

Q-methodology: What and how?

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Abstract: *In the Kingdom of Saudi Arabia (KSA), little is known about new methods for determining viewpoints about issues. Researchers continue using interviews for qualitative research and questionnaires for quantitative research. This paper explains how Q-methodology was used with educational researchers in order to determine the viewpoints of Saudi participants in KSA regarding a specific subject. As Q-methodology represents a new methodology for many research participants in KSA, I provide an introduction to this methodology that is based on my experience as a Saudi researcher who has used Q-methodology to capture her study participants' perspectives.*

Keywords -new method, KSA, Q-methodology

I. Introduction

This paper provides a description of a new research approach named Q-methodology. This approach was used in the research designed to identify the perspectives of educational researchers at two universities in Riyadh, Kingdom of Saudi Arabia (KSA). Q-methodology was used to determine the viewpoints of educational researchers towards children's participation in research. This paper explains the difference between method and methodology and then describes Q-methodology in detail, the reasons why it was chosen for the aforementioned research, the process of implementing it and how the data were obtained and analysed. The strengths and weaknesses of Q-methodology are also presented.

II. The Difference Between 'Method' and 'Methodology'

In the course of my PhD studies, I noticed that some researchers still appear to confuse the method concept and the methodology. This was especially reinforced when such researchers would ask me 'What is your method for your study?' I would reply 'Q-methodology' and they would assert, 'We asked you about the tool!' For this reason, I wanted to show the difference between these concepts. Hammond and Wellington consider the distinction between 'methodology' and 'method' [1]. 'Methodology' is used to show the justification for using particular research methods; thus, it presents the framework, while method refers to the means of gathering the research data, such as an interview or questionnaire, and the process used to analyse the data. The Oxford English Dictionary defines a method as, 'a way of doing something' and methodology as 'a system of methods used in a particular field' [2]. Furthermore, Punch indicates that method includes the types of assumptions, and one assumption is which way is implicit in reality to gain information [3]. Q-methodology is considered to be an appropriate methodology to capture people's perspectives holistically and examine the differences and similarities [4].

III. What is Q-Methodology?

3.1 Background of Q-methodology

The first introduction to Q-methodology was made by William Stephenson in 1935 in a letter to the journal *Nature* [5, 6], in which he proposed a new, practical method combining both quantitative and qualitative methods [6]. Stephenson settled on this method after obtaining PhDs in physics and psychology. His aim was to replace the traditional technique of R-methodology (statistical methodology) emphasising people, variables, skills, etc. [7] with one connecting people to appropriate statements – that is, Q-methodology [6]. As the traditional R-methodology requires objects in need of methodological examination [7], he advocated adopting Q-methodology because it identifies correlations among people. [6]. Moreover, Stephenson sought people's perspectives on specific topics and then analysed their reactions as factors, thereby correlating persons instead of tests [8], which is the aim of Q-methodology. In this respect, Q-methodology has been described as being, 'designed expressly to explore the subjective dimension of any issue towards which different points-of-view can be expressed' [5].

Although it emerged 80 years ago, Q-methodology remained largely unheard of for some time [8]. However, in the last 20 years, it has been introduced in several countries, including the United States and the United Kingdom; consequently, many books and articles about Q-methodology have emerged in different fields [7]. It is worth mentioning that Q-studies tend to explore or discover ideas from specific groups in specific situations or at the study participants' institutions; accordingly, the research questions of Q-methodology should

be simple, narrow and straightforward [7]. The research question in studies employing Q-methodology is considered vital, because it helps to draw the structure of the Q-statements for the researcher and provides a guideline for the participants during the sorting process [9].

3.2 Brief explanation of Q-methodology

Q-methodology has been described in general as, 'a set of procedures, theory and philosophy' [10]. However, a review of the literature yields different definitions of Q-methodology covering different ideas, including capturing subjectivity, the process of the Q-sort and the extent to which it is a qualitative or a mixed method. Wint [6] described the foundation of Q-methodology as the idea of subjectivity but it is not only that; Q-methodology also deals with participants as variables, not as a case study [5]. Furthermore, Watts indicates that a researcher using Q-methodology will find the reflection of the participants' perspectives about the topic, which is what the present research requires, and not their views about themselves [11]. Additionally, Woods considers Q-methodology as, 'a methodology developed for small-scale research with the aim of capturing and contrasting subjectivity' [12]. Furthermore, Hughes depicts the Q-methodology process as, 'a method that requires a participant to sort items according to some kind of criterion' [8]. These criteria include elements such as the degree to which the participants agree, and the items are usually statements presented to the participants on cards.

