

Who's afraid of research questions? The importance (and neglect?) of question-led methods teaching

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Abstract

This paper examines the place of research questions in the teaching of research methods. It describes the neglect of research questions in both methods texts and the wider academic literature but notes this situation is not peculiar to educational research and that similar concerns have been raised in the social sciences more widely, as well as in the humanities. It explores some possible explanations for this neglect and argues that the lack of attention paid to research questions may be related to the availability of appropriate resources, the structure and content of methods texts and the way some educational research is conducted and presented. Question-led methods teaching is presented as both a logical approach to the teaching of research design and data analysis and also a strategy that may help to overcome some of the weaknesses in current practice. It is argued that focusing on research questions can also encourage capacity-building among new researchers and may discourage the early formation of 'mono-method' identities.

Keywords: Research questions; research design; research methods; teaching.

Introduction

Questions are everywhere; all you have to do is observe and be curious.

Graziano and Raulin (2004, p. 57)

Curiosity is, or at least *should be*, the driving force behind the conduct of any research (Pole and Lampard 2002, Campbell et al. 1982). Indeed, the extent to which an activity not motivated by curiosity can be meaningfully characterised as research is limited. Curiosity, however, needs to be appropriately directed and the importance of 'systematic curiosity' (Lewins 1992, p. 8) and 'disciplined curiosity' (Graziano & Raulin 2004, p. 4) has been highlighted by some commentators.

Research questions represent an attempt to 'tame' curiosity. Curiosity should not lead to questions being asked in a 'haphazard fashion' (Lewins 1992, p. 8) but in relation to what is already known about the topic of interest. The process of formulating, developing and refining research questions allows researchers to make connections with existing theories and previous empirical findings and helps avoid unnecessary repetition of or overlap with previous work. This process also allows researchers to clarify their ideas, to reflect on the definition and operationalization of important concepts, and to make links between the questions they aim to address and the most appropriate research design.

Given the central role that research questions play in the research process, it is surprising that, until recently, they have received relatively little attention in the methods literature. It is perhaps even more surprising that many reports of empirical research published in academic journals do not specify their research questions or even any specific aims or objectives. Research questions appear to be a neglect area both in terms of the resources available to students and researchers, and their visibility in certain research outputs. This paper examines the place of research questions in the research methods literature and also some aspects of current research practice that may work against a 'question-led' research culture. Before presenting a case for question-led approach to the teaching (and conduct) of research methods, the paper starts by examining the neglect of research questions in more detail and suggesting possible explanations for this state of affairs.

The current literature on research questions

Relative to the vast literature on other elements of the research process, very little has been written on the subject of research questions. Many well-known and widely-read 'general' texts on research

methods simply do not broach the subject, or devote only a few paragraphs (or even lines) to the topic. It is very common to find lengthy discussions of the role of questions in interviews or questionnaires – both in general methods texts and monographs or journal articles focusing on this topic – but the role of research questions is addressed much less frequently and usually in less depth. At the time of writing there are only two book-length texts in print that are dedicated to the topic (Andrews 2003, White 2009) both written within the last decade. In contrast, Sage Publications – one of the largest publishers of methods texts - currently publish 119 general texts on ‘qualitative research’, a further 22 on ‘ethnographic research’, 12 more on ‘narrative research’ and 8 more on ‘field research’. They have 35 general texts on ‘quantitative methods’ and a further 72 on aspects of statistical analysis. At the time of writing, of the 434 methods texts listed on their website none are dedicated to research questions.

The absence of literature in this area has been noticed by some commentators, who have lamented the lack of attention paid to the subject. As far back as the mid-1970s Lundberg (1976, p. 6) reported that the contemporary literature on research questions was ‘meagre and uneven’ and, more than 30 years later, Flick (1998) noted that few textbooks have a separate chapter on the topic or even have related entries in their subject index. This neglect is not universal, however, and some recent texts pay considerable attention to the role of research questions (e.g., Punch 1998, Denscombe 2002, Booth et al. 2003, Robson 2003). The situation also appears to be improving over time, with some popular texts increasing their coverage of research questions with each new edition (see, for example, Bryman, 2001, 2004, 2008, 2012).

