

## **Transformation of the Combinatorial Research Paradigm: A Review of the Literature and Its Application in Education**

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### **ABSTRACT**

The development of social problems in society and the world of education is increasingly complex. One way to unravel the existing problems is to use research. One of the studies that can be used is mixed research (Combination). In a research, a combination of theory and research methodology is needed so that research objectives are created, namely positive contribution, namely solving problems faced by the research object. The type of research used is a literature study. The data collection technique in this study is by documentation. Data collection techniques are carried out in several stages, namely: 1) Identification of data sources, 2) Literature collection, 3) Literature review and synthesis. The data analysis technique used is content analysis. The results of the study explain that combination research is a research that combines and correlates qualitative and quantitative forms. The combination method consists of sequential, concurrent and transformative mixed methods. The concurrent transformative method in the design of the mixed research method is one part of the mixed research method.

**Keywords:** *Research, transformative, combination*

### **INTRODUCTION**

In today's time, as far as we know, there is a development where the development of science becomes a foundation to know what each individual wants to know. That way, various methods are used to find out about something. So, it can be concluded that the development of research methodology is in line with the development of science. (Hermawan 2019, 1).

In essence, an overview and a scientific method used to collect data that aims to obtain usefulness. The data can be said to be empirical data

because it can meet the criteria that have been obtained. (Hermawan 2019, 153). Therefore, in order to carry out combination research, researchers must first understand the differences in the characteristics of the two methods.

This research is basically a type of structured research, in this case it can be said to be a type of qualitative research. The type of research that is structured and qualifies data to be generalized can be called quantitative research. From the two there are differences in general, but there are also similarities between the two. (Anshori and Iswati 2009, 13).

Quantitative and qualitative research methods can be combined but must be used interchangeably. Both research methods cannot be implemented at the same time, only data collection techniques can be used. In the joint study, the qualitative method was used first, then after a new hypothesis was found, a quantitative method was used to test it.

The development of social problems in society and the world of education is increasingly complex. One way to unravel the existing problems is to use research. One of the studies that can be used is mixed research (Combination). In a research, a combination of theory and research methodology is needed so that research objectives are created, namely positive contribution, namely solving problems faced by the research object.

In this paper, the following will be explained about the combination research method. The author hopes that this article can be a contribution of thoughts for readers.

## **METHODS**

The approach of this research is qualitative. According to Denzin & Lincoln, qualitative research is research that uses a natural setting with the intention of interpreting phenomena that occur and is carried out by involving various existing methods. (Anggito and Setiawan 2018, 7) The type of research used is a literature study. Literature study is an important stage in a series of research activities to find out to what extent the science related to the research to be carried out has developed. Literature study research methods (*library research*) It is a research method that is carried out by collecting data or information sourced from literature, books, scientific journals, research reports, and other documents relevant to the research topic. This research aims to understand existing concepts, theories, and findings related to the problem being researched.

The data collection technique in this study is by documentation. Mirzaqon and Purwoko said that in literature research, data collection techniques can be done with documentation, namely looking for data on variable things or books in the form of notes, books, papers or articles, journals and so on. ("Sari," "Library Research." t.t., 44–47) Data collection techniques are carried out in several stages, namely: 1) Identification of data sources, 2) Literature collection, 3) Literature review and synthesis.

The data analysis technique used is content analysis. Fraenkel & Wallen states that content analysis is a research tool that focuses on actual content and internal features of the media. ("Sari, "Library Research" t.t., 44–47) This analysis technique is used to analyze the content of the literature that has been collected. This analysis aims to identify themes, concepts, or patterns that emerge from the literature.

## **RESULTS AND DISCUSSION**

### **Concept of Educational Facilities and Infrastructure**

It is an approach to communicate and associate qualitative and quantitative types of research. A research method or method that involves two variables using qualitative and quantitative research methods is called combination research. (Creswell, J. W 2015, 4). This approach is more complex than just data collection and data analysis but in this study it also functions as an approach of the two types of research. Which in using these two research methods will provide more insight and understanding to the researcher regarding the issues and problems to be seen.

