



## **Qualitative and Quantitative are Data Types not Paradigms: An MMA Framework for Mixed Research in Applied Linguistics**

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### **APA Citation:**

Hampson, T. & McKinley, J. (2023). Qualitative and quantitative are data types not paradigms: An MMA framework for mixed research in applied linguistics. *LEARN Journal: Language Education and Acquisition Research Network*, 16(2), 1-7.

Received  
28/04/2023

Received in  
revised form  
12/06/2023

Accepted  
05/07/2023

### **ABSTRACT**

Mixed methods research, or mixed research, is an area with a great deal of promise for applied linguistics, especially given the field's diverse range of topics and methods. However, when mixed research mixes qualitative and quantitative methods, this can be problematic as researchers suppose this implies mixing mutually exclusive 'quantitative' and 'qualitative' paradigms. This paper argues that these problems arise from the identification of paradigms as qualitative or quantitative. It explores how mixed research might be conducted from a single paradigm. Finally, it offers a novel framework for mixed research which allows for a finer grained and less problematic description of mixed research.

**Keywords:** mixed-methods, paradigms, methods, qualitative research, quantitative research

## Introduction

Applied linguistics as a discipline draws on a wide range of techniques from ethnography, the analysis of policy documents, discourse analysis and studies that are close to cognitive psychology. While this diversity is necessary, it can often feel like applied linguists are talking at cross purposes (see Cook, 2015). As such, combining more than one of these techniques in a single study can be a way forward for applied linguistics researchers. As Riazi (2016) writes:

*The methodologically pluralistic characteristic of [mixed methods research] is in line with the interdisciplinary nature of applied linguistics, and, in fact, that MMR enables researchers to investigate more complex research issues usually not possible with purely quantitative or qualitative methods.*  
(p. 33)

and furthermore:

*Applied linguistics researchers can creatively design MMR studies to investigate language-related issues to address both the general/theoretical as well as the ideographic/contextual levels of the research issue.*  
(p. 43)

However, while the use of mixed methods research may be desirable for applied linguistics (McKinley, 2020), there are, thus far, a lack of satisfying answers to the paradigmatic issues surrounding mixed research. In this paper, we argue that the lack of clarity of research stems from a misunderstanding that research paradigms are qualitative or quantitative. We outline an alternative framework which allows for an increased understanding of research and allows researchers to avoid connotations that can cause paradigmatic issues.

### Why do we need a new framework for mixed research?

Historically, paradigms have, erroneously, been strongly associated with either quantitative or qualitative research. In fact, paradigms are often referred to as ‘quantitative paradigms’ and ‘qualitative paradigms’ (e.g., Greene & Hall 2010 p. 7; Johnson & Onwuegbuzie 2004 p. 20; Riazi & Candlin 2014 p. 135). When taking this point of view, mixed research becomes difficult as:

1. Researchers are combining quantitative and qualitative research.
2. The quantitative aspects depend on a ‘quantitative paradigm’ and the qualitative aspects depend on a ‘qualitative paradigm’.
3. These quantitative and qualitative paradigms hold mutually exclusive positions on a range of issues.

Taken together, these three statements create a tension in mixed research which makes it hard for mixed researchers to do research while having a set of paradigmatic beliefs guiding that research.

The default solution to this tension in mixed research literature has been the adoption of a pragmatic paradigm (Hesse-Biber 2015). While formulations of a pragmatic paradigm differ between authors, it is focused on practical solutions and permissive of research mixing:

*In lieu of such dictates, the pragmatic mixed methods inquirer attends to the demands of the particular inquiry context and makes inquiry decisions so as to provide the information needed and maximize desired consequences—“get the job done.”* (Greene & Caracelli, 2003, p. 101)

For us, this type of paradigm is useful as it ‘gives permission’ for researchers to do research. However, it does not provide answers for how to do research. Looking at the quote above, the

obvious question is ‘but what *does* get the job done?’ (Hampson & McKinley 2023). This leaves pragmatism as an unsatisfying solution for researchers who want their mixed work to be guided by paradigm.

