

## The Mixed Methods Research Approach: An Overview

Josephine Oranga<sup>1</sup>, Audrey Matere<sup>1</sup>, Evelyn Njura<sup>1</sup>,




<sup>1</sup>School of Education, Kisii University, Kenya

## Изследователски подход със смесени методи: общ преглед

Жозефина Оранда<sup>1</sup>, Аудрей Матере<sup>1</sup>, Евелин Нюра<sup>1</sup>,

<sup>1</sup>Педагогическо училище, Кисии университет, Кения




### Author Note

Josephine Oranga  <https://orcid.org/0000-0002-1406-5839>; Audrey Matere   
<https://orcid.org/0000-0002-6882-5135>; Evelyn Njurai  <https://orcid.org/0000-0001-5261-6577>

The authors have no known conflict of interest to disclose.

Correspondence concerning this article should be addressed to Josephine Oranga, School of Education, Kisii University, Kenya, e-mail: [josephineoranga@kisiiversity.ac.ke](mailto:josephineoranga@kisiiversity.ac.ke)

### Бележки за авторите

Жозефине Оранга  <https://orcid.org/0000-0002-1406-5839>; Аудрей Матере   
<https://orcid.org/0000-0002-6882-5135>; Евелин Нюраи  <https://orcid.org/0000-0001-5261-6577>

Авторите нямат известен конфликт на интереси за разкриване.

Кореспонденцията относно тази статия трябва да бъде адресирана до Жозефине Оранга, Педагогическо училище, Кисии университет, Кения, e-mail: [josephineoranga@kisiiversity.ac.ke](mailto:josephineoranga@kisiiversity.ac.ke)

### Abstract

Mixed methods research involves using both quantitative and qualitative methodologies in a single study or inquiry to gain a more comprehensive understanding of the issue under investigation. The methodology draws from the potential strengths of both the quantitative and qualitative methodologies, allowing researchers to explore diverse views and unearth relationships that abound in the intricate layers of multifaceted research questions. This paper, thus, provides the rationale and philosophical underpinnings of the mixed methods approach while also discussing the paradigms (positivistic/interpretivist/constructivist) from which the mixed methods approach is drawn. Consequently, the main advantages of the mixed methods approach are discussed, these include that the approach enables the research questions to be answered in breadth and depth, helps test validity by converging information from different research methods, transcends the limitations of exclusive quantitative and qualitative research methodologies and responds to questions that either qualitative or quantitative methodologies cannot answer alone. Furthermore, mixed methods research fosters and enriches researchers' experiences and enables the exploration of diverse perspectives while also revealing the relationships between different layers of phenomena. This article further highlights the limitations of the mixed methods approach, which appear measly as compared to its pros. Thus, the limitations are: the need for more time and finances to undertake and accomplish the research, increased research workload, and the need for expert involvement at some or all phases of the research. Undoubtedly, the advantages of the mixed-methods approach far outweigh its limitations, hence, it is concluded that the mixed-methods design provides the best chance of responding to research questions exhaustively by its ability to combine two sets of approaches while, at the same time, making up for the weaknesses of each method.

*Keywords:* mixed methods research, advantages, limitations, paradigms

### Резюме

Изследването със смесени методи включва използване както на количествени, така и на качествени методологии в едно проучване, за да се получи по-цялостно разбиране на въпроса, който се изследва. Методологията черпи от потенциала както на количествените, така и на качествените методологии, позволявайки на изследователите да изследват различни гледни точки и да разкрият връзки, които изобилстват в сложните слоеве от многостранни изследователски въпроси. В статията се разкрива обосновката и философските основи на подхода на смесените методи, като

