

Moving beyond description: Research that helps improve teaching and learning

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Abstract

This paper is premised on the assumption that education research, in order to be relevant, needs to generate explanations that have educational significance and applicability. It argues that much of the health sciences education research showcased at conferences falls short of generating explanations that have practical applicability because the reported studies do not move beyond description. The paper suggests ways in which health professions educators might move beyond

description in order to generate explanations of teaching and learning that can be used to inform 'best practice' in education. The paper commences with a discussion of the role of theory in education research. Three forms of theory are identified – personal theoretical assumptions, theory from literature, and generation of theory from research. The paper highlights the limitations of research without theory and the role that theory might play in generating understandings of teaching and learning. Practical ways to ensure theoretical rigor in education research are suggested.

It has been said that how you study the world determines what you learn about it.¹ The purpose of health science education research is to understand teaching and learning so as to improve the quality of both. This endeavour is based on the assumption that better teaching will lead to better learning, and that better learning will result in a more clinically competent graduate. The emphasis in such research is therefore on creating explanations of teaching and learning, and then using these explanations to inform 'best practice' with regard to teaching and learning. However, much of the health sciences education research showcased at national and international conferences falls short of generating explanations that have practical applicability because the reported studies do not move beyond description. While description may be interesting, it fails to generate the kind of information that health professions educators need to understand, and thereafter improve, teaching and learning.

This paper suggests ways in which health professions educators might move beyond description in order to generate explanations that have educational significance and applicability. The paper commences with a discussion of the role of theory in education research. Three forms of theory are identified – personal theoretical assumptions, theory from literature, and generation of theory from research. The paper highlights the limitation of research without theory and the role that theory might play in generating understandings of teaching and learning. Thereafter practical ways to ensure theoretical rigor in education research are discussed. Hypothetical examples of qualitative research on assessment will be used to illustrate pertinent issues.

The role of theory in education research

Generating explanations of human activity

Research that sets out to understand and generate explanations of human activity (such as teaching and learning) is usually qualitative.²⁻⁴ Qualitative research aims to generate an 'interpreted understanding' (p. xii) of people's social world through learning about people's experiences and their interpretations of these experiences.⁵ Thus a qualitative study of assessment might set out to understand how students experience assessment, and how assessment (including its content, strategies and timing)

influences what students take seriously and what they consider less important about their curriculum. The findings could be used to plan assessment that helps students focus on all the aspects required to be competent health professionals. Without an in-depth understanding of how students interpret assessment such planning would be based on teachers' assumptions and conjecture. By understanding the students' experiences and how these shape students' learning behaviour, the planning of assessment as part of the teaching and learning process can be evidence-based.

Much qualitative research, however, fails to contribute to such insight because data analysis remains as surface description of what people said and did.² A qualitative study of assessment might use focus group interviews to elicit students' opinions of assessment. Questions might even ask students to reflect on how assessment influences what and how they learn. However, such a study design will not automatically lead to the insights required to design assessment to shape students' learning. It is the way in which the data are analysed that will determine whether the study generates explanations that have educational significance and applicability.

From the research study suggested above, students' responses could be categorised, using thematic analysis. For example, from a conscientious reading of the various interview transcripts it may, hypothetically, become evident that students understand assessment in three broad ways – for passing, as a hurdle, or as related to clinical competence. This finding may be presented by illustrating the three broad categories with quotations from the interviews, or in tabular form, or even statistically (i.e. how many students fall into each category). However, the insight that students have three broad interpretations of assessment falls short of an *explanation* of students' understanding of assessment. Rather, it *describes* what students assume but does not explain their understanding – and as such, has limited potential for influencing teaching and learning. The insights from such a study cannot yet be used to design assessment that influences learning.

Kelly² notes that analysis that remains at the level of 'thematic' involves a relatively surface-level description of the data. As such this analysis represents a preliminary exercise to gain a general overview of the issue under investigation,² and falls short of generating theory be-

cause it does not attempt to stand back from the data in order to undertake more detailed interpretation.^{2,6} Theories arrange sets of concepts to define and explain phenomena,⁷ and thus allow movement beyond description to interpretation and explanation.²