This neglect is not limited to methods texts, however. Unlike other aspects of the research process, research questions appear to have attracted relatively little attention from academics as a subject of inquiry or discussion. The work of Campbell et al. (1982) and Dillon (1983, 1984, 1990) represent some of the few comprehensive empirical and conceptual treatments of research questions in social science. A lack of attention to this topic, however, may not be confined to the social sciences. Laudan (1977), reported that the methodology of the natural sciences did not, at that time, offer a definitive taxonomy of scientific problem types. Communications with colleagues working in the area of science and technology studies (STS) suggest that, more 30 years later, this is still the case. Philosophers, in contrast, have developed and refined typologies of question types since the time of Aristotle (White 2009).

The relative lack of literature on research questions, however, appears to be in inverse proportion to the need for help and guidance in this area. Most writers who address the subject agree that the formulation of research questions is not only one of the most important elements of the research process but also one of the most difficult, a view expressed by writers in the social sciences for more than 50 years (see: Merton 1959, Kane 1984, Kerlinger 1986, Black 1993, Mason 1996, Lewis & Munn 1997, Punch 1998, Pole & Lampard 2002, Graziano & Raulin 2004, White 2009) and also by those in the humanities (Fisher 1970), philosophy (Dewey 1938) and the natural sciences (Medawar 1972, 1979).

Problems with question formulation do not appear to be confined to students and novice researchers. Taylor's (2002) interviews with key stakeholders in the social research community revealed concern that professional researchers paid too little attention to the role of research questions in their work, and Bordage (2001) reports that 'insufficient problem formulation' was the second most common reason for the rejection of papers submitted to medical education journals. Few journals in the social sciences require authors to explicitly state their research questions and it is possible to finish reading an article without having a clear idea of the questions the researchers were trying to address. Dillon's (1983, p. 19) survey of articles published in education journals revealed that only a minority of empirical papers stated their objectives in the form of questions or statements with an 'embedded interrogative structure'. And even when research questions are included in research reports, they are often unclear or poorly stated (Black 1993).

This situation does not appear to have changed fundamentally in the time since Black's (1993) and Bordage's (2001) studies. In the most recent six issues of the *British Educational Research Journal* (37:6 to 38:5) only 15 of the 45 articles reported empirical research included clearly stated research questions or hypotheses. Although the majority of the remainder expressed some kinds of aims or objectives, there was considerable variation in the detail and presentation, with some articles only expressing the rather vague intention to 'explore' a particular issue. In the six most recent issues of the *American Educational Research Journal*, published between October 2011 and August 2012, only 9 of the 34 empirical articles included research questions or hypotheses. As was the case with *BERJ*, some articles provided very little explicit information about the purpose of the reported research.

While the data presented above are only indicative and provide a rather crude snapshot of the reporting of research questions there is no *a priori* reason to believe that they are in any way unusual. Indeed, as both are internationally respected and widely cited – with *BERJ* attaining a

Thomson Reuters SSCI 2-year impact factor of 1.14 in 2010 and *AERJ* scoring 2.93 in 2011 – it might be expected that their standards of reviewing would be among the most rigorous.

Possible explanations

Having established in the previous section that research questions receive relatively little attention in methods texts, the wider methods literature and reports of empirical research, this section explores possible explanations for this situation. First, the possibility that some research is not driven by genuine curiosity is examined. Second, approaches to research that deny the possibility of single answers to particular questions are presented as inimical to the purpose of question-led inquiry. Next, the existence of ‘mono-methods’ identities and methods-led research is highlighted as a barrier to question-led research. Lastly, the neglect of research questions is linked to another crucial but often overlooked aspect of the research process: research design.

To what extent is contemporary educational research ‘question-led’?