същевременно обсъжда парадигмите (позитивистки/интерпретативистки/конструктивистки), от които се извлича подходът на смесените методи. Обсъждат се основните предимства на подхода на смесените методи, позволявайки да се отговори на изследователските въпроси в широчина и дълбочина, и помагайки да се тества валидността чрез сближаване на информация от различни изследователски методи. По този начин се превъзможват ограниченията на количествени и качествени изследователски методологии и се отговаря на въпроси, на които нито качествените, нито количествените методолог могат да отговорят сами. Освен това изследването със смесени методи насърчава и обогатява опита на изследователите и дава възможност за изследване на различни гледни точки, като същевременно разкрива връзките между различни слоеве от явления. Допълнително тази статия подчертава ограниченията на подхода на смесените методи, които са нищожно малко в сравнение с техните плюсове. Ограниченията, които се имат предвид са: необходимост от повече време и финанси за изпълняване на изследването, увеличено натоварване на изследването и необходимост от участие на експерти в някои или всички фази на изследването. Несъмнено предимствата на подхода със смесени методи далеч надвишават неговите ограничения, поради което се заключава, че дизайнът на смесените методи предоставя най-добрия шанс да отговори изчерпателно на изследователските въпроси чрез способността му да комбинира два набора от подходи, като в същото време компенсира слабостите на всеки метод

*Ключови думи:* смесени методи на изследване, предимства, ограничения, парадигми

**ARTICLE INFO:****Original Article****Received: 19, 01.2025****Revised: 15, 02.2025****Accepted: 08, 03.2025**

## **The Mixed Methods Research Approach: An Overview**

### **Introduction**

Mixed methods research has emerged as a credible alternative to unitary research designs and is increasingly becoming a preferred choice of research (Shorten & Smith, 2017; Pigot-Irvine, 2012). Accordingly, it is emerging to be more adaptive and flexible and responds better to the complex needs of contemporary research as compared to the traditional individual qualitative or quantitative approaches (Dawadi, Shrestha, & Giri, 2021). Furthermore, Wasti (2022) explicates that due to the utilization of both qualitative and quantitative data in one single study, the mixed methods approach provides stronger inferences than using either approach on their own. As a result, researchers can better respond to the multi-faceted nature of phenomena under investigation, through the integration of both quantitative and qualitative methodologies. Additionally, the approach provides a broader spectrum of understanding complex and diverse research problems in varied contexts than could be done through either qualitative or quantitative approaches alone. Moreover, its philosophical assumptions provide directions for data collection and analysis from multiple sources in a single study (Creswell & Plano Clark, 2011; Wasti, 2022). So, what exactly is mixed methods research?

The mixed methods approach is a research methodology in its own right and utilizes both qualitative and quantitative techniques in a single study to gain a more comprehensive understanding of the phenomenon under study by drawing on the strengths of both methodologies (Halcomb & Hickman, 2015). The Mixed-methods approach brings together questions from qualitative and quantitative philosophies in what is being called the third research paradigm (Doyle et al., 2009), the third path, the third methodology, and also pragmatism. Similarly, Creswell (2012) defines mixed methods research as an approach that integrates both quantitative and qualitative methods in the same study to enhance the depth and breadth, ultimately enabling corroboration and better understanding of the problem under investigation. Creswell (2015) further indicates that mixed-methods research incorporates multiple methods in an attempt to meet research objectives more exhaustively and appropriately. Consequently, it involves sampling, data collection, data analysis, interpretation, and reporting of both quantitative and qualitative data. As a result, mixed methods research can be useful in intricate situations or when responding to multidisciplinary research questions (David et al. 2018).

Notably, qualitative methods mainly gather views and perspectives, in text form, from study participants and ultimately analyze them by determining common and cross-cutting themes. On the other hand, quantitative research methods involve collecting numeric or measurable data that may be subjected to various statistical analyses in line with the study objectives. Quantitative and qualitative research activities can be integrated during sampling, data collection, data analysis, interpretation, or the reporting and presentation of results (Halcomb & Hickman, 2015; Maxwell, 2016). Furthermore, Creswell and Garrett (2008) contend further that a design is considered mixed if it employs quantitative and qualitative methodologies at any stage or level of research, including at the level of developing research questions, sampling, data collection, data analysis or at the level of interpretation of findings and conclusion.

Shorten and Smith (2017) indicate that qualitative and quantitative data integration provides a more panoramic view of the research landscape that allows for the examination of phenomena from varied viewpoints and through different research lenses. Additionally, Turin, Raihan, and Chowdhury (2021) elucidate that the mixed methods approach enables study findings to be comprehensively and meaningfully explained from multiple perspectives (Maxwell, 2016). Ultimately, the mixed methods approach transcends the limitations of exclusive quantitative or qualitative research methodologies and enables researchers to explore diverse viewpoints and unearth relationships between different layers of phenomena (Shorten & Smith, 2017).

