

Modern Pedagogical Approaches to Teaching Mixed Methods to Social Science Researchers

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Abstract

Mixed methods research is burgeoning across the social sciences. Yet there is a need to implement more modern approaches to teaching it in higher education. The aim of this work is to outline pedagogy and preliminary evaluation of new mixed methods workshops designed and implemented in an Australian university. A specific feature of these workshops included unpacking the ontological, epistemological and axiological understandings of various methods and the paradigms or worldviews that underpin each approach. This overview of the processes of scientific inquiry that permits mixing-in within and across quantitative and qualitative research designs aims to help participants to see how logics moved among these divides. In order to engage participants in critically learning about these abstract concepts, we adopted teaching strategies of flipped classroom and active learning. Results, from the workshop evaluations and individual learning reflections, provided preliminary evidence that: (i) due to this broad overview on mixed methods, participants would likely use mixed methods in the future in their field; and (ii) there is a strong appetite for high quality Mixed Methods instruction in higher education.

Keywords: *Mixed methods; flipped classroom; active learning.*

1. Introduction

Mixed methods (MM) research has increased over the past four decades, with noted growth within the social sciences and associated disciplines including business, education and health (Brannen, 2005; Creswell & Plano Clark, 2011; Fetters, Curry & Creswell, 2013). This expanding MM research community has led to the establishment of two journals in the past decade or so (*Journal of Mixed Methods Research* in 2007 and the *International Journal of Multiple Research Approaches* in 2009), and a compendium of scholarly discussion on MM (Hesse-Biber & Johnson, 2015). Nevertheless, MM is not perceived as a panacea nor a quick solution. As noted by e-blogger Gargani, 'A mixed-methods design explicitly lays out a thoughtful, strategic integration of qualitative and quantitative methods to accomplish a critical purpose - that either qualitative or quantitative methods alone could not'(evalblog.com, 2012). Indeed, mixing methodologies requires knowing about both quantitative (quant) and qualitative (qual) methods, but also encompasses knowing how to combine them effectively.

Hence we propose that it can be an advantage, for researchers new to mixing of methodologies, to learn about the general principles and widespread practical issues involved in combining or integrating methods, either within or across quant and qual components of the research design (Brannen, 2005). This means planning how to connect, build or merge their research questions, conceptual frameworks, data and their analyses in meaningful ways (Fetters, Curry & Creswell, 2013; Ivankova & Plano-Clark, 2018; Low-Choy, Riley & Alston-Knox, 2017, Section 4). An advantage of MM is that it provides researchers a 'new framework for thinking' about complex phenomena in the social sciences (Fetters *et al.*, 2013, p.2151). However, it also presents a challenge for instructors wanting to expose new researchers to a multiplicity of methods (Anguera *et al.*, 2018). Furthermore, this challenge is heightened when 'there are few instructors with the social research methods community who possess the theory/methods skills to teach such a course effectively' (Hesse-Biber, 2015, p. 475). Currently, the challenge, for learners and teachers of MM, is that pedagogical practice around how to teach MM is still developing (Ivanokova & Plano-Clark, 2018). Here we document our initial efforts to develop MM pedagogy in an Australian university. Despite the growth in MM uptake, including among research higher degree students, relatively few courses, that address this content specifically, are offered across universities in Australia¹. This points to a perceived vacuum in the 'pedagogical culture' in regards to MM instruction in higher education (Hesse-Biber, 2015, p.463). The reasons behind an apparent dearth of MM courses and teaching in Australian higher education would require an investigation that is beyond the scope of this paper. However, some evidence suggests that differing traditions

¹ A 10 tab Google search 'mixed methods courses Australia' found 7 courses across Australian universities including ANU, Curtin University, UNE, UOM, The University of Adelaide, Monash University, and The University of Western Australia.

and paradigms of quant and qual inquiry mean that researchers and/or instructors tend to become experts in either qual or quant methods, rather than both (Hesse-Biber, 2015, p. 464). While researchers may claim they are mixing methods by designing surveys that comprise both closed and open ended questions, we argue MM requires much deeper thought and investment.

Our workshops reflected our belief that mixed methodologists also need to carefully consider philosophical questions around ontology, epistemology and axiology that shape underpinning research paradigms (Morgan, 2007). The need to discuss such “ologies” is usually mandatory for qual researchers (Brannen, 2005). However, for quant scholars this philosophical aspect is becoming more necessary due to the growing multiplicity of modern statistical paradigms, yet quant practitioners are typically poorly prepared with little or no exposure to philosophy of science, except at a cursory level (Low-Choy, *et al.*, 2017, Section 8.6). Consequently, many qual practitioners view quant methods as solely “positivist” (Patel, 2015), a perspective that appears rooted in experiencing quant methods purely from the perspective of null hypothesis significance testing (Low-Choy *et al.*, 2017, p.318). In contrast, when deciding to mix qual in with quant methods it then apparently becomes “abruptly” important to make explicit the paradigms or worldviews that inform the research design. Thus unfortunately, the examination of “ologies” and the different research paradigms is often omitted from the process of MM research (Alise & Teddlie, 2010; Shannon-Baker, 2016). For this reason, our workshops make it a priority to communicate that “the what and the why of MM are logical steps to consider before deciding how it should be done”. Therefore, these three elements (what, why and how) were adopted as the framework for a series of three half-day workshops, developed and delivered by the authors to introduce mixed methods. The audience comprise researchers predominantly from social, behavioural and environmental sciences, as at a university in Australia in 2018.

