

Methods or Methodology: Terms that are too often confused**METHODS OR METHODOLOGY: TERMS THAT ARE TOO OFTEN CONFUSED**

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ABSTRACT

There is a distinct difference between methodology and methods in research. However, too many students, researchers and authors of academic papers do not seem to pay attention to the crucial difference. This is true in the field of education research, but also in many other academic disciplines. In simple terms, the term methods refers to the research tools and techniques, for example in the qualitative field, interviews are a tool to collect data, and in the quantitative field, a questionnaire-based survey is an example of a data collection tool.

Methodology is a broader concept as it refers to the overall approach to the research and includes a justification of this approach, and links to research philosophy, i.e. the way in which we produce knowledge.

This Methodological Note aims to explain where the confusion comes from, drawing on some examples from the published literature in the field of education research and beyond. It also considers the complexities and crossovers. The final section ends with key advice to researchers and authors on key mistakes to avoid when it comes to the difference between methods and methodology including to cover this in early supervision discussions.

Keywords: research, methodology, methods, advice

Introduction

Over the past decade we have noticed in several published papers and during workshops that postgraduate students and early career researchers (ECRs) in Nepal often use the terms ‘Methodology’ and ‘Methods’ interchangeably, as if they mean the same. Most research articles in the education field include information about methods, i.e., the tool and techniques applied to collect and analyse the data, however fewer cover methodology, i.e., the overall

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framework of the reasons and the reasons why certain methods were chosen instead of others. Methodology is often brushed over or even completely omitted due to the limited word length of a research article in a peer-reviewed journal. However, we feel that all too often it seems that authors have not really thought about these issues, or worse, do not seem to be aware of them. This is not just true for the education field, e.g. a paper published in *Environmental Education Research* (Dillon & Wals, 2006) noted the confusion over methods and methodologies. Similarly, a paper from computer science noted that the process of selecting methods and methodologies can be ‘tedious and difficult’ (Håkansson, 2013, p. 69).

Neither is this a problem unique to Nepal. It is a recurrent issue amongst ECRs and postgraduate students in the global North, especially those in the more applied disciplines such as health education, nursing, and public health. For example, McLachlan and Garcia (2015) noted that doctoral students are presented with a seemingly bewildering range on methodologies and philosophical positions. They added that students should take “a reflexive and provocative nature of applying philosophy in practice” (McLachlan & Garcia, 2015, p.208). Franco (2016) explored the difficulties of researchers when learning about philosophical approaches and methodologies, including such challenges as students being unaware of their own philosophical positions, students not seeing how it impacts their research and of being unaware of the conceptual frameworks for qualitative frameworks and the range of qualitative methodologies.

We are a multidisciplinary team, representing a range of disciplines including education, health, social work, and social sciences. Scholars often note that there is limited information in textbooks on research methods and methodology (Mackenzie & Knipe, 2006). We also looked at several more recently published methods textbooks and found that there are issues

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with authors not clearly introducing and/or defining methodology (e.g., Denscombe, 2010; Denscombe, 2021; Flick, 2015; Vear, 2022; Walliman, 2011).

In contemporary society, unsurprisingly people often turn to the web for support, and we also found a number of blogs (for academics and universities) stating commonly confused terms on methods and methodologies (see Box 1).

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Box 1: Online sources discussing the difference between methodology and methods

Some examples of blogs online that highlight the confusion between the terms methodology and methods
https://researcher.life/blog/article/commonly-used-research-terms/ https://www.enago.com/academy/difference-methods-and-methodology https://www.scribbr.co.uk/faqs/method-vs-methodology/ https://www.editage.com/insights/11-commonly-confused-elements-of-a-research-paper https://terrynwilliams.wordpress.com/2016/10/10/commonly-confused-words-method-methodology/ https://www.redwoodink.com/resources/word-choice-methodology-vs-methods https://www.paperpal.com/blog/researcher-resources/research-advice/confusing-elements-of-a-research-paper-that-trip-up-most-academics/

Given this, the paper sets out to address the question: “Why are people confusing methodology with methods?” It will do this by outlining both concepts and their differences, use examples to illustrate why the confusion may be occurring and then make suggestions to overcome these issues. The purpose of this paper is to remind postgraduate students and ECRs to understand and reflect on the differences of the terms used, and for PhD supervisors to spend time on this important issue in order to support students to effectively defend viva and/or support submission of their papers. This paper first highlights the importance of knowing the difference.