Concerns about the degree to which research is genuinely question-led have previously been raised by several commentators and various explanations for this state of affairs have been proposed. It has been suggested that barriers to question-led research may originate in researchers’ views about the goals of research, prior assumptions or political allegiances but can also be fostered by particular cultures within research communities. Lewins (1992, p.8) argues that the degree to which researchers are curious varies and some investigators can be unduly influenced ‘by assumptions which prevent the right questions begin asked’. He suggests that researchers sometimes become wedded to particular explanations or theories and are reluctant to pursue questions that may challenge these cherished ideas. Paradoxically, the culture of research communities does not always foster genuine curiosity. According to Sellitz et al. (1965, p. 31), ‘habits of thought’ cultivated within disciplines or groups of researchers can also ‘interfere with the discovery of the new and ... unexpected’. Both Lewins and Sellitz et al. agree, however, that researchers must be open to the possibility of their research producing unexpected (and even ‘undesirable’) results, and should also be prepared to treat such findings in the same way as any other research outcomes – critically but fairly. As Medawar’s (1979, p. 94) notes, if research ‘does not hold out the possibility of causing one to revise one’s views, it is hard to see why it should be done at all’.

Partisan research and emancipatory goals

Some researchers, however, do not see discovery or knowledge generation as the only – or even principal – goal of their ‘research’ activity. Griffiths (1998, p. 3) advocates ‘taking sides’ and appears

to view 'empowering others; empowering oneself ... [and] giving or getting a voice' as at least as – if not more – important than answering questions or generating new knowledge. Similarly, Brown and Jones (2001) focus on 'emancipation' as a goal of research and Troyna and Carrington (1989, p. 219) have argued that research should be concerned with 'fostering change'. Some of these authors go further, however, claiming that such emancipatory goals require research to be conducted in a different manner. Griffiths (1998, p. 3), for example, states that researchers should start with a 'set of values' that not only guide what is researched but also *how* the research is conducted. Gitlin et al. (1993, p. 208) ask researchers to 'reconceptualise method so it explicitly embodies the purpose of emancipatory change', Troyna (1995, p. 397) states that political commitment should 'help to shape and direct all aspects of the research act', and Troyna and Carrington (1998, p. 219) write that 'both theory *and* practices' of research should be informed by a commitment to social justice. While the quotations above are taken from only a small selection of authors, many similar views can be found in the literature. The expression of such beliefs is not limited to a particular time period or area of study and, writing in the early 2000s, Hammersley (2002) observed that taking this position appears to have become more common.

The important questions as far as this paper concerned are, are the approaches outlined above compatible with question-led research? Or perhaps more specifically, are these approaches compatible with curiosity-led research? And should they be taught as legitimate approaches on research methods courses? Advocates of 'partisan' research have argued that their approaches actually lead to better research. However, this claim has been challenged both in terms of the criteria used to judge the quality of research and in relation to the extent to which different goals of research can be balanced simultaneously (see Hammersley 1995).

This is a topic that has been debated widely by the educational research community and it is beyond the scope of this paper to revisit the issues in detail. However, as the extent to which partisan research is compatible with curiosity-led research is directly relevant to the issues being addressed, the most pertinent points will be highlighted briefly below. Issues raised by particular authors and studies will be discussed first, before more general arguments are outlined.

One of the most famous debates in this area relates to a study by Foster (1990), who claimed that in a single school that he studied there was no evidence to suggest racist attitudes and behaviour among the teaching staff. Foster's findings were challenged by a number of 'anti-racist' researchers who suggested that he had simply failed to recognise the racism that existed, with one author even

claiming Foster's book was 'racist' (Connolly 1992, p. 145). This led to a nearly decade-long debate that widened to include discussion of the primary goal of research. The criticisms of Foster's finding may have their origins in genuine concerns about the rigor of his methods and perhaps also the presentation of his research. However, the scope of the criticisms went beyond the argument that he had not demonstrated convincingly that racism was not present in this particular school; his critics argued that evidence presented in the book demonstrated that racism unquestionably existed but that he failed to recognise it (see Connolly 1992). This is a very strong claim, particularly when not based on the original data but only on a report of research that these same critics questioned in terms of its rigor. It is interesting to look at these claims in the light of other statements made by 'anti-racist' researchers that raise questions about their openness to particular research findings. Mac an Ghaill (1991, p. 116), for example, states that he adopts 'a theoretical position, that locates racism and sexism as the major barriers to the schooling of black youth' and Troyna and Carrington (1989, p. 219) have claimed that their approach 'could help obviate the misgivings that many teachers appear to have concerning antiracist education'. The first statement does not allow for other factors (such as social class, for example) to emerge as more important barriers than racism and sexism, regardless of the evidence produced in a study. Similarly, the second statement precludes the possibility that 'antiracist education' may not be the most effective way to combat racism in schools or simply might not work. Taylor Fitz-Gibbon (1996, p. 21) provides a relevant anecdote in which a prominent researcher on racism was asked what evidence he had that the programme of anti-racist teaching he was advocating was beneficial rather than counterproductive. 'His reply was that he was not that kind of researcher'.