The foundation of Q-methodology is the idea of subjectivity [6], which is based on or influenced by personal opinions. In this respect, Størksen and Thorsen state that, 'Q-methodology aims at exploring subjectivity, i.e. feelings, viewpoints, beliefs, opinions, preferences and values' of participants [13]. Accordingly, Watts stresses that Q-methodology reflects the participant's view, not the researcher's view, thereby enabling the researcher to work in the participant's world. Q-methodology allows the researcher to explore participants' perspectives and is considered one of the most effective approaches using both qualitative and quantitative research methods [14]. Additionally, Cross mentions that the Q-sort is a 'self-directed process' [15], indicating that it emerges from the self. Having the participants sort the statements lets them decide what is important and valuable from their perspectives [14]. It is also worth mentioning that there are no right or wrong answers for their sorting, because the process shows their perspective about the specific issue. Therefore, Q-methodology is considered to be, 'a foundation for the systemic study of subjectivity' [10].

3.3 Is Q-methodology a quantitative or qualitative approach?

There has been debate about whether Q-methodology is a qualitative or quantitative method or a mixed method. The results of the literature review indicate that most researchers consider it a mixed method. Hayne claims that, 'Q-methodology, an approach comprising both quantitative and qualitative method, was used to ascertain different perceptions amongst the sample' [15]. Q-methodology is a mixed method combining the strong features of each approach. In Q-methodology, the researcher collects the data in a qualitative way and analyses the data statistically, which is considered a quantitative approach; further, this approach provides more in-depth results [16]. In their nursing research, Akhtar-Danesh et al. found the following:

Q-methodology has been identified as a method for the analysis of subjective viewpoints and has the strength of both qualitative and quantitative methods. It shares with qualitative methodologies the aim of exploring subjectivity; however, statistical techniques are used to reveal the structure of views [17].

Moreover, Davis and Michelle stress that Q-methodology is considered a mixed method because the qualitative researcher sees it as quantitative and the quantitative researcher sees it as qualitative, and also, it is a multidisciplinary approach [18]. Meanwhile, Woods explains that Q-methodology is presented as quantitative, but has a qualitative aim [19]. She also illustrates that the participants in a study using Q-methodology give the researcher accurate findings by sorting the statements to explore their beliefs and then express their views during interviews. Exploring different views from different groups served as a resource for my drawing conclusions about attitudes and obstacles regarding children's participation in research and specifically about having their voices heard and the implementation of ethics procedures.

In some ways, discussions about the nature of Q-methodology are less important than having an understanding of what Q-methodology achieves. Q-methodology identifies a set of qualitatively different perspectives on the topic investigated; the perspectives are written up by the researcher to capture them holistically in verbal form, rather than in numbers. These different sets of perspectives are commonly referred to as 'voices'; in other words, Q-methodology is used to identify qualitatively different points of view. Therefore, it is important to sample diverse participants, who can be expected to have wide-ranging and contrasting perspectives.

IV. Why Q-Methodology?

My contention is that although I see Q-methodology as a mixed method, I do not perceive it as a mixed paradigm. I do not consider it as belonging to a quantitative paradigm for the following reasons:

- (i) It deals with subjectivity that has ordinal measurement (statisticians do not consider ordinal data quantitative).
- (ii) Sampling is for diversity and there is no aim of making statistical inferences – and this relates to the sampling. Q-methodology does not involve random sampling or aim to obtain a representative sample. The results pertain only to the existence of certain perspectives.
- (iii) The perspectives are then explored as ‘voices’ through interviews to flesh out interpretations.
- (iv) Q-methodology is a mixture of both quantitative and qualitative approaches [4] to conducting studies that measure perspectives using quantitative methods, such as a questionnaire [3] or qualitative methods, such as an interview, which is considered a vital method for gaining the participants’ perspectives [3, 20].

