG has utility from the perspective of learners, the facilitators, and researchers. It provides a simple schema for the facilitation of learners to reflect on the ways in which their own actions and results were implicated both in terms of their clinical competence but also how they chose to frame the open disclosure to the adversely impacted patient or patients’ families. From the learners’ perspective, their participation in a social constructed reality could be at variance with the good outcomes they desire, and they could therefore gain insight into how that reality might be reframed for better outcomes, should they meet that circumstance again in the future.

**The prospective use of the LPG to ensure optimal data collection for researchers.** For educators and learners, the LPG is a visual template used to assist analysis of interview and focus conversation and provides a useful heuristic to discover links in learners’ talk, which indicates a journey from cognition to action (Taylor, Rudolph, & Foldy, 2008). However, while the LPG is mostly used as a retrospective conversation analysis tool that leads to changes in future approaches to human interactions, with the aim of making these interactions more productive, we concluded that doing this retrospectively in the context of a research project could lead to large amounts of the data being generated suboptimally. In the setting of simulation education, where the facilitators are acting dynamically due to the unpredictability of some responses, it was a necessity that the data collected in our simulation education sessions was as optimal as possible, since there was limited funding for the number of sessions that we could provide to gather data. Therefore, we decided to use the LPG prospectively to the actual data gathering via the focus groups and interviews. During a piloting session, by focusing the LPG on ourselves as the investigators.

![Figure 2. The learning pathways grid.](image-url)
rather than the students as the learners, and highlighting any potential results we would want to avoid due to our actions, we hoped to reveal any underlying personal frames that would potentially compromise our future data collection. As we worked through the LPG in the piloting session between the researchers, we did uncover personal frames and beliefs that could have been problematic during the future data collection process. During this process, we became aware that the use of the LPG extended way beyond the realm of focus groups and interviews, and it was at the very heart of our reflexivity.

Using the LPG our desired result was that we got to hear students articulate their feelings and thought processes during the simulation, therefore, we would discover their level of understanding and generate good data. However, during the piloting between the researchers, the students we were practicing the focus groups with became relatively quiet. Conversation was hard to generate, and the potential data collection was poor. It became evident to us and others watching the debriefing that these results were the due to specific actions of the facilitators, which were perceived as assertive questioning with predetermined strongly held opinions. The participants felt that the line of questioning from the facilitators resembled a didactic teaching session of personal views rather than an illumination of participants’ views. The students also asked for clarification on the aspects that were being discussed, and it was felt that the facilitator may have “wandered off-track” regarding the initial questions, due to facilitator opinions being given. The facilitators therefore asked themselves, “Are there any frames we personally hold that might lead to our actions?” We uncovered some personal frames that we believed could be problematic and these were:

**Our actual frames**
- This topic of discussion is easy
- The students are not taking responsibility and letting down the families
- The students are covering themselves and their deficiencies

**Our desired frames**
- These are good students trying to do their best
- Separate the people from the project
- This is a hard discussion to have for anybody
- Saying sorry means different things to different people, and it need to be contextualised
- If you can’t do this, it does not make you a bad doctor

**Our actual actions**
- The students went quiet after some strong personal opinions of the facilitator were given
- The students needed clarity on the discussion topic

**Our desired actions**
- Maintain focus of the questions without making judgments
- Maintain curiosity for their answers, and minimise facilitator opinion
- Remind yourself these are stressful scenarios, and we want honest data, not correct learning/answers

**Our actual results**
- The students became quiet during the focus-group
- Discussion became hard to generate and data collection was poor

**Our desired results**
- Students articulate their thoughts and feelings, and we discover their level of understanding
- We generate good data

**Figure 3.** The learning pathways grid from the piloting of the simulation education session, commencing at the bottom right-hand corner with “our desired results,” and then progressing anticlockwise until “our desired actions.”
dynamics of an interview (Blackstone, 2012).

or anything about yourself. All these factors shape the power differentials, and you are generally not reciprocating by revealing much about themselves they may not typically share with others. As a researcher, you are asking someone to reveal what is in charge (at least that is how most respondents will perceive it to be). As a researcher, you are asking someone to reveal things about themselves they may not typically share with others, and you are generally not reciprocating by revealing much or anything about yourself. All these factors shape the power dynamics of an interview (Blackstone, 2012).

There are recommended approaches to overcome power differentials where the interviewer reveals some aspects of their own identity and story so that the interview is a more reciprocal experience rather than being totally one-sided, allows participants to view and edit interview transcripts before the researcher uses them for analysis, makes the intent of the research very clear to the subjects, shares with subjects how the data gathered will be used and stored, and ensures that participants understand how their privacy will be protected including who will have access to the data gathered from them and what procedures, such as using pseudonyms, will be taken to protect their identities (Blackstone, 2012). However, these measures had to be balanced, as sharing too much with interview participants can give the false impression that there is no power differential, when researchers retain the ability to analyze and present participants’ stories (Reinharz, 1992; Stacey, 1998).