### **Moving towards a solution: detaching paradigm from method.**

One step towards resolving this is to detach paradigm from data type. In other words, we should use quantitative and qualitative to talk about data types and recognise that, while there are common associations between paradigms and data types, they are separate things. Our first argument for this is simply that it does not mean much to talk about a ‘quantitative paradigm’ or a ‘qualitative paradigm’. Data are broadly either text or number based, and so it is sensible to use these terms to describe data. However, paradigms are not broadly text or number based, and so this usage is not sensible or useful. Secondly, and more importantly, paradigmatic thinkers do not advocate for a single data type. However, what does happen is that secondary texts ascribe a far more hard-line set of beliefs to those thinkers.

For an example of this, Johnson and Onwuegbuzie label Guba as “a leading qualitative purist” (2004 p. 14) because of his insistence that paradigms should not be mixed. However, this is a misrepresentation of what Guba has argued for. While Guba is certainly against the mixing of paradigms, when it comes to mixing of data types, Guba is far more permissive. For example, Guba and Lincoln write “From our perspective, both qualitative and quantitative methods may be used appropriately with any research paradigm.” (1994 p. 105).

Once this distinction between paradigm and data type has been resolved, the dilemma of paradigms in mixed research goes away. Mixed researchers can simply pick the paradigm which matches their beliefs about ontology and epistemology apply it during both the qualitative and quantitative parts of their research. One new issue that presents itself from this is that given the strong association between paradigm and methodology, researchers may find themselves doing part of their research in a way which is unfamiliar to themselves, their colleagues and, crucially, journal editors.

For example, a constructivist researcher doing mixed research may think about and analyse their quantitative data to how we expect a ‘quantitative researcher’ to. To illustrate, let us imagine this researcher is using quantitative survey data alongside qualitative interview data. Rather than, as a ‘quantitative researcher’ would, rather than analyse the quantitative section of their research using ‘validity’ and ‘reliability’, use ‘credibility’ and ‘transferability’ (see Lincoln & Guba, 1985). Alongside the triangulation which is already taking place, this might, borrowing from Lincoln and Guba (1985), involve:

- Member checking: asking participants if the survey findings align with their experiences.
- Peer debriefing: meeting regularly with a neutral peer to help ‘keep the researcher honest’.
- Negative case analysis: paying special attention to results that do not fit neatly into one’s findings, perhaps interviewing outliers.
- Thick description: rather than seeking to make findings which are generalisable to all contexts, providing enough description that the reader can decide how transferable the findings are to their context.

While these actions would not typically ‘go’ with qualitative data, they are all practicable here. Crucially, this approach would allow the researcher to be guided by paradigm to improve their research without flip-flopping between paradigms or being forced to adopt a paradigm which offers little guidance. On the other hand, misunderstanding paradigms as being either qualitative or quantitative would prevent this type of research.

## **Describing mixed research**

Having decoupled paradigm from data type, we wish to offer a framework for describing mixed research. This new framework breaks down mixing into three levels: method methodology and approach. This framework is not a replacement for other frameworks for describing research mixing nor is it exclusive with them. However, we believe it is practical in several ways which we detail below.

This method methodology approach (henceforth MMA framework) draws heavily on Greene (2015) who makes a distinction between mixing on the level of method, methodology and paradigm. However, given that we, as outlined above, find it neither sensible nor necessary to mix on the level of paradigm, we have replaced ‘paradigm’ with the idea of ‘approach’.

### **Mixed Method**

Method is a term that has been used in various ways and is often used synonymously with methodology. However, here we are using it quite specifically to mean method of data collection. A study which collects only quantitative or qualitative data would be mono-method under this framework while one that collects both would be mixed method.

### **Mixed Methodology**

In this framework, methodology refers to the means by which data are analysed. We have not divided these into quantitative and qualitative as several methodologies, such as grounded theory, text analysis and surveys, can use either or both types of data. Any study that uses one means of analysing data is described as mono-methodology while a study adopting several means of analysing data is mixed methodology.

### **Mixed Approach**

Approach here refers to the use of inductive and deductive logics. These are, broadly, the two approaches which researchers can take to their research. An inductive<sup>1</sup> approach is one that is observational and descriptive. A deductive approach attempts to disprove hypotheses. If a study uses one of these two approaches, it can be described as mono-approach. One that uses both can be described as mixed approach.