There are examples in the literature of specific cases where the openness of researchers to all research outcomes – and therefore their commitment to genuine curiosity – can be questioned. To be useful, a truly question-led approach to research must also be curiosity-led. However, beyond these particular cases, a more general case against these kind of approaches has been made by Hammersley (1995, p. 71), who argues that researchers should be primarily concerned with 'the truth of claims, not their political implications or practical consequences'. He argues that those who label themselves 'critical', 'anti-racist' or 'feminist researchers' do not offer a coherent alternative to more conventional approaches to research that prioritise the production of knowledge. Additionally, there is little evidence that more traditional approaches to research have contributed to 'oppression' or that these alternative approaches have been more effective at countering it. Neither is it always the case that individuals or groups can be easily divided into the 'oppressed' and the 'oppressors'. Perhaps the most pressing concern, however, is that for 'partisan researchers' there is

a danger that commitment to political goals ultimately overrides commitment to the production of knowledge (Hammersley 1995, Walford 2001). While it is perfectly legitimate for political commitments to direct researchers towards certain areas of study, every effort should be made to minimise the impact of these commitments on the rest of the research process.

The degree to which 'partisan' research is compatible with a genuinely question-led approach to research is, at best, questionable. However, there have been other developments over the past few decades that have led to approaches to research that may be equally problematic.

Postmodern and post-structuralist approaches

Some commentators, such as Alvesson (2002) and Stronach and Maclure (1997) advocate drawing on the ideas of postmodernism and post-structuralism to inform the practice of research. It seems more popular for educational researchers to identify themselves with post-structuralist ideas but Rosenau (1992) suggests the difference between the two schools of thought is one of emphasis rather than fundamentals. The editorial of a special issue of the *British Educational Research Journal* (22: 3, June 1996) entitled 'Post-modernism and Post-structuralism in Educational Research', while acknowledging that the terms 'drew on a variety of theoretical perspectives' (Paechter & Weiner 1996, p. 267) and 'cannot be treated as a unified body of theory' (p. 270) goes on to discuss the terms as if they are, for the most part, interchangeable. The authors note that, at the time of writing, post-structuralist ideas were relatively new in educational research but were gaining popularity among feminist researchers in particular. More than a decade and a half later it is relatively common to see educational researchers claiming to be informed by post-structuralism and, to a lesser extent, postmodernism.

The criticisms of these schools of thought are wide ranging and contingent on the way both '-isms' are defined by their various proponents. However, as Gomm (2004, p.1) points out, as these philosophies 'deny the possibility of their being any means for judging knowledge as being more or less true, they at the same time make research a senseless activity'. Silverman (2007, p. 139) objects to the rejection of 'every standard that has governed enquiry since the Enlightenment' and Benson and Stangroom (2006, p. 164) point out that it is fraudulent to define yourself as a researcher if you do not believe in the 'existence or reality of truth'. If there really are 'a multiplicity of truths' (Paechter & Weiner 1996, p. 269), or no way of judging if one view is more valid than another, then the idea of evidence loses all value. The value of questions is also diminished. Regardless of how well we are actually able to answer a particular question in practice, if there is no correct answer to any

question, or no way of deciding between competing answers, the usefulness of questions as tools for research – or the point of research *per se* – disappears.

It is clear that there are approaches to social and educational research that either subordinate the generation of knowledge to other goals or are sceptical about the existence of an objective reality to be researched (Hammersley 2008). Both approaches are relatively common and plenty of examples of such work have been published in prestigious peer-reviewed journals for at least the last two decades. It is also interesting that there is some overlap between these two approaches, with some authors combining post-structuralist and emancipatory approaches to the research process. Neither approach, however, is clearly and unproblematically compatible with research that takes answering questions seriously. The popularity of such approaches may go some way to explain why research questions have neglected by some authors. After all, if questions can have multiple answers or if some answers are not considered possible, the point of asking questions in the first place is lost.