However, whereas the quantitative approach requires a large sample to obtain general findings, the qualitative approach investigates a small population in depth. In contrast, Q-methodology mixes both approaches by using a small sample of participants (compared with the quantitative approach) to obtain profound findings [4]. In addition, Q-methodology is considered as: a bridge between qualitative and quantitative research. It has the same level of mathematical rigor as quantitative methodology, it provides for direct measure, and it has an interpretive component comparable to that of qualitative methodology. It is designed to (a) elicit operant subjectivity and (b) directly measure the response. It is not about a person. It is of a person [21].

All the above reasons were key in choosing this methodology, but the most important reason was to capture the participants’ viewpoints that would identify their subjectivity towards the issue, as Hughes mentions:

I was keen to go beyond the notion of using method to transfer information from a research participant’s head into my own, as if I was emptying a vessel. If I was serious about voice, then I needed to explore and understand approaches that facilitate co-construction between researchers and researched [8].

Thus, the Q-sort should identify what the participants’ perspectives give to the subject, not just their perspectives in general [6] but the ‘social viewpoint’ [7].

4.1 Advantages and disadvantages of Q-methodology

In his research, Hughes identified some advantages of Q-methodology; for instance, it gives the researcher the opportunity to listen to diverse voices and fosters respect for the participants’ viewpoints regarding any topic, rather than imposing one’s views, and for the participants themselves, regardless of whether they are adults or children [8]. In addition, Wint mentions that it is a suitable research approach for a sensitive topic, such as her study on Facebook bothering, where the participants could express their opinions based on their experience by sorting the Q-set, without embarrassment [6]. It also strengthens the researcher–participant relationship; by giving the participants freedom to sort the Q-set, the researcher relinquishes power [6]. Moreover, as Plummer states, Q-methodology allows the researcher to collect numbers of shared viewpoints from different groups of participants, and after conducting the analysis, the researcher will find that each viewpoint is heard as an individual voice [22].

Some researchers have mentioned that the main disadvantages of Q-methodology are validity and reliability issues, which are important elements of any type of R methodology study [7]. In studies using Q-methodology, validity and reliability can be implemented, but in different ways, such as by asking the same participant to sort the statements more than once; alternatively, validity and reliability sometimes emerge after the data analysis is completed, if similar factors arise [7].

V. Implementing Q-Methodology

In my research, the Q-methodology was implemented in six steps:

- developing a comprehensive set of statements (Q-set)
- implementing the Q-sort
- sampling frame (P-set)
- administering the questionnaire
- conducting the interviews
- data analysis and interpretation

5.1 Developing a comprehensive set of statements (Q-set)

In Q-methodology, the most important step is developing the statements [4], known as the Q-set or the Q-sample. It is a set of items given to the participants to sort, often presented as written statements [6], but in some cases, it could be photos, as in Størksen et al.’s study, which was conducted with four-year-old children [23]. Usually, the statements have to be in the form of numerous statements, as Watts and Stenner mention, ‘Ideally, items should be presented to participants on sensibly sized and laminated cards of a single colour and standard appearance’ [7]. In my study, the Q-set was written on cards. Researchers who use Q-methodology need to collect different statements from different sources to explore people’s opinions about a specific topic [8], which should be representative of the issue, clear, appropriate for the participants, easy to understand and

applicable [15]. For example, Størksen et al. explained that their study was based on the findings of previous studies on the same topic [13]. Moreover, Watts and Stenner indicate that the key aim of the Q-set is to collect items that cover the study topic and are linked to the research questions [7].

For my study, the statements were informed by my own cultural knowledge of the KSA, and professional experience as a lecturer at King Saud University and were developed from different sources including the following:

- A broad literature review about the issue internationally and in KSA, including books, articles, reports, etc.
- The findings of my pilot study were obtained via a questionnaire and interviews with Saudi educational researchers, postgraduate students from King Saud University, a preschool head teacher and a representative from the Ministry of Education.
- An assignment from my MSc course, where I conducted a focus group with PhD students in the education school and an interview with a lecturer who had experience of children's participation in research; I let them talk about their experiences of having children participate in their research
- Informal conversations with my colleagues working at King Saud University as educational researchers.
- My experience as a Saudi educational researcher, who has involved children in research (my MA dissertation)

Each statement was paraphrased to present only one idea, in order to make them easy to understand. Furthermore, the researcher should choose positive wording to make the opposite, negative, positive, but in a different way. It is preferable to frame the statements in the first person (I). In some studies, like this study, the statements were used for a highly educated sample, this was considered unnecessary [22].