Methodology versus Method

As noted above, these two words are too often confused. Therefore, we shall first outline the concept of methodology. The methodology considers how the researcher is going to systematically address the research problem, in other words, it refers to the framework or overall approach to doing the research.

Methodology is the broader concept of the two, it (a) is the overall approach to the research and includes a justification of this approach (Denicolo & Becker, 2017); (b) derives from the

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research philosophy (Dillon & Wals, 2006); and (c) is a way of producing knowledge (Clark et al., 2021). The selected methodology is informed by the researchers' world view, their epistemological perspective (Shannon-Baker, 2016). A methodology identifies the philosophy of an approach to which the researcher adheres; it considers how new knowledge could be gained (Denicolo & Becker, 2017), and guides and informs the research (Creswell, 1998). For example, the methodology might not be necessarily driven by the epistemological perspective (how we know things) but instead come from a pragmatic philosophy where researchers take a mixed-methods approach, one combining qualitative and quantitative methods, namely in-depth interviews or focus group discussions (qualitative) and an online survey (quantitative). It is an approach which can be particularly helpful for exploring phenomenon in different amongst differing groups and situations (Younas et al., 2022) and enables us to critically evaluate and select the most appropriate (= useful) methods to address the research question. It involves looking at how the research question is defined and assessing what the most appropriate methods will be.

Methods

Methods are techniques and tools used to conduct the research (Dillon & Wals, 2006), i.e., the way data are collected (Bryman, 2012; Flick, 2015; Silverman, 2005; Strauss & Corbin, 1998). Researchers must ensure they select the appropriate tools (methods) to best address their overall research question. Methods can include primary research or secondary research. The former may include questionnaire surveys, interviews, participant observations, focus groups or biomedical measurements. Secondary research methods include using systematic literature reviews or scoping reviews, or the analysis of routinely collected data (e.g., medical tests, school registers, prison records, and census data). However, as Bryman (2008) notes

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methods also include analyses techniques (e.g., statistical techniques or thematic analysis), or sampling, i.e., how participants are identified, selected or approached.

There are also specific types of tools and methods associated with the different methodological approaches (Denicolo & Becker, 2017), for example, observation and interviews are associated with interpretative methodological approaches, whereas laboratory-based education experiments are associated with positivistic approaches. However, some of these methods are not exclusively linked to one methodology or another and other methodological approaches may also employ these methods.

Explaining the common confusion

Informal reference to researchers as qualitative or quantitative researchers and research as qualitative or quantitative research can create confusion for both postgraduate students or ECRs. It implies that the method is the most important distinction between kinds of research, which ignores the importance of the methodologies that lie at their foundation. The terms qualitative and quantitative refers to the data collection methods, analysis and reporting modes instead of the theoretical approach to the research (Mackenzie & Knipe, 2006).

One common recommendation for postgraduate students and ECRs is that they look to journal articles as guidance for writing up their own methodology and methods, yet this can add to the confusion, as many articles present methodology and methods under a joint heading, some just use one or the other, and others do not include this as a heading at all. The way the methods or methodology is written up could also be dependent on a range of factors including discipline, publishing house style, the focus of peer reviewers, and/or limitations of word count. Table 1 outlines the key differences between methodology and methods.

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Table 1: Key differences between methodology and methods

Methodology	Methods
Approach to doing research, considers the appropriateness of a method to address the research question	Tools to answer research question
Research conceptualisation stage	Research execution stage
Technique(s) suggesting how to conduct research in your research area/topic	Actual tools/techniques or steps taken to conduct research in your research area/topic
Explain and justify the methods you used	Explain how the method is applied in a particular study: how you conducted surveys, interviews, in-person observations, focus groups, or medical tests or using existing datasets for secondary analysis
Find ways to efficiently solving a research problem	Practical solutions to the research questions.