### **Methodology**

To undertake this review, a detailed and broad literature search that involved screening abstracts of various studies from different databases, including PubMed, Cochrane Library, Scopus, and EBSCO, was performed. Moreover, the reference lists of included studies and reviews were further screened to identify additional relevant studies. Ultimately, this systematic review presents an updated and wholesome synthesis of the mixed methods derivative paradigms, the advantages and limitations of the mixed methods research approach as discussed in the sub-sections below:

#### **Mixed Methods Derivative Paradigms**

Notably, the quantitative methodology is a derivative of the positivistic paradigm, while the qualitative methodology draws largely from the interpretivist and constructivist paradigms (Turin, Raihan Chowdhury, 2024; National Collaborating Centre for Methods & Tools, 2017). This notwithstanding, 'Paradigm' generally refers to a researcher's

philosophical orientation that influences the decisions they make in the entire research process. Similarly, Creswell (2015) indicates that a paradigm is a basic set of assumptions that guides the research process. In the same vein, Shorten & Smith (2017) contend that a paradigm is a set of beliefs, values, ideas, or habits that inform the way of thinking or viewing the world. Hence, fundamentally, a research paradigm is a model, an approach, or a framework from which research is undertaken and enables the researcher to form a research philosophy that ultimately informs the research methodology. Thus, choosing the right paradigm is crucial as it provides a logical structure for conducting research, which, if followed correctly, improves the quality of the work. Consequently, McMillan (2015) contends that a paradigm is made up of four elements, namely, ontology (reality), epistemology (knowledge), methodology, and axiology (ethical considerations in research). The four paradigms of research are positivism, interpretivism, constructivism, and critical theory research paradigms. This systematic review is, however, more concerned with the positivist, interpretivist, and constructivist paradigms from which the quantitative and qualitative methodologies are largely drawn.

### ***The positivistic paradigm***

The positivistic paradigm, from which the quantitative approach largely draws, holds the view that knowledge is gained through a collection of verifiable, facts using measurable means. Accordingly, positivists believe that normative statements or narratives cannot be ascertained and confirmed and therefore have no basis in science or truth (Bryman, 2012). The paradigm assumes a singular objective reality that is observable and measurable empirically. Individuals can have knowledge of this reality and accurately explain and describe it. Additionally, positivists rely on observations through their senses to gain knowledge of their surroundings (National Collaborating Centre for Methods & Tools, 2017). Hence, researchers under the positivistic approach ascertain the truth and compare their claims in a singular objective reality. This implies that researchers are bound and limited to data collection followed by objective interpretation. Hence, according to positivists, reality is independent, and human perceptions have no part in it. Furthermore, under positivism, knowledge emanates from experiences and direct observations done through various quantifiable means that encompass hypotheses testing and determination of dose-response or cause-and-effect relationships (Turin, Raihan Chowdhury, 2024). Quantitative research methods under the positivistic paradigm include descriptive, experimental, and correlational designs. Notably, the positivistic paradigm is mostly utilized in physical sciences, natural sciences, or whenever data is collected from large sample sizes.

It is worth noting that post-positivism, which is a milder form of positivism (helps transcend positivism limitations) later developed in the 1960s and allowed interaction between the participants and the researcher (Taylor & Medina, 2011) as opposed to positivism that had no provision for such an interaction. Consequently, while positivism centers on the objectivity of the research process, post-positivism does allow for some subjectivity of the process as well. Essentially, post-positivism allows for the utilization and incorporation of both qualitative methodologies (such as participant observation and interviews) and quantitative methodologies (such as surveys and correlational studies), this being the mixed methods approach.

### **Interpretivist and constructivist paradigms**

In contrast to the positivistic approach are the interpretivist and constructivist approaches. Both interpretivists and constructivists believe in multiple realities and are critical of the utilization of the scientific (positivist) model in establishing reality (Bryman, 2012; Taylor & Medina, 2011). Ultimately, the interpretivism and constructivism paradigms are focused on subjective (qualitative) methods as opposed to objective (quantitative) methods as sources of information (Turin, Raihan, Chowdhury, 2021).