These three levels of mixing can be ‘mixed and matched’ with one another in eight different ways:

1. Mono method, methodology and approach.
2. Mixed method, mono methodology, mono approach.
3. Mono method, mixed methodology, mono approach.
4. Mono method, mono methodology, mixed approach.
5. Mixed method, mixed methodology, mono approach.
6. Mixed method, mono-methodology, mixed approach.
7. Mono method, mixed-methodology, mixed approach.
8. Mixed method, methodology and approach.

We do not in this article wish to suggest that ‘more mixing is better’ or that any particular combination is more desirable than another. Rather, we wish to highlight the possibilities that exist for researchers.

## Worked Examples

When teaching this framework, we have found that this framework can be initially be counterintuitive and that the use of examples can be instructive.

### Example One

1. A researcher takes a set of transcripts from interviews.
2. They analyse this by reading them and forming an opinion. They also produce a set of statistics describing how frequently key terms are used.
3. They write up their findings in a descriptive way.

This study is mono method, mixed methodology and mono approach. Only one type of data is gathered, but it is analysed in two ways. The analysis only involves inductive logic.

### Example Two

1. A researcher produces a set of hypotheses about the strategies teachers use to teach vocabulary.
2. They survey 200 teachers with both text and number-based answers.
3. They write about which of the hypotheses were proved and disproved.

This study is mixed-method, mono-methodology and mono-approach. It uses multiple types of data, but these are analysed in the same way and only deductive logic is used.

### Example Three

1. A researcher performs a series of interviews to find out students' motivations for learning English.
2. They analyse their findings by generating a series of codes and descriptions for those codes.
3. They then go back to their interviewees and present them their findings in an attempt to disprove any that the interviewees disagree with.

This is an example of a mono-method, mono-methodology and mixed-approach study. Only one type of data and data analysis are used. However, they use member checking which incorporates a deductive logic to check their findings.

### Example Four

1. In a case study, a researcher interviews students about the difficulties English as a medium of instruction (EMI).
2. Based on the interviews, the researcher devises a set of surveys that asks students to what extent they face these difficulties with English as a medium of instruction on a series of scales from 1-5.
3. The researcher collates this data with students' English levels to describe the difficulties faced at different levels of English proficiency.

This study is mixed method, mixed methodology and mono-approach. Multiple types of data are analysed using both surveys and interviews. However, the description of these data is purely inductive.

### **Example Five**

1. A researcher wants to investigate racial stereotypes in textbooks.
2. They read a set of 20 textbooks and generate a set of codes and descriptions.
3. The return to the textbooks with these codes and use them as the basis of a quantitative text analysis which counts codes, analyses co-occurrence of codes and tests the quality of the codes using inter-rater reliability measures.

This study is mixed method, methodology and approach. It gathers both qualitative and quantitative data and analyses them using both quantitative and qualitative text analysis techniques. The use of inter-rater reliability measures brings a level of deductive logic to this study.

### **Why Adopt an MMA Framework?**

Having painted our picture of how we view mixed research, we would like to present several benefits of it. First, none of the levels in the MMA framework are linked to a paradigm. This allows for the description of research in such a way that it is never assumed that paradigms are being mixed. As such, it avoids the types of paradigm issues that have been outlined above.

Second, by separating paradigm from data type, we free up researchers from being tied to a certain type of data. For example, if we, as constructivists, were to erroneously conflate that paradigm with being ‘qualitative researchers’, we might needlessly rule out quantitative data from our work, even when that data would be useful.

Third, this framework allows researchers to quite concisely describe the ways in which their work is mixed. For example, mixed method and mixed methodology are not the same thing and so to separate these two allows us to distinguish between them.

Finally, this framework highlights possibilities for researchers that might potentially improve their research. By understanding in what ways our research is and is not mixed already, we are able understand what other ways mixing might be included. One example of this might be a researcher who is working with focus groups. It might be impractical for them to include an additional method or methodology in their research. However, they might be able to include member checking as a part of their study. They take the results of their study back to their participants and ask them to what extent they agree with how their beliefs have been described. Adding this deductive approach gives their findings a chance to be disproved and as such may increase their trustworthiness.

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### Endnotes

<sup>1</sup> While abductive and retroductive approaches have important differences with inductive approach, we are treating them as important subtypes of inductive logic here. This is because these logics generally depend on inductive logic. The researcher requires observation before looking for the theory of best fit based on that observation.

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