2. Developing a Pedagogy for Mixed Methods

Designing mixed methods workshops from scratch involves working out: (1) content (what, why and how); (2) workshop timing and sequencing; (3) strategies for teaching and learning (e.g. active learning, small group work); and (4) an evaluation. The first workshop unpacks the main “ologies” – Ontology (*What is MM?*), Epistemology (*How is MM approached?*), Axiology (*Why and When is MM valuable?*) and Methodology (*Which way is MM implemented?*). These define the foundational knowledge needed to inform a mixed methods approach, and therefore provide an important basis for participants to critically read about, discuss, explore and consider multiple methods. Then, we explored the continuum of paradigms and associated “isms” (e.g. constructivism, positivism, pragmatism) that span qual, quant, and mixed research approaches. This drew on definitions of a paradigm as ‘a set of beliefs, values and assumptions that a community of researchers has in common’ (Johnson

et al., 2007, p. 129), and, ‘systems of beliefs and practices that influence how researchers select both the questions they study and the methods they use’ (Morgan, 2007, p. 49).

Next, we presented content on research inquiry by examining hypothetico-deductive, inductive and abductive reasoning and demonstrated how these logics may operate within MM research. Here, we introduced workshop participants to a pragmatic worldview that slides between inductive and deductive logics (abductively), and illustrated this concept by presenting a sequential mixed methods (qual + quant) research design (Morgan, 2007; Feilzer, 2010). Arguably, such ‘pragmatism offers several ways to bridge dichotomies that exist in mixed methods approaches to social science’ (Shannon-Baker, 2016, p. 325).

The second workshop focused on the importance of, and techniques for, developing a conceptual framework that could support either qual or quant methods, in a way that clarifies and distances the concepts (and variables) as distinct from the measurement approach (which may be qual or quant). Akin to mind-maps (Wheeler, 2010), these conceptual maps powerfully allow researchers to summarize their research question and also provide an interim step towards visual quantitative methods (Low-Choy *et al.*, 2017, Section 8.1). Similarly, scientific method can be viewed holistically using a structure amenable to representing the process of either qual or quant research, involving: research questions, conceptual model, empirical model, design of data collection, its analysis through to interpretation of results, and overall findings. An exercise helped researchers: identify the current stage of their research; understand the cyclical nature of the research inquiry process; and hence begin to differentiate the purpose of different (qual or quant) methods, e.g. for pioneering work (with main innovation in mapping concepts) or confirmation (with main innovation in collating new evidence). The workshop provided examples of how these conceptual, pre-quantitative maps could underpin mixed methods research, e.g. combining Structural Equation Models (SEM) or Bayesian statistical modelling with interpretative analysis of interviews (Low-Choy *et al.*, 2017, Section 5). An exercise prompted participants to draw draft a conceptual map underlying their own research.

The third workshop demonstrated options for the sequencing and mixing in, between, and across of quant and qual components of a research project (Anguera *et al.*, 2018; Creswell & Plano-Clarke, 2011). This included the foundational concepts of choosing what evidence to provide, e.g. via sampling or case studies (Onwuegbuzie and Collins, 2017, p.139). An exercise engaged students in identifying typologies of mixed methods designs (e.g. concurrent, embedded, triangulation) and extended this learning to their own projects. Here, issues of the mixed method goal, rationale and purpose were revisited along with an emphasis on research paradigm, acknowledging that paradigms are not static entities but moveable frames (Shannon-Baker, 2016). To consolidate these ideas, participants engaged in small group discussions, helping learners distinguish between multi- and mixed-methods in their own research projects. A capstone activity showed examples, then invited participants to

investigate ways to triangulate findings amongst qual or quant components of a MM study, e.g. corroboration, elaboration, complementarity and contradiction (Brannen, 2017, p.176).

3. Mixed Methods Workshop Implementation

On registration, the 58 participants were informed about and hence subscribed to the pedagogy we chose, which was designed to facilitate critical learning about abstract notions of philosophy through the structure, sequencing and format of our three MM workshops. We adopted a 'flipped classroom' approach, by setting readings (of 1 or 2 papers) for each workshop. An active learning approach required participants to undertake activities in small groups (e.g. brainstorming, concept mapping, sketching strategies for triangulating evidence). This 'hands-on approach' to teaching MM has been endorsed by Hesse-Biber (2015) who suggests it is important that students have opportunities to practice, share and reflect on MM challenges and issues. From our perspective, this prepares participants to continue to learn about and apply MM beyond the workshop.

