

Mixed Method Design in Disability and Rehabilitation Researches

Pankaj Kumar

Research Scholar, Faculty of Education, Banaras Hindu University, Varanasi, India

Abstract

Disability involves the interaction of a person with a wide range of complex factors in the environment. Hence, the nature of researches in disability, rehabilitation or special needs education presents significant challenges to knowledge development and evidence identification. Mixed methods have particular value when a researcher is trying to solve a problem that is present in a complex educational or social context. The combination of qualitative and quantitative synthesis approaches holds the possibility to help confirm or disprove a theory to a greater degree than either one method can do on its own. It also leads to mechanism to uncover and profoundly explain discrepancies between the findings of the included studies. Therefore, disability and rehabilitation researchers across the world recommended that mixed method designs to be given greater consideration. Most importantly it involves the integration of the conclusions from the qualitative and quantitative strands in order to provide a fuller understanding of the phenomenon under study.

Keywords

Research in Special Education, Disability and Rehabilitation, Mixed Method Designs

I. Introduction

Disability and rehabilitation related research involves a commitment to a participatory approach that includes people with disabilities as decision makers throughout the process. This approach requires research designs and methodologies that appropriately and effectively allow for such participation. Although critical to ensuring that the research is relevant to the lives and values of people with disabilities, these designs and methodologies may be considered less rigorous under most current evidence grading methods (Johnston, Sherer & Whyte, 2006). Further, Duckett & Pratt (2001) worked on the researched opinions of persons with disabilities (visually impaired) on researches in the field of disability and rehabilitation. They accomplished that the research should simultaneously work to secure more tangible and immediate benefits for disabled people. They also concluded that researchers should consider the ideological position they adopt, as this will affect how their research findings are reported. They suggested that future research should adhere to the following principles:

- people need to be placed at the centre of both developing and conducting research;
- research needs to be practical and relevant;
- the over-arching aim of research should be to further the empowerment and inclusion of visually impaired people.

II. The evidence collection in Disability and Rehabilitation Researches

The nature of researches in disability and rehabilitation and special needs education presents significant challenges to knowledge development and evidence identification. Conceptually, disability involves the interaction of a person with a wide range of complex factors in the environment (World Health Organization, 2001). In both research and practice, some disability and rehabilitation interventions target health or biological functions. Other interventions target skills, feelings, or behaviors and aspects of the social or physical environment that limit people with disabilities. Although disability is common, affecting the majority of people at some point, it is also extremely diverse. Interventions typically must be highly individualized, or tailored to particular configurations of impairment or to personal and contextual factors.

This diversity and need for customization often result in small samples for studies at any one local site. Some improvements in research methodology are relatively affordable whereas others are expensive (e.g., large randomized controlled trials). Lower-level investigations reporting promising results need to be followed by more definitive, higher-level trials.

III. Mixed Method Research Studies

A mixed method design is one in which both quantitative and qualitative methods are used to answer research questions in a single study. Mixed methods have particular value when a researcher is trying to solve a problem that is present in a complex educational or social context (Teddlie & Tashakkori, 2002). Morse (2005) describes that by combining and increasing the number of research strategies used within a particular research, we are able to broaden the dimensions and hence the scope of our project. By using more than one method within a research study, we are able to obtain a more complete picture of human behavior and experience. Mixed methods have the potential to contribute to addressing multiple purposes and thus to meeting the needs of multiple audiences for the results. It is inclusive, pluralistic, complementary, and eclectic. Purposes of Mixed Methods Mixed-methods research has several purposes and can address many types of research questions. The emphasis should always be on figuring out the most appropriate methods to address a specific purpose and answer particular questions.

mixed-methods research is a combination of elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative view points, data collection, analysis, inference techniques) for the purposes of breadth and depth of understanding and corroboration. Mixed methods can illustrate and explain quantitative findings, describe both process and product, check reasons for unexpected effects, develop the basis for instruments, show the extent of generality, validate and triangulate other data, and fulfill social or political purposes. Teddlie and Tashakkori (2002) described the truly mixed approach methodology incorporate multiple approaches in all stages of the study and include a transformation of the data and their analyses through another approach.

