

## Chapter 14

# Using Mixed Methods to Optimise Efficacy Measurement in Experimental Interventions Involving Human Subjects

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### ABSTRACT

*Experimental mixed research remains low in library and information science (LIS) despite being embraced in other disciplines. That might be due to limited simple research exemplars to replicate. This chapter showcases mixed methods research (MMR) in an empirical, experimental study involving the multidisciplinary area of academic reading development. A quasi-experimental test design demonstrated in the hybrid inquiry sought to discover how 1st-year university students in South Africa can utilise translanguaging practices—compared to traditional monolingual ones—to scaffold academic reading and establish efficacy. The researcher applied the experimental MMR design within a sequential exploratory scheme in the reading intervention study to understand the usefulness of ‘new’ translanguaging techniques in developing academic reading in higher education. The chapter is intended as an initial reference source for LIS scholars for whom it may be beneficial to use mixed methods to assess the efficacy of phenomenon on human subjects in experimental interventions.*

### INTRODUCTION

Smagorinsky (2008) argues that the methodology is central to any research project. Everything hinges on methods, and methodological flaws can quickly render the entire research effort invalid. This chapter argues that a mixed-method design is a prudent choice for any investigator to avoid research pitfalls. Mixed methods research (MMR) has advantages, including in experimental interventions. One of the rationales for using a combination of qualitative and quantitative methods, according to Collins et al. (2006), is treatment integrity (that is, assessing the reliability of interventions and programmes). Mixed

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methods designs offer informed research to create, test and implement appropriate interventions to address and prevent pressing problems or issues in any discipline. Ngulube et al. (2009) point out that researchers use MMR approaches to conduct enquiry and “to bridge the gap between qualitative and quantitative paradigms to answer research questions holistically.” (p.106). Therefore, many fields, including Library and Information Science (LIS), are now advocating and using MMR (Creswell, 2009; Fidel, 2008; Johnson et al., 2007; Ngulube, 2020).

Mixed methods research is also gaining momentum (e.g. Gomez, 2014; Mertens, 2014; Molina-Azorin & Fetter, 2016; Ngulube, 2013, 2016; Ngulube & Ngulube, 2015;). This popularity results from its promise to examine intricate problems and offer a comparatively great representation in cases where only one research method cannot address a phenomenon. The study in this chapter identified the pressing, complex problem of underachievement in academic reading. The hypothesis was that the problem stemmed from monolingual literacy pedagogy. The researcher designed an experimental translanguaging reading intervention challenging the English-only norm and Higher Education reading pedagogy practices. MMR seemed most suited for this complex linguistic and literacy research problem since it could determine the efficacy of these ‘new’ reading models or practices more fully, especially in the face of conservative sceptics. In the proxy study, MMR generated knowledge yielding valid, convincing evidence and aided to assess, establish and now publicise the impacts of the exemplar interventionist, experimental hybrid research (Molina-Azorin & Fetter, 2019).

However, despite cited advantages, there still exists a disparity and a research vacuum into MMR’s use in general, which utilises experimental test designs in particular. Tashakkori and Teddlie (2010, p.33) lament that “the developing world is not highly visible in publications regarding or involving mixed methods.” Such research methodology could help broaden the beneficial scope of mixed procedures in enquiry in LIS scholarship too.

Given the broadly accepted value of mixed methods research as a foundation for solid, rigorous research, scholars like Fidel (2008); Ngulube et al. (2009); Ngulube (2010) and Ma (2012) are concerned about the failure of South African researchers to take full advantage of MMR and its benefits. Despite its popularity worldwide and across disciplines, mixed-method in LIS, particularly in South Africa, remains inadequate (Ngulube, 2020). Ngulube et al. (2009) ascertained the scarcity of pluralistic mixed-method practises within the LIS field. Experimental designs were even scarcer. The findings show that the limited use of mixed methods research by LIS scholars in South Africa is a worrying trend that needs urgent addressing. Ngulube (2020) cites difficulties in conceptualising the practice of mixed methods research, distinguishing between multimethods and mixed methods research, and using appropriate mixed methods research approaches as partly to blame for the limited use of mixed methods in LIS research. The problem of the researchers’ uncertainty about how to “actually do mixed-method research” also seems to be universal (Morse, 2010b, p.340). In light of the low use of experimental mixed methods research in LIS and Southern African research, this chapter provides an exemplar of mixed methods research in a reading development programme.

The chapter seeks to demonstrate MMR as an attractive methodology using an empirical research case study around reading development problems and experimental intervention at the first-year university in South Africa. The chapter shows how the study combined qualitative and quantitative research methods at all stages of the research process, including formulating the problem, reviewing the literature, designing the research analysis data and drawing inferences. The study is used as a proxy to feed into the mixed method’s body of knowledge and scholarship thus far to push it further, particularly in LIS. This chapter has the central intention of promoting and proposing a more extensive adaptation of the MMR

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