For workshop evaluation and assessment of knowledge and learning we used a MM approach, via a survey tool (implemented in Qualtrics, and accessible by personal devices) Closed and open-ended questions sought to determine: participants' attitudes and expectations of MM including prior use, and projected usefulness, of MM methods within their own research. We obtained 15 respondents to questions delivered electronically during class (n=9) or afterwards (n=6), yielding a response rate of about a half. Since workshops are delivered free-of-charge, we typically experience an attendance rate of 50-90% compared to those who registered. Due to the small sample, these figures are indicative only.

4. Quantitative Feedback

Only 8 respondents answered the question on how useful they thought mixed methods would be for their own research, with all selecting "extremely" (n=3), "very" (n=4) or "moderately" (n=1) useful, meaning it would be of benefit to "all", "most" or "half" of their research projects. Interestingly no responses ranked MM as being less beneficial, aligning with the growing perceived relevance of mixed methods in doctoral theses in the social sciences (Creswell & Plano Clark, 2011).

We also received 9 responses to rate how likely it would be that they would use MM in the future: between 0 (not likely) and 10 (highly likely). A mean rating of 7.71 showed that on average, this was quite likely. About a quarter of the respondents were not sure (ratings of 3-4 in Education and Archaeology), nearly half were adamant (4 ratings of 10 in Psychology, Business, Cultural Heritage, Health), and a third considered it moderately likely (3 ratings between 6 and 8 in Business, Social Work). On a related note, there were a further 13

responses to the post-course administrative surveys. Ratings for usefulness of each MM workshop, ranged from: extremely (5 ratings of 10 in Arts/Education/Law, Business, Health, Science), highly (6 ratings of 7 to 9 in Business, Health, Science), moderately (1 rating of 5), to a little (2 ratings of 2-3 from Health, Science). The lowest ratings were made by participants who were very early in their PhD candidature.

5. Participant Reflections and Qualitative Feedback

In the MM course individual participants were given the opportunity during each workshop to reflect on their learning, with options to share these among a small or whole group. This included discussing “lightbulb” moments and “take-home” messages. Feedback was collected post-workshop by the administrative team responsible for logistics. We were able to appraise the open-ended comments left by a cross-section of respondents; some examples of high-level feedback are Examples 1 and 3 in Figure 1. Indeed, feedback was predominantly positive across different fields, and confirmed that this was typically the only training that any researchers had encountered on MM. (See Figure 1).

1. *“This is the most useful methods course I have ever attended. Thanks!” (Academic Staff)*
2. *“I had pretty simplistic notions of MM research unpacked a bit – 1) that the reason for a second method will vary depending on the phase of research at which it is introduced, 2) that MM research can be thought of in terms of a continuum, with one or other dominant or of equal status” (HDR Student)*
3. *“It is good to revisit the variety of methods in a specifically mixed-methods context” (HDR Student)*

Figure 1. Mixed Method Workshops Feedback

Constructive feedback was specifically sought separately, and often indicated the course was sufficient to their current needs. Equally often, however, there was a desire for more: establishing a community of practice; a longer workshop to provide more examples or more comparisons (e.g. qual vs quant components, or good vs poor examples); more literature; or further workshops on different topics. The most common verbal feedback during class was a request for a workshop on how to write up mixed methods research.

6. Discussion and Conclusion

Mixed methods research is a growing methodological option for researchers across the broad range of social sciences. We designed MM workshops that invited participants to delve into the foundations of mixed methods and why they would use them, from a modern perspective. We advocate a new kind of MM pedagogy that introduces the idea that qualitative and quantitative approaches, and their logics of inquiry, can be, and often are, integrated or woven into and throughout the entire research process (Brannen, 2005; 2017). By making the logic

of scientific inquiry central to the series of workshops on MM, participants were able to understand that mixing-in can occur within or across quantitative and qualitative analysis. Furthermore, we aimed to provide a more general appreciation of the research process (qual, quant or mixed) by highlighting the central role of mapping concepts and considering the role and logic of evidence (provided by any method) within the framework of scientific method. Participants were introduced to the philosophical ways of knowing or “ologies” and invited to explore the different paradigmatic positions that underpin the research process, and shown how this could help select and justify choice of a particular MM.

In conclusion, recent work has begun to revisit the question of whether it is possible to mix or integrate data, referring to the potential messiness of untangling ontological and epistemological assumptions when methods are mixed (Uprichard & Downey, 2016). Finally, a ‘more thorough “mixing in” of qualitative and quantitative components of analysis’ as suggested in recent literature (e.g. Low-Choy *et al.*, 2017, p. 318) may work to break down the persistent stereotypes and assumptions associated with each of these approaches. Pedagogically, student-engaged learning approaches that guide the unpacking of complex mixed methods issues may assist those new to MM to gain a better understanding of MM (Hesse-Biber, 2015; Invankova & Plano-Clark, 2018). Finally, we suggest continued scholarship is needed in the area of mixed methods teaching and pedagogy within and across higher education institutions.

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