It is important to adopt a framework for the Q-statements, whether a theory or article or book, etc. Thus, to underpin my set of statements (Q-set), I decided to adopt a framework using a book to structure the Q-set by drawing on other literature, professional experience, etc. Wint found that, 'The process of extracting a Q-set from the larger discourse usually involves some sort of classification process where statements are grouped under broad categories or themes' [6]. Moreover, the statements should not overlap, the language must be clear and the researcher must try as much as possible to reduce ambiguity and, finally, the statements must be understandable to all [6]. In addition, the number of statements must be minimised, because the standard number of statements for a study employing Q-methodology is usually between 40 and 80, depending on the topic [7].

In summary, it is not only criteria, such as balance and coverage, which determine the size of the Q-set; it is also the number of statements falling within the usual range expected when using Q-methodology. As Wilson mentions, 'The researcher presented the Q sample for sorting by several acquaintances in order to gather opinions regarding the size of the sample, syntax of the statements, and effectiveness of conditions of instruction' [22]. Moreover, the researcher must ensure that each statement matches with the correct theme of the Q-methodology statements, because this increases the internal validity and reliability of the research [4] and provides balance, boundlessness and coverage for the participants [7]. Making a balance of the statements means providing full coverage of different opinions on the topic, ensuring that they are related to the research questions and that each positive statement has a corresponding negative one, but with the same concept – this is more important than just being positive or negative [7].

5.2 Implementing the Q-sort

To implement the Q-sort in my study, six steps needed to be completed, as shown in Fig. 1.

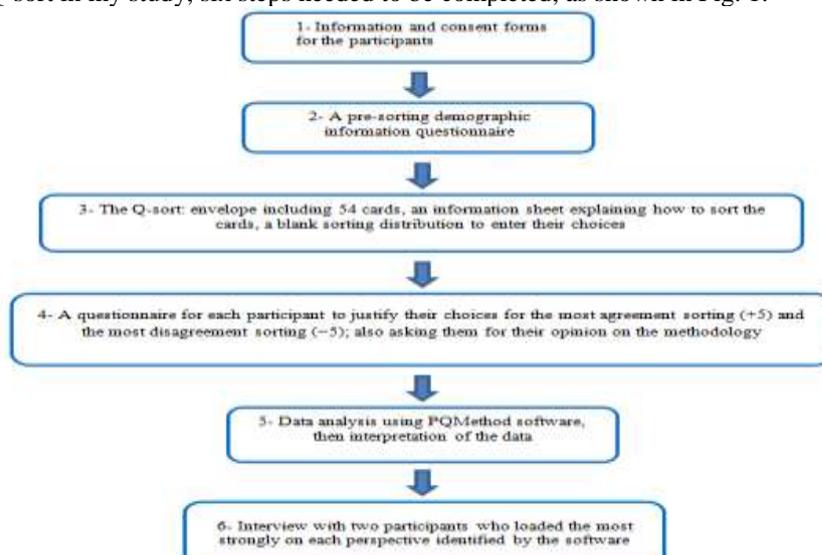


Figure 1: The Q-steps

characteristics in which they are interested' [20,p.158]. This method, as Hayne notes, is suitable for a study adopting Q-methodology [4]. The Q-participants should number between 40 and 60, as this is considered the ideal range for a Q-methodology study [5]. Moreover, in a Q-methodology study, the number of participants must be fewer than the number of statements to ensure that it is a valuable study with data that are easy to analyse [7].

5.4 The questionnaire

For this research, I used a questionnaire rather than an interview to interpret the responses of the participants after carrying out the Q-sort. The reason for this was to overcome my problem of distance and avoid discussing the issues with my colleagues, because I could be considered as an insider researcher, as I am a lecturer at KSU. In addition, the responses to the questionnaire helped me to identify the reasons for the participants' choices and their opinions on the methodology in general. Furthermore, the questionnaire allowed the participants to identify any unclear statements and make suggestions for new statements or other ways of implementing the Q-methodology in future studies [7].