Interpretivists particularly believe that reality is understood and experienced differently by different people in society. Consequently, while there may be only “one” reality, everyone understands and interprets it according to their perception (Morgan, 2014; Maxwell, 2016). This ultimately generates the belief held by interpretivist theorists that all research is shared and influenced by the researchers’ theories and worldviews. Consequently, as already indicated, interpretivists employ qualitative techniques and methods to undertake research. This encompasses focus group discussions, interviews, observations, or the collection of data from documents on a phenomenon (for instance, reports, newspaper articles, books, or websites).

Constructivism, on the other hand, asserts that reality is a construct of the mind and thus, like interpretivism, it is subjective. Chowdhury (2021) similarly explicates that the constructivist paradigm holds the view that reality is socially constructed and subjective. This, thus, implies that reality is constructed by individuals based on their social interactions and experiences as opposed to the view that there is only one single methodology to generate it (Creswell & Plano Clark, 2011; Bryman, 2012). Ultimately, as with the interpretivism paradigm, studies that align themselves with the constructivism paradigm normally focus on



the respondent's experiences as well as their own, and identify with the qualitative methodology due to its subjectivity and focus on experience.

Hence, interpretivism and constructivism share the same ontology: the existence of multiple realities that are constructed socially by interactions and experiences. Their point of departure, as discussed above, is in their epistemological belief, with constructivism focusing on how individuals construct their realities through interactions with others and interpretivism on the other hand, focusing on how individuals experience and interpret their reality (Turin, Raihan Chowdhury, 2024). Hence, the positivistic approach stands in sharp contrast with the interpretivist and constructivist approaches.

Lastly, the critical theory research paradigm, even though does not take center stage in this discussion, asserts that social science cannot achieve 100% objectivity. The paradigm is concerned with undertaking social change through scientific research. Consequently, the paradigm questions procedures and knowledge, and acknowledges how power is used or misused in systems or phenomena under investigation.

#### **Essence and Advantages of Mixed Methods Research: What, Why, and When?**

Tariq and Woodman (2013) enumerate five reasons for the adoption of the mixed methods approach, accordingly, the reasons are: triangulation, complementarity, development, expansion, and initiation. Consequently, Almalki (2016) lists rigor and flexibility offered by the mixed methods process as the main reasons for opting for the mixed methods research approach.

On the other hand, David et al. (2018) indicate that the mixed methods approach is suitable in instances where the research questions cannot be answered exhaustively by either qualitative or quantitative methods alone. As a result, the mixed-methods approach offers logical ground and an in-depth understanding of case studies by integrating the philosophical frameworks of both quantitative and qualitative methodologies (Fetters, 2016). Ultimately, the utilization of mixed methods in research enables the research questions to be answered in breadth and depth (Enosh, Tzafrir & Stolovy, 2014) and allows for the generalization of study findings and implications to the population. This is because, the quantitative approach enables a researcher to gather data from a large sample, increasing the possibility of generalizing the findings to a larger population while on the other hand qualitative approach enables a deeper exploration and understanding of the phenomena under investigation. Hence, whereas qualitative research brings depth to the study, quantitative data provides breadth to it. Furthermore, Shorten and Smith (2017) indicate that purposeful integration of data allows



researchers to get a better view of their research landscape, viewing the issues under investigation from varied viewpoints and through various research lenses. Petarra (2024) also maintains that mixed methods research can greatly increase the reliability and depth of research by incorporating the strengths of both quantitative and qualitative approaches. Similarly, Mason (2006), contends that the mixed methods approach offers massive potential and possibilities for generating novel ways and insights for comprehending the contexts and complexities of social experiences, ultimately enhancing researchers' capacities for generalization and social explanation.