Using literature to generate explanations of human activity

According to McMillan and Schumacher,⁸ a theory should be consistent with both the observed phenomenon and an already established body of knowledge. The assessment study discussed earlier neglects to draw on existing theory and literature. It fails to locate the study against the backdrop of what is already known about assessment and thus ignores potential lenses⁹ for interpreting the data and understanding the findings. Engagement with existing theory and literature in the field of study^{2,10} facilitates research in two ways. Firstly, it allows a greater range of questions to be asked of the data set.² It allows the researcher to use the literature as a lens to interpret data by aiding him/her in recognising and interpreting patterns beyond the surface level of the data.² Secondly, it ensures that explanations generated from the study build upon what is already known.²

In the case of the assessment research, existing literature has the potential to suggest a variety of lenses for interpreting these patterns – for example, literature suggests variously that assessment drives learning,¹¹ that assessment needs to be ‘authentic’ to be effective,¹² that ‘good’ assessment should promote ‘deep’ learning,¹³ that assessment needs to be ‘aligned’ with outcomes and teaching strategies to be effective,¹⁴ and/or that assessment provides teachers with feedback regarding the effectiveness of their teaching.¹³ These lenses could be used to categorise and interpret the data in ways which would allow an explanation of assessment. For example, if the researcher draws on the extant literature regarding the role that assessment plays in driving learning,¹¹ a study might be designed that elicits the ways in which assessment drives learning, that explicates the kinds of learning that different assessment techniques drive, and that elucidates how students work with assumptions about assessment and learning when they prepare for assessment activities. Data from this study would be analysed through the lens of existing understandings of the role that assessment plays in driving learning (i.e. concepts from the literature would be used to sort, categorise, interpret and understand the data).

However, the purpose of such research would not be to repeat an existing study or to confirm the literature. Rather, the study would be intended to examine, in the specific context in which it was conducted (i.e. in the researcher’s institution, faculty, field of health sciences education), how assessment drives learning for his/her students. The question might be, for example, ‘How does the use of four objective structured clinical examinations (OSCEs) as high stakes assessment in the final year of the dentistry programme at my institution influence students’ learning in their final academic year?’. Clearly the purpose of this study would be to ascertain whether the OSCEs helped students to focus on the kinds of knowledge, skills and dispositions that will make them competent clinicians on graduation. Findings from the study would be used to plan appropriate assessment. If the OSCE assessments were found to drive learning that was clinically orientated in the fullest understanding of that concept (i.e. psychomotor, cognitive and normative) then use of the OSCEs could be strengthened. If, however, evidence from the study suggested that the students learnt only to pass the OSCEs and that they failed to integrate the learning from the OSCEs into their clinical practice, then alternative exit assessments would need to be explored.

It is thus evident that the specific context of a study is important because the study is initiated to improve the quality of learning in a specific

context. This is not to say that the findings may not be generalisable to other contexts – to other dental schools or, more broadly, to other fields of health sciences education. The presentation of such findings at conferences and in journals suggests that there is an assumption that findings from a specific context will have more general applicability. Indeed, ‘transferability’ (or applicability) of concepts and theories generated from localised qualitative research to other contexts is often considered a criterion of valid¹⁵ or relevant research.¹⁶ However, in order for the findings to be transferable, the contexts must be similar. Lincoln and Guba¹⁶ suggest that the role of the researcher is to identify key aspects of the context from which the findings emerge and the extent to which they may be applicable to other contexts.⁽⁹⁾

The preceding discussion has highlighted the significant role that theory plays in generating understandings of teaching and learning. Firstly, through existing literature, theory informs study design and analysis. Secondly, theory is also the product of the research process. There is a further way in which theory influences the nature of qualitative research, although not explicitly in its potential to generate understanding. However, this aspect of theory will influence the *kinds* of understandings that are generated, and is thus pertinent to the current discussion.

Personal theoretical assumptions

Much analysis, including the examples illustrated earlier, fails to acknowledge the way in which theoretical assumptions, often implicit, influence how studies are designed, how analysis is completed, and what conclusions are considered appropriate. For example, drawing on existing literature, the researcher may assume that students experience assessment in terms of reward and punishment. This assumption would influence what the researcher asked the research participants, and how the participants’ responses were interpreted. The emphasis in study design and analysis would be on how students experience assessment as reward or punishment, and how this influences their learning practices. However, what the researcher may neglect to do – and this is a common shortcoming in current qualitative research^{2,18-20} – is to make explicit the roots of this assumption which are based in the behaviourist tradition of learning. Behaviourism assumes that learning is achieved through stimulus-response,²¹ and this conclusion about the nature of learning is based on classic maze studies with rats. It is unlikely that the researcher in the assessment study will problematise the applicability to health science students’ behaviour of a theory of learning that is based on rat studies. Similarly, if the researcher assumed a constructivist understanding of learning, s/he would premise the study design on the assumption that students are active participants in their own learning and constantly trying to make meaning of their learning experiences.²¹ In designing the interview questions and interpreting the data, such a researcher would look for evidence of how students used assessment opportunities to assist them to make meaning. However, it is possible to present the findings from this study without ‘owning up’ to the hidden assumptions about learning that framed the study design, analysis and conclusions.