It is worth noting that many – but not all - of those advocating ‘emancipatory’ or ‘partisan’ research and those proposing the adoption of ‘post-structuralist’ or ‘postmodernist’ approaches to research general define themselves as ‘qualitative’ researchers. The next section looks at the creation of ‘mono-method’ identities and examines whether attachment to particular methods can also impede the conduct of question-led research and the teaching of question-led research methods.

b) Mono-method identities and ‘methodolatry’

Even in cases where researchers are genuinely curious and open to the prospect of surprising results, there may be barriers to genuinely question-led research. Some commentators have presented evidence suggesting that research is often either methods-led or that the range of questions a researcher can address is restricted by a reluctance to learn new methods or designs. Worryingly, this situation appears to have persisted, with studies in the early 1980s and early 2000s producing similar findings.

Many of the experienced researchers and stakeholders interviewed in Campbell et al.'s (1982) survey expressed the concern that far too much research is led by preferences for certain methods or techniques rather than the desire to answer a particular question. Consensus among the respondents was that the driving force behind most significant 'research milestones' tended to be specific problems to be addressed rather than the use of particular methods. However, Dillon's (1984) survey, published only two years later, concluded that in the field of educational research

inquiry was not question-led. Both authors view this situation as problematic, with Dillon (1984) warning that attachment to particular methods restricted the range of questions studied and Campbell et al. (1982) expressing concern that the repeated use of the same methods led to the creation of research 'ruts'.

Two decades after Campbell et al.'s (1982) and Dillon's (1984) studies, the stakeholders in Taylor's (2002) survey expressed similar anxieties in relation to educational research, with particular concern being focused on 'mono-method' researchers, who repeatedly use a single or narrow range of research methods and/or research designs. The director of a large grant awarding body supported the view that research should start with questions, stating: 'It's a good thing to be problem driven. What did they say about single methodology people – give a child a hammer and everything becomes a nail' (Taylor 2002, p. 58).

Janesik (1998) uses the term 'methodolatry' to describe the 'slavish devotion to method' that can lead to methods coming before questions in social research. However, the tendency to repeatedly use the same research methods or research designs is not restricted to any particular research 'tradition'. It is common for researchers to define themselves in terms of their preferred methods of data collection or analysis, regardless of their particular area of expertise. While some researchers define themselves as 'ethnographers', 'case-study researchers' or 'conversational analyst', others happily describe themselves as 'ANOVA researchers' (Miles & Shevlin 2001) or 'multi-level modellers'.

The development of mono-method identities is almost certainly encouraged by the common tendency to divide research methods into 'qualitative' and 'quantitative' techniques. Many specialist methods texts use these terms in their titles and general texts tend to be structured around this division. Even some recent texts on 'combining' or 'mixing' methods use this division as a starting point (e.g. Teddlie & Tashakkori 2009, Creswell 2009). The lack of logical basis for this division has been widely discussed in the methods literature (see Bryman 1988, Gorard 2002a, Gorard & Taylor 2004). There are no methods of data collection that are necessarily or logically connected to the retrieval or creation of either numeric or non-numeric information and, in any case, all data can be traced back to their origin as a non-numerical quality (Prandy 2002). As Punch (1998, p. 58) makes clear, data 'does not occur naturally in the form of numbers'.

An additional consequence of this divide is also evident in the existing literature on research questions and, importantly, in methods texts. The formulation of research questions is viewed by some as only necessary in certain types of research. Sarantakos (1998, p. 119), however, argues that formulating research questions 'is not the prerogative of quantitative research only'. He agrees with Flick (1998) and Agee (2009) that research questions are crucial to the conduct of 'qualitative' research.

This position is perhaps less controversial than the suggestion that hypotheses – used appropriately – can be useful in research of all types. Mason (1996) notes that there is resistance among some 'qualitative' researchers to the idea of hypotheses and Dillon (1983) observes that most of the attention devoted to hypotheses in the method literature related to 'quantitative' research. However, some authors of methods texts, such as Dobbett (1982), warn readers that hypotheses are inappropriate for ethnographic research. Creswell (2003) extends this advice to include all 'qualitative' studies which, according to him, do not even need explicitly stated aims or objectives.