We highlight some issues, using the context of Nepal as an example. Some journals, in their instructions to authors, request that a section on ‘Methodology’ is included, and the editors probably expect details about the methods used in your study, not its methodology. For example, the *Birat Journal of Health Sciences* [<https://www.nepjol.info/index.php/bjhs/about/submissions#authorGuidelines>] instructs authors using the following text: “...Please arrange the manuscript as follows: Title, Abstract, Introduction, Methodology, Results, Discussion, Conclusion, Recommendations, and Limitation of the study, Acknowledgements, Conflict of interest, References, Tables, Figure and legends.” We have looked at some papers published in 2023 in this journal and selected five examples (see Box 2) that clearly refer to methods but all have the subheading ‘Methodology’.

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Box 2: Few examples of texts that refer to methods but labelled as ‘methodology’

<p>Methodology</p> <p>A prospective study over one year of cases of RTA was done. The pattern and outcome of the otolaryngological and facial injury was recorded.</p>	<p>Methodology</p> <p>This prospective, cross-sectional study, was conducted from July 2021 to December 2021 at Birat Medical College Teaching Hospital after taking permission from the Institutional Review Committee (IRC). Patient selection was done using inclusion and exclusion criteria. A total of 66 patients were included in the study, who received two prolotherapy injections in a g followed up after 12 weeks</p>
<p>Methodology</p> <p>A web-based cross-sectional study was conducted among interns at College of Dental Surgery, B.P. Koirala Institute of Health Sciences. A questionnaire was prepared and Google Form link was shared with the signed-up participants via messaging apps; Viber and Whats App. The descriptive statistics were calculated using Microsoft Excel 2016.</p>	<p>Methodology</p> <p>Analogue Score for pain at re (Foot Function Index), and ult thickness) findings were noted evaluated.</p> <p>Methodology</p> <p>A study was conducted where the clinical records of children with facial dog bite injuries reported from 2015 to 2018, were assessed and analyzed. A proforma was designed to extract relevant clinical data from the case records. Information such as age, gender of the victims, anatomical site of the injury, interval between injury and presentation to the hospital, nature of injuries, profile (stray or pet)and immunization status the of dog, outcome and complications were extracted.</p>
<p>Methodology</p> <p>This was a Cross Sectional Descriptive study conducted at PICU of Birat Medical College Teaching hospital in Eastern Nepal. From August 2021 to July 2022, records of all possible admissions in PICU were reviewed. Demographic profile, diagnosis, outcome and duration of stay were analysed.</p>	<p>Methods sections labelled ‘methodology’ in five recent 2023 papers published in the academic journal: <i>Birat Journal of Health Sciences</i></p>

Often journals may state the correct author instructions, for example the *Journal of Social Sciences & Management* requires authors to include a section called ‘Material & Methods’ (see Box. 3). However, despite the journal instructions being clear, papers can be accepted which confuse the two concepts. Again, in Box 3 the recent paper in this journal, shown on the right-hand side uses the sub-heading ‘Methodology of the Study’, in a section which only addresses methods.

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Box 3: Example of disagreement between author' instructions and published methods

<p>Author instructions International Journal of Social Sciences & Management ISSN 2091-2986</p> <p>Web address: https://www.nepjol.info/index.php/IJSSM/index</p> <p>Introduction: A brief and clear description of the purpose of the investigation relating the previous research and essential arguments should be mentioned.</p> <p>Materials and Methods: This section should be written well defined to understand the steps of investigation done which allows other researcher to reproduce the result.</p> <p>Results and Discussion: The findings of the manuscripts should be presented with appropriate evidences and discussions in a</p>	<p>Methodology of the Study</p> <p>Site This study was conducted at Mayo Hospital Lahore.</p> <p>Setting: Setting for the current study was surgical and medical wards of Mayo hospital Lahore.</p> <p>Study Design: Cross-sectional descriptive study design was used.</p> <p>Study Duration: The study was conducted with in the duration of four months, starting from January 2018 and ends on April 2018.</p> <p>Study Population: The study targeted population was the Nurses from surgical and medical ward of Mayo Hospital Lahore.</p> <p>Inclusion Criteria</p> <ul style="list-style-type: none"> ➤ All nurses from surgical and medical ward mayo hospital Lahore. ➤ Nurses who were interested and willing to contribute in the study. <p>Exclusion Criteria:</p> <ul style="list-style-type: none"> ➤ Nurses who were absent at the time of data collection. ➤ Nurses who were not willing to participate in the study. ➤ Nurses from ICU & emergency and other departments except surgical and medical. <p>Technique of Sampling: In this study convenience strategy is used, participants who</p>
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Another relevant point is that for much of the scientific research, the methodology aligns to positivism trying to find the 'one truth', with the assumption "of an unmediated relation between the world and the acts of investigation of it" (Burman, 1997, p.792). Therefore, the selected methods seek to 'measure' something whether it be the efficacy of a medicine or quantity of carbon dioxide. These methods are often seen as objective or neutral.