These two studies might have the same research question and the same students. To some extent, the same data might be generated for each study. However, how the data are interpreted and how the explanation that is given of the data will differ, will be strongly influenced by the initial assumptions about learning that the two different researchers held. Their theory of the nature of reality (in this case, of assessment) (i.e. their ontology) and their theory of what counts as knowledge and what passes for justification of knowledge claims (in this case, what conclusions can be made about assessment, and what conclusions are ‘true’) (i.e. their epistemology) influenced, albeit implicitly, all aspects of the study. Merriam²² argues that this kind of theory (i.e. ontological and epistemo-

logical assumptions) shapes every aspect of the study, from determining how to frame the purpose and problem, to what to look at and for, to how to make sense of the data that are collected.

The preceding discussion has highlighted three aspects of the importance of theory in education research. If the purpose of education research is to create explanations of teaching and learning that can inform 'best practice', then the research 'product' needs to be an applicable explanation. In fact, the product needs to be a theory about the meaning of the research findings that can eventually be applied in the teaching and learning context. Theory is thus, firstly, the product of the education research process. Secondly, theory needs to inform the research process. In other words, theoretical insight (and the literature that frames it) is an essential prerequisite to educational research design⁽⁶⁾ if the study is to be located within, and is intended to make a contribution to, what is already known about the subject. Thirdly, the theoretical assumptions that framed the study (the epistemology and ontology) need to be made explicit as these will determine what kinds of conclusions, understandings or theoretical insights can be drawn from the study.

In the section that follows, discussion will highlight practical ways of ensuring rigor for each of these three aspects of theory.

Ensuring theoretical rigor

'Owning up' to theoretical assumptions

Theoretical rigor requires that the researcher 'owns up' to the set of ideas (i.e. the assumptions) that s/he started out with when designing the study.²⁶ The researcher, thus, needs to explicitly disclose, when presenting research findings at conferences or through academic papers, the pre-suppositions and values that guided his/her research design, analysis and conclusions.²⁴ Such disclosure may be a challenge because assumptions about the world are so often 'taken for granted', and it may be difficult for a researcher to recognise and name his/her own assumptions. Parse *et al.*²⁶ suggest that this disclosure might be achieved through description – the researcher describes the personal meaning of the subject under study, and includes his/her beliefs about the subject by drawing on theoretical and experiential frames of reference. These beliefs may be drawn from named and formally labelled theoretical perspectives (such as positivism,²⁷ interpretivism,²⁷ critical inquiry,²⁷ postmodernism,²⁷ objectivism,²⁸ constructivism,²⁸ subjectivism²⁸), from the researcher's professional discipline (for example, nursing theories of care),^{20,24} from concepts, models, and theories of a particular literature base and disciplinary orientation,⁹ from personal values, biases and culture,^{2,9,20} and from personal experiences.⁹

The assumptions that the researcher has about how the world operates also influence the choice of methodology.²⁸ Methodology is the theory that underpins the research design,² for example the selection of experimental research, survey, ethnography, phenomenology, grounded theory, or action research. The methodology provides the rationale for how a study will be conducted, how the analysis will be done, and how meaning of the findings will be made.² Methodology influences selection of objectives, research questions, research strategy and implementation of the study,¹⁹ as well as determines the choice of methods⁹ (for example, observation, focus group interview, statistical analysis, documentary analysis). Methodology affects the kinds of things that can be found and the conclusions that can be drawn – as Carter and Little¹⁹ note, 'A grounded theory study is likely to produce a theory, a narrative study a detailed analysis of life stories, and an ethnography a detailed description and/or interpretation of a culture. A successful action research project might produce teen anti-smoking activists and anti-smoking activities on

school premises' (p. 1323). What is taken for granted by the researcher at the commencement of the study thus affects not only how the study is conducted and what conclusions can be drawn (i.e. what theory might be generated), but also how the findings might be used.

