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INTEGRATING QUALITATIVE AND QUANTITATIVE METHODS: ADVANCED MIXED-METHODS APPROACHES IN SOCIAL RESEARCH

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ABSTRACT
In recent years, the limitations of only quantitative or qualitative approach in social research have become increasingly apparent. Although meaningful integration of qualitative and quantitative data is still elusive and requires further development, mixed methods research is becoming an important methodology to investigate complex health-related topics. In order to gain a more thorough and nuanced understanding of a research question or phenomenon, researchers frequently combine qualitative and quantitative data. While quantitative data offers more general patterns and trends, qualitative data offers rich, detailed information on attitudes, beliefs, and experiences. Researchers can examine a research question from several perspectives and obtain a more comprehensive understanding of the phenomenon being studied by combining the two types of data. This paper explores the advanced strategies for integrating these two paradigms through the design of mixed methods, which go beyond simple triangulation. Based on case studies of post-conflict education, public health, and community development, the study shows how sequential explanation designs, mixed methods embedded, and transformative frameworks generate richer and more complex social phenomena. Particular attention is paid to the challenges of integrating data sets, negotiating paradigm tensions and ensuring methodological rigour when combining statistical generalization with depth of interpretation. The findings suggest that when mixed methods are correctly integrated, not only can the results be validated, but also emerging insights can be discovered, which no approach alone can reveal. The paper concludes with practical recommendations for researchers who want to move from fundamental integration to truly advanced mixed methodology practices, relevant to the context.

Keywords: *investigation, research approaches, mixed-methods, Qualitative Research, Quantitative Research*

INTRODUCTION
We are studying research and how to do it to the best effect. Therefore, it is prudent to deal with four basic questions: why do we start researching? How can we keep it interested? What characteristics of my own personality may help me complete the research? What skills do you have that can help me in this process (Dawson 2002, Miller Chestnorn & Rodriguez 2011 and Beardsmore 2013)? The answer to the first question is likely to be part of your course. If you have luck or thoughtful planning, your research will be of your own choice, which should give you a true motivation, which should give you an interest in what you are doing. However, if you are choosing a topic for you, it is important that you choose a method that allows you to remain motivated. Before selecting the method, you must know what motivates you and what you are good at. If you are a little friendly and you find people who are working well with you, interviewing or a group may be the appropriate tool for you.
However, if you like to crunch the numbers and spend hours analyzing statistical data, surveys may be the most suitable method for you. Likewise, when deciding how to organize research, it is important to consider your existing skills: Do you have the right research skills (hopefully...). Organizational skills? Good time management (Dawson 2002, Miller-Cochran & Rodrigo 2011 and Beardsmore 2013)? Do we really think all this through? Dawson (2002) demonstrates that at the beginning of any research, five essential questions must be answered: What, why, who,