Consequently, triangulation of both methodologies enables a more comprehensive understanding of the issue under investigation and helps test validity by converging information from different sources (Carter et al., 2014). Similarly, Ventakesh et al., (2013) indicate that a better and clearer understanding can be gained by triangulating one set of results with the other, ultimately enhancing the validity of inferences and conclusions as triangulated study findings are well-validated. Paterra (2024) is in congruence with Ventakesh et al. (2013) and explains that the mixed methods approach enables researchers to validate, evaluate, clarify, and elaborate study findings from one methodology with the results from the second methodology. Subsequently, findings from quantitative and qualitative data can be compared side-by-side after simultaneous data collection through discussion or the qualitative data collected can be transformed into quantitative scores (if this was the objective, from the inception of the study as ideally, qualitative data is meant to provide depth that would be lost when the data is quantified). Undoubtedly, triangulation offers more insights into a phenomenon than an individual method may offer. As Onwuegbuzie and Collins (2007) indicate, triangulation as necessitated by the mixed-methods approach provides the best chance of responding to research questions exhaustively under its ability to combine two sets of approaches while at the same time, making up for the weaknesses of each approach. Qualitative and quantitative data can then validate each other, resulting in a solid foundation for drawing evidence-based conclusions. This explains why the mixed-methods design is becoming increasingly responsive and relevant in responding to impact research questions (Saville, 2012).

On the other hand, the collection and collation of participants' perspectives in mixed methods research gives the participants a voice that ultimately leads to the generation of research findings that emanate from participants' experiences. Furthermore, the fact that the mixed methods approach embraces and encourages active stakeholder- participation aids in

bringing in positive change as informed by the study findings. This is because the investigators often gather data concerning participants' needs, experiences, and ways of addressing them, thereby starting a conversation that eventually triggers and helps bring about the much-needed change (Mertens, 2009). Moreover, the mixed methods approach allows the researcher to extend the range and breadth of the inquiry through the incorporation of varied inquiry techniques and components. For example, in the utilization of qualitative data to augment quantitative findings within an outcomes study, the qualitative data can be integrated into the study at the beginning to aid in designing the intervention, during the intervention to determine participants' experiences and reactions to the intervention, and after the intervention to help explain the findings/ results (Palinkas et al., 2011).

Consequently, David et al (2018) elucidate that the mixed methods approach can be used to gain a good understanding of contradictions and connections between quantitative and qualitative data. This, accordingly, requires that the researcher determines beforehand what synergies can be attained by the use of both quantitative and qualitative approaches. Ultimately, Burt (2015) contends that determining reasons for the use of the two approaches often poses a challenge as many researchers do not receive formal training on how and why to use both approaches in a single study. This, thus calls for more focused research training on how to integrate the two research approaches.

Mixed methods research also reinforces scholarly interaction and enriches researchers' experiences (Smith et al., 2015). Accordingly, the fundamental reason for combining the quantitative and qualitative methods is the fact that both kinds of research designs have value and that to a given extent, they complement one another, eventually adding value when combined in a single study. When both data sets are merged, they produce greater certainty and wider implications (Morgan, 2014; Maxwell, 2016). As a result, the findings from mixing two methodologies produce a more complete picture and provide an opportunity for more complementary and divergent views that lead to more reflection and enrich comprehension of the phenomenon, while also opening up new avenues for further research future.

Moreover, in a mixed methods study, the weakness of the quantitative methods is offset by the strengths of the qualitative methods and vice versa (Plano Clark & Ivankova, 2016). As a result, a quantitative method could be strong in an area where a qualitative method is weak. Furthermore, a qualitative method may be more responsive to one question, and a quantitative method may be more appropriate for another. Plastow (2016) is in congruence with (Plano Clark & Ivankova, 2016) and elucidates further that in a mixed

methods approach, the weakness of one method is compensated for by the strengths of the other. Consequently, quantitative methods in a mixed methods study achieve objectivity while qualitative methods provide the requisite explanations for given research findings and phenomena (Oranga & Matere, 2023). The premise here is that the integration of qualitative and quantitative approaches results in a complete, comprehensive, and synergistic utilization of data that leads to better comprehension and insights into research findings and complex phenomena as opposed to if either approach were utilized alone (Fetters & Freshwater, 2015).