It is arguable that there can be no study without what is taken for granted at the moment of conception of the study. The disclosure of these assumptions is therefore essential in order to support and elucidate any claims that the researcher might want to make about the relevance, validity, or transferability of the study findings. In making his/her research preconceptions explicit, the researcher provides the reader with a basis for evaluating the study.²⁴ The reader may agree or disagree with the initial assumption, but is, at least, able to evaluate the study from within the paradigm (or perspective) that the researcher designed it.²⁴

Theory to inform research

It has already been argued that research needs to be located in relation to current understandings of a topic.^{2,10} Thomas¹⁷ suggests that this access to theory and literature provides 'tools for thinking' (p. 422). The purpose of referring to existing literature and theory is to inform the study design and the analytical framework. Charmaz²⁹ suggests that locating a study within extant theory allows the researcher to set the scene for the study, to justify the focus of and techniques used to conduct the study, and to organise, analyse, interpret and provide a context for the data that is collected.

In qualitative research, a preliminary literature review is usually conducted at the planning stage.² Theory in qualitative research frequently provides an organisational framework (or even a comparative context) for interpreting the data and for ways in which to represent the data after initial analysis.²⁰ Sandelowski²⁰ suggests that a theoretical framework drawn from the literature 'fits' (p. 216) the data well when it easily permits comparison (i.e. when there are common characteristics in the theoretical framework and the data set), when it provides a useful framework for organising the data for representation (i.e. when it provides conceptual tools that can be used to organise and analyse the data – for example, the concepts of 'deep',³⁰ 'surface'³⁰ and 'strategic'¹³ approaches to learning may help analyse data that emerges from focus group interviews with students in a study of how assessment influences learning), and when it does not distort the meaning of the data (i.e. the data should not be 'massaged' to fit the theory – rather the theory should help explain the phenomenon under scrutiny).

The role of theory varies depending on the study design.³¹ Case study design needs identification of the theoretical perspective at the beginning of the study because that perspective affects the design of the research questions and the analytical framework for interpreting the findings.³² This theoretical perspective is generated from the existing knowledge base accessed during the preliminary literature study.¹⁸ Similarly, ethnography, although initially descriptive, is 'guided' (p. 574) by the available knowledge related to the field of study.¹⁸ Even for study designs such as grounded theory and phenomenology, where pre-conceptions are 'bracketed out' so as not to interfere with the theoretical perspective that should emerge from the study,³³ prior familiarity with the relevant theory and literature is pertinent – 'theory plainly becomes functional for the background of the research and is a strategy for literature review research' (p. 574).¹⁸ Grounded theory and phenomenology study designs balance the generation of new theory with recognition of what already exists in the field.¹⁸ However, for grounded theory and phenomenology, the literature is not used as a lens for designing the study and interpreting the data.¹⁸

The relationship between literature and analysis is often iterative in qualitative research. Thus further literature, possibly even on a slightly different aspect of the topic, might need to be reviewed during the analysis and writing up phases of the research when the data analysis highlights the relevance of new or unexpected issues.² Kelly² notes that the researcher may go backwards and forwards between the literature and the research question during the course of the study.

Finally, Onwuegbuzie and Leech³⁴ remind, and warn, that the selection and review of the literature and the theoretical perspectives within that literature is not a neutral process. It, like all other aspects of the research process, is influenced by the researcher's view of the world – as Dellinger³⁵ puts it, 'review of the literature is inherently an interpretive and value driven process ... (influenced by) the researcher's own story about what is deemed valid, worthwhile, meaningful and valuable in a set of studies' (p. 4).

Generating theory from research

This paper commenced with the argument that education research, in order to be relevant, needs to generate explanations that have educational significance and applicability. This is the third aspect of theory in education research, and is the ultimate purpose of such research. The first, 'owning up' to theoretical assumptions, provides the broad parameters within which the study will be conceptualised. The second, surveying the current literature and relevant theories, provides the lens for understanding the field of research and analysing and interpreting the data. The first and second aspects of theory provide the context for the third. They determine what is scrutinised, how it is scrutinised, and how findings are interpreted. However, without the third aspect of theory – the generation of theory as provisional end-product³⁶ – educational research cannot have practical applicability.