5.5 Conducting the interviews

The interviews with the educational researchers were considered an essential step of the Q-methodology. I conducted open, informal interviews with the participants who loaded most strongly onto each of the identified 'voice' profiles. For example, if the Q-sort identified four voices, then I interviewed eight participants. It helped me to explore the strong loading onto one or another of the identified voice profiles by coding and dividing them into themes based on the statements provided [4] and allowed me to gain a better understanding of the nuances of each identified voice, which further helped me gain a deeper understanding of the Q-sort profiles. This kind of interview offered many advantages, as it allowed me to extract more information from the participants, check their perspectives and compare their choices and the factor arrays from the analysis [6]. Furthermore, it enabled a wider exploration of the participants' perspectives on the ethics of children's participation in research, and allowed me to investigate the way the participants placed their statements on the distribution and why they chose a particular statement to be the strongest one [7].

5.6 Data analysis and interpretation

Q-analysis identifies the differences and similarities between participants [4]. Although some statistical programs, such as SPSS (now IBM SPSS), can analyse the responses, they are not recommended [7], although some studies have used the SPSS package and obtained similar results to those of Hayne [4]. In this study, the PQMethod software (available for free from www.Irz-muenchen.de/~schmolck/qmethod/) was used for performing the analysis because it runs on Windows; for instance, the factor arrays are produced by the PQ software [7] and the program is easy to use, shows the initial for each person automatically, and the way of presenting the factors is straightforward [9]. Each factor shows a pattern of a person's perspectives, representing an individual level of statistical correlation, and at the end it shows the pattern of the Q-factors [8]. The factors appear as a family of subjective responses linked to each other; the Q-factors emerge from a person's feelings, thus reflecting their subjectivity, rather than being about themselves [21]. After the analysis, as Ernest mentions, the result illustrates the differences and similarities amongst the groups [25].

The PQMethod software gives the researcher the results of the data as numbers for each factor, but does not interpret these factors. The interpretative task in Q-methodology involves the production of a series of summarizing accounts, each of which explicates the viewpoints being expressed by a particular factor [5]. The aim of this stage is to read the factors that have emerged as words, not just numbers, and that allows the reader to see the similarities and differences of the participants' perspectives [26].

VI. Strengths and Limitations

The strengths and limitations of this methodology depend on the context; in the study at hand, the context was the KSA. The strengths focus on the suitable points of the method. Q-methodology helps with exploring participants' viewpoints on any new topic in a different way. This method is considered well-organised and follows clear steps. As one participant in the pilot study commented, 'Although I do not have any idea about the topic, I can share my perspective from reading the statements and sorting them'. Moreover, many participants commented that the results could not be generalised because of the low number of participants. The answer is that the point of Q-methodology is to identify people's viewpoints, rather than how many people hold this viewpoint. Furthermore, this method allows for revealing all the participants' voices and does not ignore any voice, as illustrated throughout the course of the analysis, by presenting the results in factors. Furthermore, in the Q-sorting process, administering a questionnaire to the participants after they completed their Q-sort made the data collection more time-efficient and simpler than would have been possible through interviewing. Lastly, this method is effective whether the researcher is present or absent during the data collection.

Based on my experience as a Saudi researcher, I can explain the limitations of Q-methodology as follows. The methodology was new and unfamiliar to the Saudi participants; thus, they needed time to understand it, then use it, and they indicated that they did not have time to learn a new skill by recognising the Q-methodology as a method. However, I understand their fear of trying this new approach, since Q-methodology is a new and unfamiliar tool in KSA; consequently, there was a need to simplify the statements in order to make them perfectly clear for the participants. At the end, when I asked them their opinions on the method, Q-methodology, their answers were valuable and will help future researchers to keep in mind and accordingly avoid the problems identified. For example, the participants focused on the number of statements as being too large (54 statements); therefore, the decision was made to decrease them in the future. In addition, some of them commented that the Q-methodology process took a long time to complete; thus, it would be better to undertake the process online.

VII. Conclusion and Future Recommendation

Since Q-methodology remains uncommon among researchers, this research adds a new study to the Q-methodology community, as few studies using this method have been conducted in the Saudi context. Using new methods, such as Q-methodology, can increase the academic community's awareness of other methods that can be used to explore people's perspectives, rather than using existing questionnaire and interview tools. Personally, I hope this article inspires change in the Saudi academic community, enabling the community members to learn about it and use it to conduct their research.

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