### **Designing Mixed Methods Research: Merging Qualitative and Quantitative Methodologies**

While designing and undertaking a mixed methods study, consideration and decisions should be made as to whether equal opportunity and priority will be accorded to both quantitative and qualitative aspects of the study or if the research questions demand that emphasis and priority be placed on either of them, all depending on the needs of the investigation. Notably, the need to analyze and understand one data set before proceeding to the next, the research questions, or data collection constraints and difficulties may inform such decisions (Mertens et al., 2020). Ultimately, the researcher may adopt the *concurrent mixed methods design* in which qualitative and quantitative data are given the same prominence and collected concurrently. In this case, the researcher would seek to compare both qualitative and quantitative data sets to search for congruent findings (David, 2018; Dawadi et al., 2021). Alternatively, the investigation may prefer the *sequential mixed methods design*, where the qualitative collection of data may precede quantitative data collection to first explore the problem under study followed by quantitative data that allow for the studying of large samples, to enable the application and generalization of the results to a population. On the other hand, the collection of quantitative data may precede that of qualitative data when the aim is to test study variables with a large study sample, followed by a more in-depth exploration with a few cases in the qualitative phase (Dawadi, 2021). Similarly, Creswell and Plano Clark (2011) explicate that one key aspect that influences the design of procedures for a mixed methods study is how to mix the quantitative and qualitative data sets. Accordingly, mixing means either that the quantitative and qualitative data are integrated at a given pre-determined point, kept separate, or combined in some way as the study progresses. Subsequently, in a two-phase project, research may begin with the quantitative phase (i.e., collecting data, analyzing, and discussing the findings) and the results

used to set the ground for the second phase of the study, in which case, the qualitative method is used to explain the findings.

Alternatively, David et al (2018) explain that in different study, the researcher could concurrently collect both quantitative and qualitative data and merge or integrate the two data sets by transforming the qualitative themes into counts (even though the intention of qualitative research is never to quantify research findings, but rather to find insights that are ultimately presented in verbatim) and comparing these counts with descriptive quantitative data. In yet another situation, the researcher might have a primary aim to collect one form of data (say quantitative) and have the other form of data (say qualitative) provide supportive information. In this case, the researcher is essentially embedding secondary data within a larger study having a different form of data than the primary database (Mertens et al., 2020).

Consequently, researchers should be sure to utilize rigorous data collection and data analysis procedures that are appropriate to each methodology's tradition, including maintaining the right sample size for qualitative and quantitative analyses to validate and authenticate findings. Furthermore, the investigator should be sure to utilize processes and procedures that accommodate the integration of quantitative and qualitative approaches either *sequentially* or *concurrently*, with either the same or with different study samples. The two databases might be kept separate but connected.

### **Use of Theory in Mixed Methods Approach**

Ultimately, the procedures should be framed within the theoretical/philosophical underpinnings of research, for example, within the social constructionist model that seeks insights and multiple perspectives on a single issue (Mertens et al., 2020). Notably, in mixed methods research, researchers may test both theories and generate them too. Here, researchers use theory either deductively (as in quantitative research) or inductively (as in qualitative research). The theories are characteristically found at the beginning as a lens that shapes the types of questions that will be asked, strategies of data collection, participants in the study, and the study implications (Plano Clark & Ivankova, 2016).

### **Limitations of the Mixed Methods Approach**

The utilization of the mixed methods approach has limitations too, one of which is that it involves more work (Creswell & Plano Clark, 2011). As a result of the higher amount of work involved, mixed methods studies also consume more time as compared to individual qualitative and quantitative approaches conducted on their own. Combining the two approaches also ultimately implies that more financial resources will be required to

accomplish the research. In the same vein, Paterra (2024) contends that mixed methods research approaches require increased resources. Furthermore, researchers need to exhibit and espouse an expansive set of skills that span both the qualitative and the quantitative approaches, which, more often than not, is hard to achieve (Mertens et al., 2020). On the other hand, Cresswell (2014) and Bressan (2017) contend that the recruitment of experts for both methodologies may be a challenge and so is working with interdisciplinary and multidisciplinary teams required in most mixed methods studies.

Similarly, Miller et al. (2013) list legitimization, representation, and integration as the main shortcomings of the utilization of the mixed methods approach. Furthermore (and in congruence with previously discussed studies), Miller et al. (2013), contend that the amount of time required, and the costs involved in the process of data collection, analysis, and interpretation all pose a challenge to the integration of qualitative and quantitative approaches in a single study. Lisle (2011) explains that the integration of findings from both qualitative and quantitative methodologies can pose a challenge, especially in the process of trying to present the findings in a cohesive narrative. The author similarly, reports that It takes longer to finish mixed-methods studies due to separate multi-stage data collection and separate data analysis. Ultimately, a researcher must uphold credibility and robustness throughout the process of conducting a mixed-method study. Hence, even though the mixed methods approach offers several benefits, challenges, and adoption exist too.