Glaser and Strauss²⁵ suggest that theory can be 'discovered' (p. 1) from the data, and although their methodology is specific to 'grounded theory', this suggestion has applicability to other qualitative methodologies. To generate theory, data analysis moves beyond surface-level description, and this process requires time and training.² Data analysis usually proceeds from the identification of patterns present in the data to explorations of the meanings and processes associated with the observed categories or patterns of behaviour.² If the study is to move beyond description and an explanation is to be generated, then even a systematic analysis of the data leading to the identification of key themes will not be enough.² In order to undertake a more detailed interpretation that may lead to explanation or theory, the researcher is required to 'stand back' (p. 287) from the data.² The *meaning* associated with the categories identified in the initial analysis needs to be explored before an explanation can be generated.² Except in the specific methodologies of phenomenology⁽ⁱⁱⁱ⁾ and grounded theory^(iv), extant literature informs the construction of this meaning. Kelly² argues that quality theory must build upon what is already known. Such theory should be clear, have structure, coherence, scope, generalisability and pragmatic application.^{37,38} In the context of education research, understandings and theoretical insights generated have to, ultimately, be 'usable' in the context of teaching and learning. They need to be able to inform 'best practice'.

Conclusion

This paper commenced with a call for research that generates the kind of information that health professions educators need to understand, and thereafter improve, the quality of their teaching and the learning of their students. In the ensuing discussion, the significance of theory in explana-

tions that have educational significance and applicability was highlighted. Three aspects of theory were identified – theory as the product of education research, theory to inform the research process, and theory as the assumptions that frame the study. Their inter-relationship was explicated, echoing Sandelowski's²⁰ observation that '(t)heory in qualitative research is produced from inside and also enters from outside the boundaries of any research project' (p. 214). Qualitative research has the potential to generate theory 'from inside' a data set, but the nature of that theory is determined 'from outside' by the assumptions of the researcher, including what s/he reads, or neglects to read, in preparation for the study. In elucidating the characteristics of qualitative research, Hammersley³⁹ offers a checklist that ensures that all three kinds of theory are taken into account. The characteristics serve as a useful guideline to determine theoretical rigor in education research. Quality qualitative research should generate substantive and formal theory, be empirically grounded and scientifically credible, produce findings that can be generalised or transferred to other settings, and be internally reflexive in terms of taking account of the effects of the researcher and his/her research strategy on the findings that have been produced.³⁹

Manuscript status

The manuscript has not been published and is not under consideration in the same or similar form in any other journal.

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Footnotes

(i) This suggestion is not uncontested. Thomas¹⁷ argues strongly that it is not the purpose of qualitative research to use 'local interpretation (for) informing global interpretation' (p. 427), and that 'qualitative inquiry can't do that and ... that it doesn't pretend to be able to' (p. 427). Whether findings from qualitative studies can, or should, be generalisable is a strongly contested proposition and persuasive arguments are presented for both sides.

(ii) A note for those concerned about the relationship between this claim and qualitative research methodologies such as grounded theory and phenomenology. Mills²³ argues that ontological (theoretical perspectives on the nature of reality) and epistemological assumptions (theories for knowledge justification) shape how all research is conceptualised. These implicit and explicit theories underlie the beliefs, propositions, and theoretical conceptions that frame studies and their analysis, even when the theory is purported to be emergent. Mills²³ suggests that these theories 'provide the researcher with a framework for the problem and questions to be addressed in the study' (p. 114). Mitchell & Cody²⁴ go further, suggesting that grounded theory methodology and phenomenology are in themselves theoretical locations that influence the study design and findings. Further, while these methodologies recommend researchers to suspend any prior theoretical commitments or to bracket their assumptions concerning their field of study²⁵ (which the preceding discussion suggests may, in fact, be impossible), they do not 'mandate ignorance of relevant scholarship in an area nor do they excuse the failure to develop the theoretical sophistication required to do good qualitative research' (p. 213).²⁰ Indeed, Glaser and Strauss²⁵ called for a sociological 'perspective' and 'theoretical sensitivity' which Mitchell and Cody²⁴ suggest is achievable only through theoretical knowledge. Theory thus arguably remains significant to study design and analysis even for those methodologies that claim to generate rather than rely on theory.

(iii) For a detailed discussion of the methodology of phenomenology see Husserl E. *Ideas: General Introduction to Pure Phenomenology*. New York: Collier, 1962 (original published 1913).

(iv) For a detailed discussion of the methodology of grounded theory see Strauss AL. *Qualitative Analysis for Social Scientists*. Cambridge: Cambridge University Press, 1987.