where, when? In many ways, this can be the hardest part, and in many cases it is difficult to specify specific research that you want to do at the first stage.
Dawson (2002) states, "If you are unable to summarize your research in one sentence, the research topic is likely too broad, poorly thought out, or too obscure." It can be easier to answer why you are doing research, that it is required by the course, that the employer wants to do it, that it may interest you (Dawson, 2002) or that it is a combination of all three. In order to successfully conduct a research, knowing why you are conducting a study is critical to the success of the research, which affects the management and reporting of the research (Dawson, 2002).
The third question is who requires any researcher to identify potential participants in his or her study. You must understand the type of person to target to generate the information needed to answer the central question of the study. Where, you are concerned about the location of your investigation, which will to some extent depend on your budget and the time you have available to complete your investigation. It is important to find an appropriate place so that participants feel comfortable and contribute to worthwhile projects (Dawson, 2002). The concluding inquiry, when, maps out the timeline for carrying out the project. Attention must be given to the intended participants, especially if interviews are planned, if questionnaires are to be administered, and/or if observations are to be undertaken (Dawson, 2002).
Particular consideration should be given to the proposed participants, especially those who intend to conduct interviews to ask questions and/or observe them (Dawson, 2002). Willig (2013) has made it very comforting that there is no correct and wrong way to conduct research. However, it is essential that researchers can pinpoint exactly what they are doing, why they are doing it, who they are doing it with, where they are doing it, and when they are doing a specific investigation. To that end, my current "what" is to study the integration of quantitative and qualitative data in mixed methods research, assuming that, despite its challenges, it is beneficial for many studies.
Research encompasses multiple definitions due to its varied forms. It can be seen as
“studious inquiry or examination… investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical applications of such new or revised theories or laws” (Merriam-Webster Online Dictionary, 2010). Thomas et al. (2011, p. 3; endorsed by Tuckman & Harper, 2012) describe it as “a careful and systematic means of solving problems” and of gaining new knowledge (Bhattacharyya, 2006), while Mouly (1978, p. 12) proposes that it is best viewed as “… the process of arriving at dependable solutions to problems through the planned and systematic collection, analysis and interpretation of data.”
Gratton and Jones (2010, p. 4; echoed by Godddard & Melville, 2001; Brink et al., 2006) describe research as “…a systematic procedure for uncovering and expanding human knowledge,” which Kumar (2008) argues should yield some innovative addition to current understanding or help resolve an issue.

Educational Research

Educational research can be understood as “…critical inquiry aimed at guiding educational judgments and decisions to enhance action” (Bassey, 1999; cited in Foreman-Peck & Winch, 2010, p. 8) conducted with care and method (Picciano, 2004). It involves gathering and assessing data within the educational realm to comprehend and improve it (Opie, 2004). The field spans a broad range of topics, from the administration and organization of education to questions of equality and social justice, curriculum, assessment, special educational needs, creativity, and the influence of education on the economy (Gardner, 2011). Its motivation is to improve provisions and produce a positive impact on both individual learners and society at large (Reiss et al., 2010), by informing all stakeholders including the government, practitioners, and parents (Gardner, 2011).
The British Educational Research Association [BERA] (2013) contends that educational research should aid the future development of education while also shedding light on effective

practices of the present (supported by Whitty, 2006; Wallen & Fraenkel, 2011; James, 2012), aligning with Newby (2013), who argues there are three purposes for undertaking educational research: to investigate current and anticipated issues, to shape policy decisions, and to assess and advance classroom practice.

Research Design

Hakim (2000, p. 1) notes that design focuses mainly on aims, uses, purposes, intentions, and plans within the practical limits of location, time, money, and the researcher's availability. She adds that a research design will also mirror a researcher's ideas; to achieve success, the investigator must tackle three essential questions during the process (Creswell, 2003). Creswell (2014) argues that researchers should interrogate the knowledge claims and theoretical perspectives they bring to any study, consider the strategies they intend to employ, which will shape their methods, and examine how they will collect and analyze data.

This must be done so that researchers are aware of any bias they may bring to a research inquiry, how it will influence the selection of their approach and the tools chosen for data collection (Vogt et al., 2012). Broadly, three distinct pathways connect research quantitative, qualitative, and mixed methods. Creswell (2014) views research designs as different varieties of inquiry within these approaches, which Denzin and Lincoln (2011, cited in Creswell, 2014, p. 12) termed "strategies of inquiry." Moreover, Creswell (2014) argues that the advent of modern technology offers a multitude of opportunities for innovative research design and advanced procedures in the social sciences.

Research Methodologies and Methods

Rajasekar et al. (2013, p. 5) characterize research methodology as "…the procedures by which researchers go about their work of describing, explaining and predicting phenomena".