### **Conclusion**

The mixed methods approach is not utilized just for the sake of having varied approaches in one research inquiry, the aim is to strengthen understanding and generate new knowledge by viewing it from different perspectives. However, it is worth noting that mixing research methods within a study ultimately increases the complexity of conducting research, often requiring more resources and additional research induction and training occasioned by the fact that multidisciplinary research teams are required to be well-versed in both quantitative and qualitative methodologies concerning sampling, collection of data, data analysis and interpretation. However, the advantages of mixed methods significantly outweigh its limitations. Consequently, when applied thoughtfully, the mixed methods approach can result in a nuanced, richer comprehension of complex research questions, approaching a valuable tool in research. Data can be integrated during collection, analysis, or discussion. Undoubtedly, the findings from mixing two methodologies produce a more complete picture and provide an opportunity for the generation of more complementary and

divergent views that lead to more reflection and enrich a comprehension of the phenomenon, while also opening up new avenues for further research.

### References

- Asghar, J. (2013). Critical paradigm: a preamble for novice researchers. *Life Sci. J.* 10 (4)3121-3127.
- Bowers, B., Cohen, L.W., Elliot, E. A., Grabowski, D.C., Fishman, N.W., Sharkey, S.S., Zimerman, Sh., Horm, S. D., Kemper, P. (2013). Creating and supporting a mixed methods health services research team. *Health Serv Res*, 48 (6Pt2), 2157–2180. <https://doi.org/10.1111/1475-6773.12118>
- Creswell J.W, Plano, Clark, V. L (2011). *Designing and conducting mixed methods research*. Thousand Oaks, BMJ Publishing Group
- Cresswell, J. W., 2012. *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. (4th ed.). Boston, MA, Pearson.
- Cresswell, J. W., & Garrett, A. L. (2008). The “movement” of mixed methods research and the role of educators. *South African Journal of Education*, 28(3), 321-333.
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research*. (2nd ed). Thousand Oaks, Sage.
- Creswell, J. W. (2015). *A concise introduction to mixed methods research*. Sage Publications Ltd.
- Creswell, J. W., & Plano, Clark, V. L. (2011). *Designing and conducting mixed methods research*. Sage Publications.
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). Sage Publications.
- Dawadi, S., Shrestha, S., & Giri, R. A. (2021). Mixed-methods research: A discussion on its types, challenges, and criticisms. *Journal of Practical Studies in Education*, 2(2), 25-36. DOI: <https://doi.org/10.46809/jpse.v2i2.20>
- David, S. L., Hitchcock, J. H., Ragan, B., Brooks, G., & Starkey, C. (2018). Mixing interviews and rasch modeling: demonstrating a procedure used to develop an instrument that measures trust. *Journal of Mixed Methods Research*, 12(1), 75-94. <https://doi.org/10.1177/1558689815624586>
- Doyle L, Brady, A-M., Byrne, G. (2009). An overview of mixed methods research. *J Res Nurs*, 14(2), 175-85. <https://doi.org/10.1177/1744987108093962>
- Fetters, M. & Freshwater, D., (2015). The 1+1=3 integration challenge. *Journal of Mixed Methods Research*, 9(2), 115-117. <https://doi.org/10.1177/1558689815581222>
- Halcomb, E, & Hickman, L. (2015). Mixed methods research. *Nursing Standard*, 29(32), 41–47. <https://doi.org/10.7748/ns.29.32.41.e8858>
- Kaushik, V., & Walsh, C. A. (2019). Pragmatism as a research paradigm and its implications for social work research. *Soc. Sci.*, 8(9). 255. DOI: <https://doi.org/10.3390/socsci8090255>
- Mason, J., (2006). Mixing methods in a qualitatively driven way. *Qualitative Research*, 6(1), 9-25.