As for this case, there are several objectives of this research, which consist of four of them as follows:

1. In order to better understand an issue of problems in the research in order to triangulate the type of data which is qualitative and detailed into descriptive data with quantitative data.
2. In order to get a hasik in the form of statistics obtained from a certain sample and then it will be processed by conducting observations and interviews with a number of individuals in order to obtain a more in-depth idea of the results of existing statistics.
3. In order to develop a participant (qualitative) view which will be analyzed based on a broad sample that can be said to be quantitative.
4. In order to be able to express rights and tendencies within groups and within oppressed individuals. (Syamsuddin and Vismaia S. Damaianti 2009, 2).

The things that must be considered in designing using a mixed method or commonly called a combination (Indrawan and Rully 2014, 3–4), which are as follows:

1. Timing

Taking into account the time it takes to collect qualitative and quantitative data. This research investigation was carried out either sequentially (gradually) or simultaneously (one time).

2. Bobot (weighting)

Several factors need to be considered in this approach: whether qualitative data takes precedence over quantitative data. This depends on the

wishes of the researcher and the variables of the study. In this study, one method may be more balanced or heavier to one method than the other.

### 3. Mixing

The two types of data can be combined simultaneously in data collection, data analysis, interpretation or all three phases simultaneously. The combination of qualitative and quantitative data is truly integrated into one and is sustainable. Two pieces of data are linked together sequentially or at the same time. In integration, e.g. qualitative data is converted into quantitative data (which can be statistically calculated) or vice versa, research does not combine and connect but integrates (combine) secondary data types, e.g. qualitative in primary (quantitative) data types.

### 4. Theorizing

A combination of research theories (mixed) often appears at the beginning of the research to form a problem statement. These theories can be written explicitly or implicitly.

Table of aspects considered in the design of the mixed method:

<b>Time (timing)</b>	<b>Weight</b>	<b>Mixing</b>	<b>Theorization</b>
Concurrent/non-sequential	Balanced	Incorporate (integrati)	Eksplisit
The first qualitative-sequential stage	Qualitative	Connecting	
Quantitative-sequential first stage	Kuantitatis	Embedding	Implisit

There are three specific ways to combine (mix) multiple methods, namely:

1. Sequential Mixing Method Strategy, Sequential Mixing Method is a procedure to combine results/discoveries obtained from one method to another.
2. The strategy of the siltultan mixture method (once), this simultaneous mixture method is a research conducted at the same time, qualitative and quantitative research is carried out simultaneously to achieve a complete analysis of the research problem of the research problem.

3. Procedure of the Transformative Mixed Method, this mixed transformation method is a method of collecting data gradually (sequentially) or simultaneously (simultaneous). (Sugiono 2015, 2).

In general, there are 6 mixed method research strategies, namely:

1. Sequential Exploratory Strategies

It involves the collection and analysis of quantitative data at the initial stage and then the collection of qualitative data based on the results of the quantitative data. The two data are separate, but still related.

2. Sequential Exploratory Strategies

Unlike the previous strategy, this strategy uses early stage qualitative data collection and analysis and subsequent quantitative data collection based on qualitative data results, using quantitative data to help interpret the results.

3. Sequential Transformative Strategy

It has two different phases. The first stage is quantitative and qualitative, and the second stage is quantitative and qualitative. The first stage is an approach followed by the second stage.

4. Concurrent Triangulation Strategy

Researchers collect quantitative and qualitative data at the same time (simultaneously). The weights between quantitative and qualitative data are balanced.

5. Strategy Embedded Competition

It is similar to the concurrent triangulation strategy, as it can be described as a mixed method strategy that applies quantitative and qualitative data collection step by step. The combination of the two data was carried out when the researcher compared the discussion.

6. Concurrent Transformative Strategies

Transformative strategies are like sequential transformative strategies, and as well as are based on specific theoretical perspectives. (Sugiono 2011, 3).

### **Stages of Mixed Method Research**

In this mixed-methods research method, research can be carried out in several stages to obtain perfect research results. Where this is done by formulating the background of the research problem and formulating research

questions, developing the flow of dating identity status scale instruments, collecting or collecting data with quantitative methods, analyzing existing quantitative data, taking or collecting data with qualitative methods, analyzing existing qualitative data, combining quantitative and qualitative data and analyzing both, then at the last stage, will be interpreted until the data that has been found can be obtained and perfect research results can be obtained(Creswell, J. W 2017, 2).