However, in social research, there is an acknowledgement that there may be more than one truth and both the researcher and methods chosen could impact the results. As Bryman (2012, p.6) argues social research and social research methods are not practised in a vacuum and are embedded in wider contextual factors including the epistemological (how research should be conducted) and ontological (the nature of social phenomena) positions. The stance the researcher takes has an implication on how the social research is conducted. In such context therefore, it is key to understand the methodological approach, as Bryman (2008, p.161) notes "Methods became as much to do with philosophical choices as technical ones".

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What are the complexities and crossovers?

The most common definitions suggests that methodology is the overall approach to research linked to the paradigm or theoretical framework while the methods refer to systematic modes, procedures or tools used for collection and analysis of data (Mackenzie & Knipe, 2006).

Research methodology has different dimensions and research methods constitute a part of that methodology. Research methodology not only constitutes of research methods but also considers the logic behind the methods used as well as explanation of the choice of a particular research method or technique applied over others. Which is why in a PhD thesis your thoughts about the methodology comes before you discuss about the methods. A common mistake is to call the chapter 'Methods' when it should really be 'Methodology and Methods' to remind yourself and the reader that both are addressed in the chapter. Whereas research methods consist of all those methods the researchers use in performing research operations. These three groups consist of: (i) methods concerned with collection of primary data; (ii) the methods used to analyse the data (quantitative, qualitative or mixed-methods); and (iii) methods to assess the quality (reliability and validity) of the results obtained.

Sometimes, your approach can also lead to confusion in the need to clarify both methodology and methods. Some researchers, especially those using mixed methods, favour a pragmatist approach, and mixed methods is a research methodology (Dawadi et al., 2021). This brings with it the possibility for the methodology to be confused with the methods, as the focus of the philosophy is on seeking the most efficacious methods for answering the research question. Pragmatism, which originated in the USA in the 19th century, aims to contribute practical solutions to a problem to inform future practices (Saunders & Bristow, 2015).

Pragmatism uses a concrete way to view the world, and values both objective and subjective knowledge (James, 1908) allowing both quantitative and qualitative research methods in a

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study. It does not adhere to metaphysical concepts such as truth and reality (Creswell & Plano Clark, 2011). Therefore, a pragmatist's philosophical standpoint sees the research question as more important than the underlying paradigm of the method (Punch, 2013), with the focus on using what is needed to answer the research question (Tashakkori & Teddlie, 2003). Once the methodology and methods have been identified it is perhaps even more important to ensure these are clearly explained in order that the research can be understood, replicated, and verified.

Final Thoughts

It is advisable to have a good knowledge of both methodology and methods prior to conducting your research to avoid the pitfalls. We have found some books and articles useful which are on our reference list. We thought therefore it might be useful for those new to research, supervisors and journal reviewers to offer a few suggestions (Box 4).

Box 4: Advice on considering methodologies and methods

- Try to attend workshops/trainings to explore the concepts of philosophical approaches and research methodologies;
- Discuss methodologies and methods early on in research supervision sessions;
- Select your methodology first as it will guide the decision on which methods to use;
- Supervisors to support students to ensure they can clearly identify/articulate the differences between methodology and methods;
- Be more precise about the use of language in your writing;
- Reviewers for journals need to ask for clarification when required;
- Clearly articulate your methodology rather than leaving the reader to guess as it is merely implied.

In summary, methodology is a theoretical basis to support your chosen research methods. It helps us to recognise the elements influencing effectiveness of the research approach used. It

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signifies the way to efficiently solving research problem. It is determined/applied during initial stage of a research. Whereas methods are the specific techniques to collecting research data. To understand a research problem systematically, it is very important to know research methodology along with the research methods.

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