The barriers to and benefits of conducting Q-sorts in the classroom

Cite this article as: Killam L, Timmermans KE, Raymond JM (2013) The barriers to and benefits of conducting Q-sorts in the classroom. Nurse Researcher. 21, 2, 24-29.

Date of submission: November 11 2012. Date of acceptance: February 22 2013.

Abstract

**Aim** To outline the barriers to and benefits of using Q methodology in a classroom.

**Background** Q methodology has been established as a systematic way to measure subjectivity that is consistent with the naturalistic paradigm. While it is often confused with quantitative methods, it provides the qualitative researcher with powerful tools to investigate the diverse subjective experiences and perceptions of participants.

**Data sources** Reflections in this paper stem from the experiences of the authors and are supported by literature.

**Discussion** Barriers to conducting a Q-sort activity in the classroom are context dependent and may include limitations of the environment, time constraints as well as issues with comprehension. Despite these barriers, using a classroom for the activity can also enhance student learning, increase participation in research, clarify instructions, enrich study feedback and promote accessibility of the study population.

**Conclusion** With an understanding of potential pitfalls of using this methodology in the classroom setting, nurse researchers can develop strategies to reduce these barriers and enhance the quality of future research.

**Implications for practice/research** Q-methodology is an alternate way of measuring the subjective views of individuals in a variety of settings such as clinical practice, research and educational institutions. Q-sorts may be used for research and/or classroom activities because the activity can promote discussion related to the content of a class. If using an activity like this one, educators and researchers need to be mindful of potential barriers to sorting in order to minimise them and maximise the potential of the activity.

**Keywords** classroom research, participation, Q method, Q methodology

Introduction

Q METHODOLOGY was introduced in 1935 by psychologist and physicist William Stephenson as a systematic way to measure subjectivity. In essence, participants are asked to rank a given set of statements on a scale ranging from ‘most disagree’ to ‘most agree’, each scale point having a pre-determined number of spaces (Watts and Stenner 2012). As a result, this approach promotes careful consideration of the ranking of each statement.

The analysis in Q methodology produces conceptual categories of viewpoints for interpretation by the researchers. These are produced using a ‘by person’ factor analysis to quantify the patterns of subjectivity in a group of participants who have completed a ‘Q-sort’ (Akhtar-Danesh et al 2008). In traditional factor analysis, a large number of people are given tests. These tests are correlated and analysed using factor theorem to identify how people are alike (Stephenson 1935). However, Stephenson (1935) showed that traditional factor analysis could be inverted, with smaller groups of people asked to provide responses to a large number of test items. This inversion allows the test (the statements or other measurable material) to be scored, rather than the individuals involved in the study. Perceptions of the...
test items can then be determined. Q methodology uses this inverted factor analysis to identify groups of people who think in similar ways.

Q methodology is most commonly used in fields such as psychology, marketing, sociology and conflict management (Ramlo 2008). It has also recently been applied in other fields such as nursing (Akhtar-Danesh et al 2008) and dream research (Parker and Alford 2010).

It is increasingly being recognised for its ability to quantify subjectivity. Another reason for a recent rise in the popularity of the method may be the increasing availability of data-analysis software (Akhtar-Danesh et al 2008). For example, PQMethod (Schmolck 2002) is commonly used by Q-methodologists and is available to download for free.

Once a program identifies groups of people who have sorted statements similarly, tables are produced. These are then carefully analysed by the researchers to determine themes (Watts and Stenner 2012). This interpretation involves careful consideration of the rank-order of statements in each produced factor array and is most recognisably a qualitative component of the method.

Unfortunately, with the rise in popularity, misconceptions of Q methodology as a quantitative assessment tool have led to the obscuring of the principles underpinning it in some published research studies (Dziopa and Ahern 2011). These studies can be potentially confusing to novice researchers. Q methodology has also been labelled as ‘quantological’ because it uses statistics to obtain qualitative findings (Parker and Alford 2010).

Since subjectivity is the focus of the study, Q methodology is underpinned by a post-positivistic orientation. Q methodology is a powerful tool for researchers to discover a range and diversity of viewpoints, perspectives and beliefs among a group of participants (Shinebourne 2009). Numerous publications are available to guide researchers through Q methodology, with Brown (1980) and Watts and Stenner (2012) recommended starting points for researchers new to the methodology. Support from experts is also available through a free subscription to Kent University’s Q-listserve (https://listserv.kent.edu/cgi-bin/wa.exe?A0=Q-METHOD).