A methodology endows a piece of research with its philosophy, the values and assumptions that drive the rationale for the investigation, as well as the standards employed for interpreting information and drawing conclusions (Bailey, 1994). It supplies the study's focus and approach and is the process by which researchers identify the methods to use in order to address their particular question (Crotty, 1998). The approach will offer an overview that weighs ethics, potential risks and problems, and the constraints of any method (Dawson, 2002) and can be seen as the discipline of applying (and grasping) suitable methods and processes for particular research endeavors (Kaplan, 1973; cited in Cohen et al., 2007, p. 47; Kinash, n.d.). Kothari (2004; endorsed by Rajasekar et al., 2013) asserts that it is the science of how a research project can be carried out and outlines the stages researchers pass through as they decide on the most effective means to address their research problem, and the logic underpinning their reasoning.

Research methods are the instruments and/or utilities researchers employ while conducting any form of inquiry or investigation (Walliman, 2011; Bailey, 1994). A vast array of tools can be harnessed to carry out different inquiries (Walliman, 2011; Cohen et al., 2007), and it falls to the researcher to choose the most suitable instrument for their particular study (Wilkinson & Birmingham, 2002). Each selected tool should complement the others to ensure the information produced is relevant to the study's subject and unfolds in a logical sequence (Jonker & Pennink, 2010).

Quantitative Research

Quantitative research is viewed as a deductive method of inquiry (Rovai et al., 2014). Quantitative researchers treat the world as external to the observer and assert that there exists "… an objective reality independent of any observations" (Rovai et al., 2014, p. 4). They argue that by breaking this reality into smaller, more manageable components for a study, this reality becomes understandable. It is within these subdivisions that measurements can be taken and hypotheses tested and replicated concerning the relationships among variables. This approach is characterized by the researcher proposing a theory that is embodied in a concrete hypothesis,

which is then subjected to testing; conclusions about the hypothesis follow after a sequence of observations and data analysis (Rovai et al., 2014).
A hallmark of this research approach is that the collection and examination of information are carried out using "… mathematically based methods…" (Aliaga & Gunderson, 2000; cited in Muijs, 2011, p. 1) which concentrate on "…polls, or surveys… [emphasizing] the gathering of numerical data and generalising it across groups of people" (Babbie, 2010; cited in University of Southern California, n.d., para 1; endorsed by Bryman, 1988; cited in Blaikie, 2010, p. 215; Harwell, n.d.).

Qualitative Research

Qualitative inquiry centers on uncovering and interpreting "… the meaning individuals or groups ascribe to a social or human problem" (Creswell, 2014, p. 4; echoed by Holliday, 2007). Denzin and Lincoln (2005) describe this stance as gaining insight into issues by examining them within their own particular contexts and the significance that people attach to them. It concentrates on extracting meaning from the experiences and views of participants, pinpointing "… meaning, purpose or reality" (paraphrase of Hiatt, 1986; in Harwell, n.d., p. 148; Cohen et al., 2011; Merriam, 2009). Qualitative methods are typically characterized as inductive, anchored in the view that reality is socially constructed, that variables resist precise measurement, are intricate and interwoven, that subject matter takes precedence, and that data mainly reflect an insider's perspective (Rovai et al., 2014). Rovai et al. (2014, p. 4) argue that this research stance "values individuality, culture, and social justice," yielding a breadth of information rich in content and context, though inherently subjective, yet timely (Tracy, 2013). That said, employing qualitative approaches does not preclude conducting a critical, disciplined, and balanced inquiry into any educational issue (Thomas, 2009; Silverman, 2009; Bell, 2010).