- Mann, K., & MacLeod, A. (2015). Constructivism: learning theories and research approaches. In J. Cleland, S.J. Durning (Ed.), *Researching medical education*, (2nd Ed.), John Wiley & Sons Ltd., New Jersey. DOI: <https://doi.org/10.1002/9781118838983.ch6>
- Mertens, D. et al. (2020). The future of mixed methods: A five-year projection to 2020, s.l. *Mixed Methods International Research Association* (MMIRA).
- Mertens, D. M. (2009). *Transformative research and evaluation*. New York, Guilford
- National Collaborating Centre for Methods and Tools (2015). *Appraising qualitative, quantitative, and mixed methods studies included in mixed studies reviews: the MMAT*. Hamilton, ON: BMJ Publishing Group.  
<https://www.nccmt.ca/registry/resource/pdf/232.pdf>
- Onwuegbuzie, A., & Collins, K. (2007). A typology of mixed methods sampling designs in social science research. *The Qualitative Report*, 12(2), 281-316.
- Oranga, J. and Matere, A. (2023). Qualitative research: essence, types and advantages. *Open Access Library Journal*, 10: e11001. <https://doi.org/10.4236/oalib.1111001>
- Palinkas, L. A., Aarons, G. A., & Worwitz, S. (2011). Mixed methods designs in implementation research. *Adm Policy Ment Health*, 38(1), 44-53.
- Park, Y.S., Konge L, Artino, Jr. A.R. (2020). The positivism paradigm of research. *Acad. Med*, 95, 690–694. DOI: <https://doi.org/10.1097/acm.0000000000003093>
- Pattera, A. (2024). The advantages and disadvantages of using mixed methods for survey work. <https://www.linkedin.com/pulse/advantages-disadvantages-using-mixed-methods-survey-pattera-ph-d--ci83c>
- Plastow, N. (2016). Mixing-up research methods: A recipe for success or disaster? *South African Journal of Occupational Therapy*, 46(1), 89-91. <https://doi.org/10.17159/2310-3833/2016/v46n1a16>
- Pulla, V., & Carter, E. (2018). Employing interpretivism in social work research. *International Journal of Social Work and Human Services Practice*, 6 (1), 9–14. DOI: <https://doi.org/10.13189/ijrh.2018.060102>
- Rehman, A.A., & Alharthi, K. (2016). An introduction to research paradigms, *IJEI*, 3(8), 51–59. <http://www.ijeionline.com/attachments/article/57/IJEI.Vol.3.No.8.05.pdf>
- Shorten, A., & Smith, J. (2017). Mixed methods research: expanding the evidence base *Evidence-Based Nursing*, 20(3), 74-75. <https://doi.org/10.1136/eb-2017-102699>
- Smith J, Cheater F, Bekker, H., et al. (2015). Are parents and professionals making shared decisions about a child's care on presentation of a suspected shunt malfunction: a mixed method study? *Health Expect*, 18(5), 1299–315. <https://doi.org/10.1111/hex.12106>
- Shorten, A., Shorten, B., Kennedy, H.P. (2014). Complexities of choice after prior cesarean. *A narrative analysis*, 41(2), 178–84. <https://doi.org/10.1111/birt.12082>
- Turin, T.C, Chowdhury, N., & Raihan, M. (2024). Decoding research: philosophical pillars of research paradigms. *Bangabandhu Sheikh Mujib Med. Univ. J.* 17(2), e73249. DOI: <https://doi.org/10.3329/bsmmuj.v17i2.73249>
- Turin, TC., Raihan, M.H., & Chowdhury, N.A. (2024). Paradigms of approaches of research. *Bangabandhu. Sheikh Mujib Medical University Journal*, 17(2), e73973, eISSN 2224-7750 | © CC-BY-NC-4.0 |.



- Wasti, S.P., Simkhada, P., van Teijlingen, E.R., Sathian, B., Banerjee, I. (2022). The Growing importance of mixed-methods research in health. *Nepal Journal of Epidemiology*, 12(1), 1175-1178. <https://doi.org/10.3126/nje.v12i1.43633>
- Wisdom J, Creswell, J.W. (2013). *Mixed methods: integrating quantitative and qualitative data collection and analysis while studying patient-centered medical home models*. Rockville, MD, BMJ Publishing Group.
- Youngs, H., & Piggot-Irvine, E. (2012). The Application of a multiphase triangulation approach to mixed methods: The research of an aspiring school principal development program. *Journal of Mixed Methods Research*, 6(3), 184-198. <https://doi.org/10.1177/1558689811420696>