The technique used when conducting research and data search is by using an insertion design. Thus, the mixed research method on the transformative model will be useful at a time when researchers need qualitative and quantitative types at the same time by prioritizing theoretical and defensive properties such as the case of feminism in the study of International Relations(Stentz, Jane E., Plano Clark, Vicki L., & Matkin, Gina S 2012, 3). This is due to the existence of a mixed method that creates binary division in deduction and induction where the quantitative method and the qualitative method are used at the same time as a reinforcement of existing research results(Gilbert, Tony 2006, 5).

The data collection procedure is as follows:

1. Identify and determine the types of qualitative and quantitative data collected during the research.
2. Quantitative data is usually selected by random sampling, so all data is qualitative and sampling is used to find people who have participated in a survey. For example, a combination of mixed sampling methods, namely:
  - a. A combination of quantitative and qualitative sampling. For example, stratified purposeful sampling and purposive random sampling
  - b. Sampling was carried out continuously. In this sampling, the first step completes the second step of the sampling process.
  - c. Concurrent sampling, in this sampling qualitative and quantitative probabilities are combined
  - d. Multi-level sampling, sampling that applies to more than one analytical unit.
  - e. Sampling uses a combination format based on the previous mixing method strategy.

There are several techniques in collecting data in the mixed research method, including the Interview Technique where the interview technique is carried out as a process to obtain information in fulfilling the purpose of the research, which is carried out by means of questions and answers and is qualitative. The interview is usually conducted in a face-to-face situation between the respondent or resource person and the interviewer (Bungin, Burhan 2015, 4). Thus, the interview in the research is direct, and in other words, the researcher must be able to obtain and select the right resource person to be interviewed. As for the specified resource persons, they are required to have at least mastery of data and information related to the topic being researched to obtain accurate data sources in a research.

The next technique is the Observation technique, where the technique commonly referred to as observation is one of the data collection methods where the data from the study can be observed to collect research data by the researcher. In other words, observation is a data collection technique that is carried out through the observation of the researcher. The observation process is usually carried out based on the use of the five senses. Then there is the Questionnaire Technique where the technique is the result of the preparation of systematic questions from the researcher intended for respondents. After the respondents fill out the questions in the questionnaire, the questionnaire will then be returned to the researcher. In this case, the answers from the respondents are needed as data in the research. This technique can be said to have similarities to the interview technique but the difference between the two lies in not being done face-to-face or directly in the questionnaire technique.

The next technique is the Documentation Technique, where documentation is a data collection technique that is carried out through the collection of documents (Mamik 2015, 5). In qualitative techniques, these documents can be in the form of diaries, photos, minutes of meeting results, periodic reports or the like. While in quantitative techniques, documents can be in the form of statistics. On the other hand, the Sampling Technique is the last technique in mixed research, where this data collection technique is a differentiator between qualitative methods and quantitative methods. This is because, in quantitative research, the object of research is more universal and broad. This sampling technique is then used to be able to simplify the data collection process. According to Margono, the sampling technique is a technique or way to determine the sample size that will be used as the actual data source but with an appropriate number of samples (Cresswell, J. W., Plano-Clark, V. L., Gutmann, M. L., & Hanson, W. E 2003, 3). Thus, in practice, this sampling technique does not require the researcher to take an overall sample of the population to be studied, but the researcher can choose and then take the right sample to represent the population in a study.

In mixed research, data collection techniques are almost similar as those conducted in qualitative and quantitative research. Where there are interviews, observations, documentation, and questionnaire collection techniques. However, in the quantitative method, there is an addition, namely sampling. The difference between qualitative and quantitative is that it can be seen from the data, such as the results of quantitative documentation, the document will be in the form of statistical data. Meanwhile, in qualitative, the data is in the form of daily records, daily schedules or the like. After all the data has been complete and collected, the next step that must be taken by the researcher is to start analyzing the data. On the other hand, in the mixed research method, in addition to data collection and analysis, the researcher will integrate quantitative data and existing qualitative data. This is done because there are statistical and experimental methods that can strengthen generalizations or predictions (Zandvanian, Ahmad, & Daryapoor, Elaheh 2013, 5). As for analyzing data, several techniques are needed, in which case quantitative research and qualitative research have different data analysis techniques.