Mixed Methods Research

Mixed-methods research has evolved from simply combining qualitative and quantitative data to employing sophisticated approaches that leverage the strengths of both paradigms. Mixed-methods research offers a comprehensive understanding of complex social phenomena by combining the depth of qualitative insights with the breadth of quantitative data.
The concept of mixed methods research has been described in numerous ways, which can make it a challenging notion to grasp (Niglas, 2009). It has been characterized as "empirical research that involves the collection and analysis of both qualitative and quantitative data" (Allan, n.d., Slide 4), while Burke Johnson et al. (2007, p. 123) define it as: "… the type of research in which a researcher or team of researchers combine elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration."
Greene (2007, p. xiii; endorsed by Johnson & Onwuegbuzie, 2004) contends that this approach affords researchers opportunities to "… compensate for inherent method weaknesses, capitalize on inherent method strengths, and offset unavoidable method biases." Creswell and Plano Clark (2011) note that this approach allows for a deeper understanding to emerge than would be possible if only a single method were employed for particular studies. Moreover, they present a set of core characteristics that illuminate the essential elements of mixed methods research.
They claim that researchers gather and analyze both qualitative and quantitative data in a sequential and/or concurrent and rigorous manner that integrates the two data forms. The manner in which this data is integrated will depend on the nature of the inquiry and the researcher's philosophical stance.
Greene et al. (1989) set forth five separate rationales for blending quantitative and qualitative research data. Triangulation opens doors to convergence and corroboration of findings drawn from different methodological approaches. Complementarity "aims to elaborate, enhance, illustrate, or clarify the results obtained from one method with those from another" (Greene et al., 1989, p. 259). Development involves researchers using outcomes from one method to inform

another, ensuring all facets of the inquiry are covered. Initiation highlights the uncovering of contradictions or inconsistencies within the data sets, which can lead to reframing the questions or introducing new questions.
In Nigeria, where cultural diversity and socio-economic challenges demand nuanced research approaches, mixed methods can provide actionable insights.

Advanced Mixed-Methods Approaches
Mixed-methods research has transformed from a simple combination of numbers and narratives to a sophisticated approach that reveals nuanced, context-rich insights. By integrating qualitative and quantitative methods, researchers can tackle complex social issues with unprecedented depth and breadth. In Nigeria's diverse and dynamic context, advanced mixed-methods approaches can be game-changers for understanding and addressing pressing challenges. Let us look at the cutting-edge techniques that are redefining social research.
1. Embedded Design: It involves integrating qualitative and quantitative components at multiple stages (e.g., data collection, analysis, interpretation). For example, use qualitative interviews to inform quantitative survey questions, then use survey results to identify participants for follow-up interviews.
2. Innovative Data Collection: Combine traditional methods (survey, interviews, observation) with digital data (social media, sensor data, online platforms). Participatory methods (photovoice, community mapping) can also be used to engage local stakeholders.
3. Advanced Analytics: Meta-inference can be adopted to draw conclusions that integrate qualitative and quantitative findings. Use joint displays to visualize qualitative and quantitative data together (e.g., tables, matrices). Analyze nested data with Multilevel modelling (e.g. individuals within communities).
4. Transformative Approaches: Participatory action research, engage stakeholders in the research process to drive change. Critical realism: Use mixed methods to explore underlying mehanisms and contexts.

Challenges and Benefits
It is considered in our view, that several clear hurdles confront any researcher who opts to employ mixed methods in their study. The initial hurdle concerns skills: it is essential for researchers to recognise their own capabilities and to assess whether they can meet the demands inherent in a mixed methods approach (Creswell & Plano Clark, 2011). The second, and arguably the most urgent hurdle, is selecting which mixed method research design best suits the specific study. This choice hinges on where the project sits along the spectrum of research approaches—will the method be truly mixed, granting equal prominence to both quantitative and qualitative data, or will one strand dominate over the other (Burke Johnson et al., 2007)? To bring coherence to the array of mixed method research designs, Creswell and Plano Clark (2007) have distilled them into four principal typologies—the triangulation design, the embedded design, the explanatory design, and the exploratory design.

The triangulation approach aims to collect complementary yet distinctly varied data on the same topic, which can then be merged for analysis and interpretation. Allan (n.d., Slide 24) notes that the strengths of this model lie in its sensibility.

- **Benefits:** it feels intuitive to gather information from multiple sources using diverse methods that complement one another to form an efficient design.
- **Challenges**: its drawback rests in the substantial effort and expertise needed to integrate everything, and the possibility that discrepancies across data sets may prompt additional research or investigation.