Consideration must be paid to context-specific influences on the sorting. Q-sorting can be conducted well in many settings and adapted to explore a variety of complex issues (Amin 2000). However, the intricacies of Q-sorting in the classroom have received little attention in the literature. The purpose of this paper is to examine considerations for researchers conducting Q-sorts in the classroom with a student population. The paper will illuminate the inherent complexities by exploring the benefits and barriers faced when Q-sorts are used with students in this setting. Many of the issues discussed stem from recently completed research involving the perceptions of unsafe clinical learning situations in baccalaureate nursing education. Procedural decisions made will be discussed in conjunction with philosophical and methodological implications. Some alternate options will also be explored.

The Q-sort activity
After the researchers conducting the study had obtained ethical approval, a researcher not currently teaching the students approached them during classes where the Q-sort was being used to promote awareness of potential threats to safety in clinical settings. The study was conducted with nursing students in all four years of a Bachelor of Science in nursing programme at one site of a collaborative programme, as well as the fourth year of study at another site in the same collaboration. The researcher gave them the option to participate, presented the research methodology and gave them packages containing information about the study as well as invitations to participate in the research by handing in their completed Q-sorts. The Q-sort activity included 43 statement cards and a ‘Q-template’ for sorting the cards.

Following a brief introduction to the topic, participants were asked to read the preface: ‘In a clinical setting, it is most unsafe when...’ Verbal and written instructions were provided. Each statement card was read and sorted using the Q-template, which contained a predetermined number of boxes for the cards under headings ranging from ‘Most Disagree’ to ‘Most Agree’ (Figure 1, page 26). A short discussion followed regarding the students’ impressions of the activity as well as statements that were meaningful to them. Students willing to participate in the research study signed the consent form and handed in their packages. Others either handed in their packages without signing the consent forms, or kept them.

In general, the sorting activity was completed in about 45 minutes. Ten different classrooms were visited.

Barriers to sorting in the classroom
Although Amin (2000) argued that Q methodology can be conducted effectively in a variety of settings, it is important to note that the chosen setting will yield both potential barriers and benefits. Careful consideration of the barriers can help in planning optimal conditions for students to complete Q-sorts. The setting in which students participate in the Q-sort may influence their decisions, and so a number
of strategies were implemented in this study to decrease the setting’s impact. Overall, barriers to conducting a Q-sort in the classroom were considered in relation to the environment, time constraints and student comprehension.

Environment It is well documented in teaching and learning that a supportive environment is an essential component in helping students to translate information into knowledge (Coral 2009). Likewise, the physical environment in which a Q-sort is conducted can influence the sorting process. Awareness of environmental issues can enhance the quality of research and it is up to the researcher to provide an appropriate environment for sorting (Karim 2001). Attention to the physical characteristics of the room and potential distractions can encourage a more honest and accurate representation of participants’ thoughts while sorting.

The style and size of desks, for example, can influence data collection. Ample space is needed to adequately organise oneself while completing a Q-sort, and inadequate desk space can limit students’ abilities to sort statements comfortably and efficiently. Small desks in one of the ten student groups in this study complicated the sorting task. Students managed this difficulty by sorting the statements on binders on their laps. When possible, efforts should be made to schedule an alternate room or to visit these students in another class if sufficient space is unavailable in the study location.

In the study described here, the number of classes for possible recruitment was limited, as students were not recruited in one of the research team members’ classes. An alternate classroom of adequate size with appropriate desks was not available at the required time.

In a classroom, it is more likely that distractions will affect sorting. To limit distractions, researchers can set some ground rules for discussion before sorting. However, as students complete their sorting, the level of noise in the classroom becomes more difficult to control.

An increasing level of noise in a classroom can be a significant distraction that can hinder a student’s ability to focus on the task at hand. Some students participating in this study identified noise in the classroom as a factor affecting their level of concentration. This noise could be peers’ discussions, or laptop computer and mobile phone sounds. To reduce noises in the classroom during data collection, the researchers reminded students to remain quiet and to turn off laptops and mobile phones during sorting.

Discussion can also allow ideas and thoughts to be shared, which could influence the sorting of the statements. This sharing of thoughts or perceptions is counter to the goal of most forms of Q methodology, which is to allow the participants to provide their unique perspectives (Akhtar-Danesh et al 2008, Shinebourne 2009). An important feature of Q methodology is that participants are able to indicate their viewpoints without prejudice or peer coercion. To avoid discussion, the process was clearly explained, and the fact that there was no ‘right’ answer emphasised. Participants were told that the
goal was to identify divergent perspectives of unsafe clinical learning situations. The facilitator reminded students that all perceptions were valid. In some classes, limited discussion occurred near the end of the sorting.