In contrast, there are many experienced researchers who believe that hypotheses can be used in 'qualitative' studies and even in ethnographic research. Guba and Lincoln (1994) and Holliday (2002) both argue that hypotheses can be useful in 'qualitative' research. Similarly, Barton and Lazarsfeld (1969), Spradley (1980) and Reason (1994) view hypothesis testing as perfectly compatible with ethnographic studies, and Hammersley and Atkinson (1995, p. 19) write about the identification and testing of 'hypothetical patterns'. Holliday (2002, p. 34) provides a very useful review of the arguments for and against the use of hypotheses in 'qualitative' research before concluding that 'the essential nature of hypotheses does not have to be restricted to the controlled world of quantitative research'. Indeed, there seems to be no logical reason why hypotheses cannot be used in any kind of research. Hypotheses and research questions are, in one sense, two sides of the same coin (White 2009). Although formulating hypotheses is not an essential prerequisite to conducting research, there is no reason not to use them where they are helpful.

Students and new researchers should be wary of identifying themselves with particular research traditions, however tempting a certain approach might appear. Forming an identity shaped by a predilection for particular research methods or research designs will tend to limit the kind of questions that a researcher is prepared, or able, to address. Unfortunately, the structure of many research methods texts – and their focus on issues of epistemology and ontology – may encourage this kind of behaviour. However, research methods teaching should actively discourage the

development of 'mono-method identities', and emphasising a question-led approach to research, rather than presenting students with a number of 'traditions' to choose between, may help avoid students and new researchers adopting these identities early in their research careers.

c) The neglect of research design

Another area of the research process that has suffered from relative neglect is research design. There are far fewer texts in print focusing on research design than there are on research methods, and even some texts with 'research design' in the title primarily focus on methods of data collection and analysis (e.g. Creswell 2003, 2009). Although the terms 'research methods' and 'research design' are often used interchangeably, there are important differences between the two (White 2009, Gorard 2013). De Vaus (2001) argues that the essence of developing a research design is making decisions about the kinds of evidence required to address your research questions. Hakim (2000) and Yin (1989) agree that research design is not about *how* to conduct research - the research methods - but rather about the *logic* of inquiry; the links between questions, data and conclusions.

In addition to being clear about exactly what your research aims to accomplish, having clear and well-defined research questions helps the researcher plan a coherent research design. As Stone (2002) notes, clearly defined research questions promote clarity of thought, thereby informing the choice of research design. Denscombe (2002) agrees, believing that clarity of purpose 'streamlines' the production of a suitable research design. Once an appropriate research design has been constructed, the researcher can then decide upon suitable methods of data collection and analysis. Spending time developing and refining research questions pays dividends later in the research process, when making decisions about research design, as such decisions will be facilitated greatly by a coherent set of well-formulated questions. This is because, according to Punch (1998), a good research question indicates the data needed to answer it.

The confusion of research methods and research design has led some commentators to view the latter as something that is only necessary in certain kinds of research. Mason (1996) suggests that 'qualitative' researchers are often resistant to the idea that they need to specify a research design at the beginning of the research process. But as de Vaus (2001, p. 16) notes, 'any research design can, in principle, use any type of data collection and can use either qualitative or quantitative data'. He emphasises the primacy of research design over research methods and argues that decisions about sampling and data collection 'are all subsidiary to the matter of "What evidence do I need to collect?"' (p. 9). Flick (1998) supports this view, arguing that both research questions and research

designs are crucial to the conduct of 'qualitative' research and Denscombe (2002, p. 112) reminds readers that 'there are no good grounds for qualitative research to excuse itself from the criteria for good research that apply to other social science approaches'.

The lack of focus on research design described by Gorard (2010, 2013) may be an additional factor contributing to the neglect of research questions, both in the methods literature and in published reports of empirical research. If even some authors of methods texts are unaware of the difference between research methods and research design, it is likely that this misunderstanding is much more widespread among practising researchers who do not consider themselves to be 'methods specialists'. Unless publishers have got their market research very wrong, the relatively small numbers of texts on research design might also suggest that there is little demand for such resources among methods teachers.