Mixed model designs are part of a larger research program and

are designed as complementary to provide information related to several research questions, each answered with a different methodological approach. Qualitative and quantitative data collection can occur in parallel form or sequential form (Mertens & McLaughlin, 2004). The intent may be to seek a common understanding through triangulating data from multiple methods or to use multiple lenses simultaneously to achieve alternative perspectives that are not reduced to a single understanding. To determine the type of mixed methods design researcher should consider following questions:

- What priority or weight does the researcher give to the quantitative and qualitative data collection?
- What is the sequence of collecting the quantitative and qualitative data?
- How does the researcher actually analyze the data?
- Where in the study does the researcher “mix” the data?

Six mixed methods designs are suggested with the above questions. First four as the basic designs in use today and the last two as complex designs that are becoming increasingly popular (Creswell & Plano Clark, 2011). The designs are:

- the convergent parallel design
- the explanatory sequential design
- the exploratory sequential design
- the embedded design
- the transformative design
- the multiphase design

IV. Mixed Method Design in context to Disability and Rehabilitation Researches

- a) **Convergent Design:** The convergent mixed methods design is to simultaneously collect both quantitative and qualitative data, merge the data, and use the results to understand a research problem. Quantitative and qualitative data are collected concurrently, analyzed separately, and then merged.

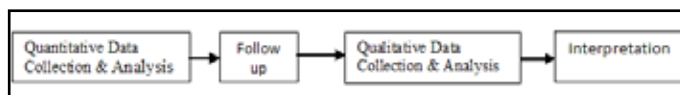
Example: A convergent mixed methods design study could be carried out to find answer of following research question:
To what extent do self-esteem survey ratings agree with the views of secondary school students with learning disabilities (LD) about their self-esteem?



- b) **Explanatory Sequential Design:** Instead of collecting data at the same time and merging the results, a mixed methods researcher might collect quantitative and qualitative information sequentially in two phases, with one form of data collection following and informing the other. An explanatory sequential mixed method consists of first collecting quantitative data and then collecting qualitative data to help explain or elaborate on the quantitative results.

Example: An explanatory sequential mixed method design study could be carried out to find answer of following research question:

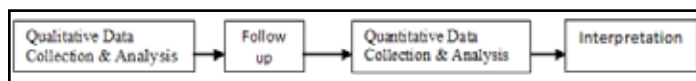
In what ways do the views of prospective teacher educators in special education about their competency in using assistive technologies and explain what they reported about their competency in using assistive technologies on surveys?



- c) **Exploratory Design:** Rather than first analyzing or collecting quantitative data as is done in the explanatory design, the mixed methods researcher may begins with qualitative data and then collects quantitative information under in an exploratory sequential design (Cresswell, 2011). Qualitative data are collected and analyzed first, results are used to inform follow-up quantitative data collection.

Example: An exploratory sequential mixed method design study could be carried out to find answer of following research question:

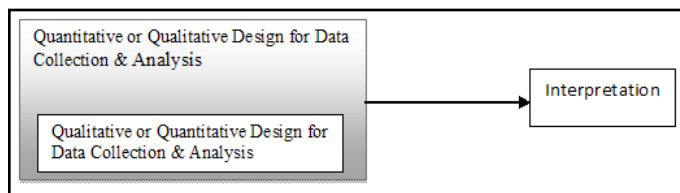
Are the views of secondary school students with visual impairment about their self-esteem generalizable to many secondary school students with visual impairment?



- d) **Embedded Design:** The purpose of the embedded design is to collect quantitative and qualitative data simultaneously or sequentially, but to have one form of data play a supportive role to the other form of data. Qualitative and quantitative data can be collected sequentially, concurrently, or both. One form of data is embedded within another.

Example: An embedded mixed method design study could be carried out to find answer of following research question:

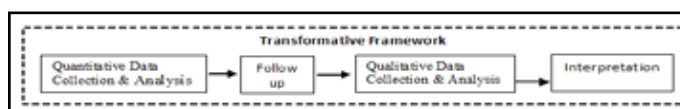
What are the characteristics of elementary school students with hearing impairment who scored very high or very low on achievement test surveys?