To reduce the noise in the classroom, conducting the sort at the end of a class or incorporating a break directly after the sorting procedure may be considered. However, this approach would have the disadvantage of increasing the likelihood of students rushing through or not completing the sort.

In the study, the purpose of the activity was not only related to research, but also aided the promotion of critical thinking about unsafe clinical learning situations. Therefore, it was deemed most appropriate to conduct the sort in the classroom at a time when students would be less likely to rush through the activity.

**Time constraints** Offering adequate time to complete the Q-sort is a significant factor in obtaining quality results. Q methodology is most effective when students engage in a thoughtful and purposeful reconsideration of statement placements (Dennis 1986, Brown 2002, Watts and Stenner 2012), but in the classroom Q-sorting is typically affected by time constraints. These can be problematic as the activity is complicated and requires time for participants to think about each statement (Karim 2001).

Since this study was conducted during scheduled class sessions, the participants were limited to a specific time frame set by the course professor. However, with the exception of one group of students, no time limit was communicated to the students, and it was left up to the researcher to manage time appropriately. Students in this study completed the sort in approximately 30 to 45 minutes without being rushed. This time range is consistent with the experience of Akhtar-Danesh et al (2008), so it is reasonable to assume that students took the necessary time required to engage in meaningful sorting.

Completing the sort while being watched could cause participants to feel rushed, reducing their ability to comprehend the activity and make meaningful decisions. To eliminate time pressures for students, a strategy for collecting data at convenient times outside class could be implemented. This would undoubtedly result in a decreased participation rate due to the complexity of student schedules.

Online sorting may eliminate scheduling barriers. An online Q-sort would also have enabled easier access to a more geographically diverse sample (Karim 2001). However, it was felt that students needed the verbal instructions as well as the hands-on sorting flexibility provided by tangible cards. Face-to-face sorting with participants is ideal (Karim 2001) and using tangible cards provides participants with more flexibility when placing statements, and comparing and reconsidering their choices.

Offering an opportunity to start the sort on a computer or on paper and finish it outside class may be another feasible option. However, students will be more likely to forget about the activity if completing it outside class, particularly on a course with large volumes of homework. Approaching students individually would have been more time-consuming for the researchers, but could have decreased the students’ sense of pressure, resulting in a more thoughtful completion of the Q-sort.

**Comprehension** Participants in this study viewed Q-sorting as difficult. Karim (2001) also supports the notion that participants find Q-sorting a challenging activity. Some showed signs of confusion despite being given verbal and written instructions. In general, students in upper years of the course expressed more of an understanding of the sorting process than first-year students, whose lack of comprehension could come from having little or no experience with research. However, upper-year students had not been exposed to Q methodology either; it is unfamiliar to many researchers and is not taught to students on the course involved in the study.

Although the researchers ensured that instructions were clear and the statements were concise, it is possible that there was some confusion or misunderstanding in the statements and/or tables. To minimise this confusion, the researchers circulated among the students and provided further clarity when needed. However, when asked, a few students in the first year indicated they might have completed their sort backwards. These backwards sorts were not considered in data analysis. Approaching each student individually to ensure instructions were understood might have prevented this error.

For ethical reasons, personal information that would have identified participants was not collected. Therefore, it was not possible to return to the students for clarification in relation to a particular sort after it was collected.

**Benefits of sorting in the classroom** There are many benefits to conducting Q Sorts in a classroom with students, including: enhanced learning, encouraged participation, increased understanding of the study, enriched feedback and alleviated scheduling conflicts. For research involving students’ perceptions of unsafe clinical learning, it was felt that these benefits outweighed the drawbacks of recruitment in the classroom.
**Enhanced learning** The most significant benefit to conducting a Q-sort in the classroom is that it can be connected to an in-class activity, promoting meaningful enquiry-based learning. In this study, students were given the opportunity to explore their viewpoints of a topic relevant to their placements' learning environment and in which they had to critically analyse unsafe clinical practice. The activity promoted thinking because students were forced to choose which statements they thought were most unsafe in clinical practice, enabling subjectivity to become operant (Barker 2008). Watts (2011) explains that the concept of operant subjectivity refers to Stephenson’s notion that viewpoints should be considered as ‘empirically observable, meaningful and relational behaviour’. This exercise also enhanced their reflection and understanding of unsafe practice in clinical settings.