The embedded design employs a single enquiry method in a secondary, supportive role, allowing researchers and readers to interpret the study in its entirety.

- **Benefits**: it demands fewer resources and yields less data, making it a more approachable task for researchers. This approach is utilized in quantitative experimental designs where only a small amount of qualitative data is required (Allan, n.d., Slide 25).
- **Challenges:** it can be hard to synthesize results, and this approach proves particularly tricky within qualitative research, with few exemplars available for researchers to model their study after.

Explanatory designs are framed as a two-stage approach in which quantitative data serves as the foundation for constructing and articulating qualitative data. The quantitative data guides the qualitative data selection process, which, in my view, is a notable strength because it allows researchers to precisely target data that matters for the specific research project. Allan (n.d., Slide 26) notes that this design is frequently employed in educational research and is described as a participant selection model.

- **Benefits:** it is straightforward to implement and helps maintain the research focus, since one data set builds upon the other.
- **The obvious challenge** lies in selecting participants to ensure that relevant information is accessible, along with the time-consuming nature of this methodological path.

The exploratory design stands in opposition to the explanatory model, with qualitative data shaping the process of gathering quantitative information.

- **Advantages:** the distinct stages are straightforward to implement, and qualitative data gains acceptance among quantitative researchers.
- **Obstacles**: its time-intensive nature and the possibility that participants may be unwilling or unable to engage in both phases, often because the second phase was not sufficiently planned in advance (Allan, n.d., Slide 27).

Additional hurdles for those employing mixed methods research include time and resource demands, and the challenge of persuading others of its merit (Creswell & Plano Clark, 2011).
Moreover, Creswell and Plano Clark (2011) stressed that mixed methods studies can demand substantial time, effort and resources from researchers, and it is crucial they recognize this, especially if they are operating solo. They also point out that certain sectors of academia resist mixed methods on philosophical grounds, arguing that it represents a blend of divergent dispositions that may make them wary of the legitimacy of mixed methods research. It seems evident to me that this approach is remarkably pragmatic, as the researcher is granted the chance to tackle an issue using both numerical data and narrative, and to conduct the study with the methods they feel most at ease with.

Summary

It seems to the authors that mixed method research yields affirmative advantages for investigative inquiries, provided that this approach suits a given issue. When this holds true, it opens opportunities for researchers to craft "… an overall or negotiated account of the findings that brings together both components of the conversational debate" (Bryman, 2007, p. 21; cited in Rovai et al., 2014, p. 5). It is essential that, irrespective of the specific typology of mixed method research chosen, there exists a deliberate and meticulously executed sequence to the study, which is carefully documented and assessed (Rovai et al., 2014). The authors aligns with the views of Deacon et al. They argue that, despite potential short-term disruption, the proposed reappraisal and reanalysis can yield lasting analytical benefits: it can alert the researcher to the likelihood that issues are more multifaceted than first assumed and provide a chance to build more persuasive and sturdy social explanations of the processes under study.
Mixed methods appear to forge a credible bridge between quantitative and qualitative inquiries, and indeed, for those who employ them. Ultimately, as Creswell and Plano Clark (2014, p. 12) observe, "we are social, behavioral, and human sciences researchers first, and the splits between quantitative and qualitative research only served to narrow the approaches and the

opportunities for collaboration." It would be ungenerous to deny the gains for researchers and society at large in achieving a deeper grasp of today's educational challenges, regardless of whether insights arise from qualitative, quantitative, or mixed methods research.

Practical Recommendations:

1. Develop a clear integration strategy: Define how and why you are mixing methods (e.g. triangulation, complementarity, development).
2. Build expertise: Train in both qualitative and quantitative methods; collaborate with experts.
3. Pilot test: Try out mixed-methods approaches in smaller studies.
4. Publish mixed-methods research: Share examples to contribute to methodological advancements.
5. Context-specific: Consider local cultural nuances, language, and access to resources when designing mixed-methods studies, engage local stakeholders to ensure relevance and feasibility.

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