A further consideration is that many studies in health care require a team of researchers and within any team, there is always going to be variability. Variability can be in many forms, for example, vocational disciplines such as nursing, medicine, or allied health disciplines, however, in can also be variability of prior beliefs and ongoing reflective practices. Therefore, it may well be pertinent for a research team to consider their collective reflexivity as well as their individual approach. Park and Zafran describe this within an ethnographic study of stigma in psychiatry, where they recognized that there was the development of distinctly different paradigmatic questions within the collective research group, which appeared to be emerging due to the variety of epistemological orientations and ethical stances of each researcher (Park & Zafran, 2018). They concluded that collective reflexivity was beneficial in making visible the unpacking of epistemological bumps and emergent metaphors during the research process (Park & Zafran, 2018).

It is therefore imperative that researchers maintain reflexivity throughout their research and especially during their data collection during interviews. Reflexivity has been described as an awareness of the researcher’s contribution to the construction of meanings throughout the research, and acknowledging the impossibility of remaining outside of their subject matter, while conducting research. It explores ways in which their involvement influences, acts upon, and informs such research. However, there are many other definitions of reflexivity such as “Reflexivity is an attitude of attending systematically to the context of knowledge construction, especially to the effect of the researcher, at every step of the research processes” (De Witt & Ploeg, 2006). Since the researcher interacts with their interview subjects, it creates a potential complexity that requires addressing, that of power differentials. Interviewers must be aware of and attentive to the power differential between themselves and interview participant, as the interviewer sets the agenda and leads the conversation. Although interviewers usually aim to allow participants to have some control over which or to what extent various topics are discussed, ultimately, it is the researcher who is in charge (at least that is how most respondents will perceive it to be). As a researcher, you are asking someone to reveal things about themselves they may not typically share with others, and you are generally not reciprocating by revealing much or anything about yourself. All these factors shape the power dynamics of an interview (Blackstone, 2012).

Reflection involves looking back and thinking about an event, whereas reflexivity goes beyond reflection and deeply analyses the situation, subsequently changing future situations accordingly if required. It is this deeper analysis and alteration of future environments that makes reflexivity invaluable. Therefore, rather than being a specific stage in the research process, it should be a constant ongoing dynamic, occurring throughout the research. This makes true reflexivity difficult if not impossible.

Reflexivity is constantly challenging the obvious and making it explicit. In addition, by doing this, it will ensure that the research is honest and true, which I believe is its value and importance. Reflexivity needs to analytically addressed rather than just simply acknowledged.

**Implications for Reflexivity in Qualitative Research**

There are many definitions of reflexivity in qualitative research, one such definition being “Reflexivity is an attitude of attending systematically to the context of knowledge construction, especially to the effect of the researcher, at every step of the research processes” (De Witt & Ploeg, 2006). Since the researcher interacts with their interview subjects, it creates a potential complexity that requires addressing, that of power differentials. Interviewers must be aware of and attentive to the power differential between themselves and interview participant, as the interviewer sets the agenda and leads the conversation. Although interviewers usually aim to allow participants to have some control over which or to what extent various topics are discussed, ultimately, it is the researcher who is in charge (at least that is how most respondents will perceive it to be). As a researcher, you are asking someone to reveal things about themselves they may not typically share with others, and you are generally not reciprocating by revealing much or anything about yourself. All these factors shape the power dynamics of an interview (Blackstone, 2012).
valid understandings, of a situation under study. Understanding something about the position, perspective, beliefs, and values of the researcher is an issue in all research, but particularly in qualitative research where the researcher is often constructed as the “human research instrument” (Malterud, 2001). Therefore, it is imperative that researchers understand the essence of reflexivity but also contextualize it: What it means to them and what the implications are in their specific research.

Conclusion
The LPG has utility from the perspective of learners, educational facilitators, and qualitative researchers. It provides a simple schema for the facilitation of learners to reflect on the ways in which their own behaviors were implicated in terms of their clinical competence, and in reference to our study, how they chose to frame their contribution of medical error and provide honesty and integrity in an apology to the adversely impacted patient or patients families. From the learners’ perspective participation insight into how their social constructed reality at variance with good outcomes and professional practice can help in reframed that reality for better outcomes should they meet those circumstance again in the future. We have demonstrated a commensurable approach between an underpinning philosophy on the social construction of reality, an educational intervention in which critical reflection is paramount, a method of interpretative inquiry, and thorough self-reflexivity in researchers to posit a helpful educational framework to prepared both student and interns for future practice. While the utility of the LPG emerged during three studies which ultimately used the methodology of hermeneutic phenomenology, its utility transcends this one methodology, and should be seen as a useful adjunct in any enquiry that develops using social constructivism.

For researchers, the LPG is a visual template used to assist analysis of interview and focus conversation and provides a useful heuristic to discover links in learners’ talk, which indicates journey cognition to action. The use of the LPG allowed future optimization of data collection and interpretation by ensuring the reflexivity of the researchers, a vital part of research conduct. We have suggested the use of the LPG as a prospective adjunct to data gathering tool, which can make reflexivity explicit and visible, therefore ensuring it is truly considered, understood, and demonstrated by researchers.

We therefore encourage all researchers to consider what reflexivity means to them at all parts of their research, consider how they will demonstrate this understanding, and respond to dynamic changes as required.

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