A lack of attention to research design is likely to shift focus away from the importance of research questions. An effective research design can only be developed after a clear set of research questions have been formulated. A lack of fit between research questions and research design should be obvious to an informed reader (White 2009, Gorard 2013) and can be identified as a weakness in a research project. Developing a research design from research questions allows a researcher to identify any weaknesses with the research at an early stage and make modifications to eliminate or minimise their impact. It also makes 'warranting'¹ claims a much more straightforward and transparent process. In contrast, flaws in research that does not have a clear set of research questions or an explicitly stated research design are much more difficult to pinpoint. Claims are correspondingly more difficult to warrant and therefore more vulnerable to criticism.

It may be the case that the lack of attention given to research design is connected to the neglect of research questions. It is not possible to attribute any causal direction to this relationship; neither is this necessary as both are essential to the conduct of quality research. It is clear, however, that – at least in terms of the resources available – both have 'Cinderella' profiles in the methods literature. Given the lack of relevant data it is not possible to say whether this is actually reflected in the practice of methods teaching. All available indicators, however, would suggest that this is likely to be the case.

Implications for methods teaching

Some of the issues raised above could be seen as criticisms of current research practice pertinent only to professional researchers and academics. While these discussions are intended to point out aspects of the wider research culture that are problematic, they also raise questions about how methods are currently taught and about the socialisation of novice researchers. Students are (or should be) encouraged not only to read methods texts but also to consume research outputs. Those texts and articles can shape their views of what research is, and what it should aspire to be. But many of these texts and articles are written by academics who advocate approaches to research that are incompatible with research inspired by curiosity and open to the possibility of surprising findings. As both of these qualities are essential to question-led research – or even to something that can be meaningfully called research at all – this is a worrying situation.

The benefits gained by spending time formulating and developing research questions have been outlined over the course of this paper and are discussed in detail elsewhere (see White 2009). It helps clarify the focus of the research, draws attention to any concepts that may need to be defined and operationalized, and is an essential prerequisite to the development of an appropriate research design and analytic strategy.

A question-led research strategy is as beneficial to students required to conduct research projects as it is to professional researchers. The teaching of research methods, however, should also reflect this question-led approach. In advocating a truly ‘question-led’ approach to teaching research methods, I propose the following principles:

1. All research should be question-led. Teaching should focus on research questions at the start of a course or module and the importance of curiosity and surprise should be emphasised throughout.
2. Any philosophical or political positions that are not open to the prospect of all possible research findings – or do not accept the existence of an objective external reality – should not be presented as legitimate strategies for generating knowledge. They may be presented as interesting historical trends but not as serious attempts at genuine discovery.
3. Research design, and its links to research questions, should be taught before strategies for data collection and analysis. It should be emphasised at all times that the research designs should be developed before methods of data collection are considered.
4. Philosophical discussions of ontology and epistemology should be kept to a minimum and restricted to issues that impact on research design (such as causation). Different research ‘traditions’ should not be presented as pathways to be chosen and adopted as ‘identities’.

Conclusion

Over the past decade, both the UK and US social research communities have aired their concern about a lack of quantitative skills among practising researchers (Gorard et al. 2004, Henson et al. 2010; MacInnes 2009). This issue has been taken seriously within the social science research communities and by funders and policy makers. Considerable funds have been allocated to tackle this problem and, in the UK, addressing this issue has been a priority for the National Centre for Research Methods. However, I consider the lack of focus on research questions and research design to be a more pressing, and fundamental, problem. It is also an issue that is directly relevant to all practising researchers and teachers of research methods. If this problem is to be addressed, we need to rethink the way research methods are taught. I believe that encouraging research-led methods teaching will help to improve the quality of social and educational research and ameliorate some of the issues the field is currently facing. Many current strategies to address the lack of quantitative skills tend to see this as a standalone problem unconnected to other aspects of method teaching. I believe it is the case that, by focusing methods teaching on research questions and research design, students can be: discouraged from adopting mono-method identities; be convinced that numeric data and quantitative judgment can be useful in many different ways; and be encouraged to develop quantitative skills. If this is not the case, they will still have learned much of value.

Notes

1. Warranting claims is another neglected element of the research process. See White (2009) and Gorard (2002b, 2013).

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