- e) **Transformative Design:** The researcher frames the study within a transformative theoretical perspective. Qualitative and quantitative data can be collected concurrently, sequentially, or both. At a more complex level we have the transformative mixed methods design than the four previous designs. The intent of the transformative mixed methods design is to use one of the four designs (convergent, explanatory, exploratory, or embedded). The design focuses over how the qualitative findings provide an enhanced understanding of the quantitative results in order to explore inequalities.

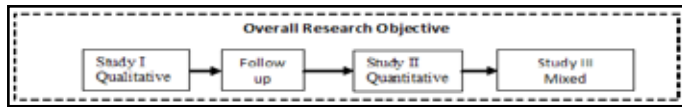
Example: A transformative mixed method design study could be carried out to find answer of following research question:

How do the views of upper primary school students with learning disabilities help researchers to develop a remedial program?



- f) **Multiphase Design:** Both sequential and concurrent strands are included in a study over a period of time (e.g., in a large-scale evaluation). Include combinations of the previous questions

at different phases in the project so that an overall research goal is addressed. Multiphase mixed methods designs occur when researchers or a team of researchers examine a problem or topic through a series of phases or separate studies. The groups of phases or studies are considered to be a mixed methods design and the intent of the design is to address a set of incremental research questions that all advance one programmatic research objective (Creswell & Plano Clark, 2011)



V. Advantages and Challenges in Mixed Method Researches

There are several strengths of mixed method researches concerning the mixing of qualitative and quantitative primary level findings and of qualitative and quantitative synthesis techniques. The main advantage of the mixing of findings from qualitative and quantitative is that more complete, concrete, and nuanced answers can be given to complex research questions compared to unmixed syntheses. The combination of qualitative and quantitative synthesis approaches holds the possibility to help confirm or refute a theory to a greater degree than either one method can do on its own. It also used to uncover and profoundly explain discrepancies between the findings of the included studies. Further, when researchers collect multiple data using different strategies, approaches, and methods in such a way that the resulting mixture or combination is likely to result in complementary strengths and counterbalancing weaknesses, a mixed methods study has the potential to produce a more robust understanding of a complex phenomenon, which is unavailable in a qualitative or a quantitative study undertaken in isolation (Johnson and Onwuegbuzie 2004; Robins et al. 2008)

However, there remain several challenges concerning the implementation of a mixed method research. First of all, although most researchers agree that the quality-quantity dichotomy and the 'incommensurability'-position is restricted, sterile, or even misleading (Morgan 2007). Various paradigmatic assumptions are still being debated when conceptualizing, implementing, and interpreting mixed methods studies (Greene 2008; Mertens 2010). Combining quantitative and qualitative studies and methods with traditionally different viewpoints concerning ontology (single vs. multiple reality), epistemology (objectivism vs. subjectivism), and axiology (value bound vs. value free) can turn out quite challenging (Bryman 2007; Johnson et al. 2007).

VI. Conclusion

The review by division of research of Council for Exceptional Children (CEC) suggested there are a limited number of studies under mixed method designs (Houchins, 2015). While correlational, group experimental/quasi-experimental, qualitative, and single-case design research have justifiably been given substantial attention. One obvious reason is the lack of guidance from the field on mixed method researches (Houchins, 2015). Numerous special education researchers across the world recommended that mixed method researches be given greater consideration. Also, the structure of university coursework is often compartmentalized as being quantitative or qualitative without many explicit efforts to promote mixed method.

Mixed method research not only imply the integration of divergent qualitative and divergent quantitative studies within separate qualitative and quantitative strands of a synthesis, they most importantly involve the integration of the conclusions from the qualitative and quantitative strands (for example in the form of comparing, contrasting, building on, or embedding one type of conclusion with the other) in order to provide a fuller understanding of the phenomenon under study (Creswell and Tashakkori, 2007). Whether it makes sense to perform a mixed method research on a certain topic depends on the research domain and the topic at hand, the objectives of the synthesis, and the posed research question. Ultimately, the research question and the available evidence in the literature remain the key drivers for choosing a mixed methods approach or not. We have to annotate that a synthesis only gains credibility when the data in the included primary articles are comparable enough to be combined to answer a single research question. It is possible that a researcher intends to perform a mixed method on a certain topic, but that it turns out that a mono-method approach is the only appropriate or feasible way.

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