Data analysis techniques in quantitative research methods are divided into two categories in the form of descriptive statistics and inferential statistics. Descriptive statistics is a technique that can be used as a tool to analyze data by describing the data that has been obtained or describing it as it is without any general conclusions or without generalization. This analysis is a description of the accumulation of data in which no hypothesis testing is required. In other words, a researcher simply explains and explains the data. The second technique is called Inferential Statistics which is a technique commonly used for large sampling of large numbers. With the size of the existing population, the results of the sample will be generalized to the existing population (Venkatesh, Viswanath, Brown, Susan A., & Sullivan, Yulia W 2016, 4). Inferential analysis is a technique that is deeper than descriptive analysis. This is due to inferential analysis which is not just describing one data, but there are aspects of drawing conclusions and making decisions based on the results of the analysis that has been carried out (Sutopo, Yeri, & Slamet, Achmad, n.t., 3).

Tashakkori and teddlie (2003) explained that there are several ways to analyze mixed method data, namely:

1. Data Transformation
2. Making Instruments
3. Exploring outliers
4. Testing dual levels



## 5. Create a matrix or table

### **Transformative Research Methods**

According to Mertens, from the 1980s to the 1990s, a paradigm shift emerged, partly due to dissatisfaction with existing research models. The transformative method found that the interpretative/constructive research approach was insufficient to address the issues of social justice and social orientation. Transformative research believes that research should be politically relevant and include those that change the lives of participants, the institutions where people work, and the lives of researchers.

Transformative researchers can use fundraising methods to analyze qualitative and quantitative data in a constructivism-like way *interpretivist*. However, the mixed-method approach provides a transformative research framework for developing a more comprehensive social portrait through the use of multiple perspectives and objectives, thus allowing for a greater diversity of values, attitudes, and positions to be understood. (Suryani and Hendryadi 2016, 49).

The design of this combined method is used by researchers to apply a theoretical lens to the ideal idea of justice and social power in the analysis of the qualitative and quantitative data collected. This type of change is called change because it is related to the social change of the society being studied, the researcher's task is to create social justice. (Syamsuri dkk. 2021, 38)

#### a. *Metode Sequential Transformative*

This method is followed by objective theories (gender, race, social sciences) in two stages in each research procedure. The first step can use quantitative or qualitative methods, and the second step can use qualitative or quantitative methods. Lender theory is introduced in introducing a research framework to guide the formulation of research questions to understand the problem.

#### b. *Model Concurrent Transformative*

Like the sequential transformation model, the researcher of this simultaneous transformation model is guided by the use of quantitative and qualitative perspective theory. The theories of this perspective are as follows: Theory of characteristics, appearance, participatory research, or conceptual or theoretical framework. This model is a combination of triangulation and an integrated model. Two data collection methods are implemented at the same time during the investigation phase. The method weights may be the same. Data can be combined by merging, connecting, or inserting (mixing with equal weight, splicing, mixing with different weights) (Hermawan 2019, 164–167).

Meanwhile, in the concurrent transformative model, or this concurrent transformative model, the researcher can determine the data source that he will obtain from quantitative and qualitative methods at the same time (Halcomb, Elizabeth J., & Hickman, Louise. 2015, 2).

On the other hand, the existence of this transformative concurrent model is commonly used in researching the quality and interests of humans or society in general in dealing with various problems related to social relations, power or defense. However, to conduct research using this transformative model, there is no need to establish a defense or advocacy on the topic being researched (Sweetman, David, Badi'e, Manijeh, & Creswell, John W. 2010, 4). Thus, the transformative concurrent model has the main advantages in the form of ease in writing reports and research implementation in addition to the long time required and the lack of literature related to transformative from the first phase to data collection in the second phase as a disadvantage.

## **CONCLUSION**

Combination research is research that combines and correlates qualitative and quantitative forms. Which in using these two research methods will provide more insight and understanding to researchers about the issues and problems to be studied. The combination method consists of sequential, concurrent and transformative mixed methods. The concurrent transformative method in the design of the mixed research method is one part of the mixed research method. As for the concurrent transformative model, it is often used to research topics that are advocacy or theoretical, such as the topic of feminism in international or social relations.

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