Forced-choice sorting has been criticised for producing findings that are mechanically rather than carefully placed (Dennis 1986; Barker 2008). In this study, students remarked that it was not an easy task; some felt frustrated by the required prioritisation of the statements and indicated that they wanted to make additional boxes under the ‘Most Agree’ column. The presence of the researchers aided in clarifying the purpose of the activity, which facilitated critical thinking among students about their views of unsafe clinical learning. Some students indicated that they appreciated being given the opportunity to express their thoughts and feelings about unsafe clinical practice.

Barker (2008) described the Q-sort activity as an empowering experience that allows participants to explore their understanding and knowledge drawn from their daily practice. Similarly, Ramlo (2005) identified that Q methodology helps with discussion, improves dialogue, and aids in the determination of consensus and differing views among a group. Overall, the Q-sort activity stimulated meaningful discussion, which met the learning needs of students and helped to build a sense of belonging in the classroom and clinical settings.

**Participation** In this study, the use of Q-sort in the classroom encouraged participation in research. The Q-sort activity was included as part of the class objectives for that day, and assisted in their learning about research and the importance of student safety in clinical settings. However, only students who wished to participate in the research study signed the consent forms and handed back their packages. Most students agreed to participate in the study; they had already completed the Q-sort and felt it would be beneficial for their viewpoints to be included in the analysis.

As a result, the researchers were able to encourage higher participation rates and increase the diversity of the Q-sample. This eliminated a potential disadvantage in face-to-face Q-sorting, which has been criticised for limiting the diversity of the Q-sample (Karim 2001).

**Clarity of instruction** Q methodology is preferably conducted face to face (Karim 2001). Participants typically need comprehensive instructions to complete the Q-sort because of its complexity (Akhtar-Danesh et al 2008). In this study, detailed written and verbal instructions with visual guidelines presented at the beginning of the class helped the students to understand the purpose of the research, its methodological underpinnings, and its theoretical application to clinical practice setting. Students were then instructed to read through all the statements and divide them into three piles: agree, disagree and neutral. Tangible cards provided more flexibility for students when sorting, something that is unlikely to be possible with web-based Q-sorting.

**Enriched feedback** The use of a Q-sort in the classroom also enabled enriched feedback. Students were able to complete the sort in an allotted time frame with the researchers present. They often sought feedback from the data collectors, which was ideal, considering the complexity of the method.

Engaging in the Q-sort in the classroom also gave the researchers the opportunity to collect feedback and comments from the students at the end of the session. This was beneficial for future class activities, where vague explanations about the Q-sort activity by the researchers as well as student misconceptions could be clarified. Overall, this exercise provided feedback about the study, particularly surrounding the ease or difficulty of conducting the research in such a setting.

**Accessibility** The researchers attended multiple classes on separate occasions in all four years of the baccalaureate nursing course. This may be considered time-consuming, but it allowed them to obtain valuable student feedback and also aided recruitment to the study by providing easy access to the student population. The researchers involved in the study were colleagues working alongside the professors whose classes were visited. The researchers had access to class timetables and were able to schedule class time with those professors willing to adopt the Q-sort as part of the day’s learning objective. This was less time-intensive for the researcher than meeting with individuals, as large groups could be recruited at once. It was also easy to schedule, because students were in class at the same time and location each week.
Conclusion
Conducting a Q-sort in a classroom may be beneficial for a variety of reasons related to research and student learning. Understanding the pitfalls of conducting Qsorts in the classroom helps researchers to develop strategies for reducing these barriers in future research. Consideration should be given to promoting an optimal setting for the Q-sort.

Face-to-face interaction with the researcher helps to clarify explanations and feedback. However, students may appreciate the opportunity to engage in a combination of tactile and computer-based sorting. Sorting statements on a computer in a classroom with the option of continuing outside class may relieve the time pressures felt by some students.

The benefits of conducting Q-research in the classroom outweigh the barriers. Nurse researchers should strive to understand and apply Q methodology in a variety of contexts to make the perspectives of participants explicit and add to the growing body of evidence in nursing (Barker 2008) as well as other disciplines. Q methodology is a more robust way of measuring the subjective views of individuals than are traditional forms of enquiry, such as interviews or focus groups (Cross 2005). Further, Q methodology may serve as an alternate way to perform course evaluations, which recognise students as individuals and identify more relevant areas for teacher growth (Jurczyk and Ramlo 2004). Karim (2001) suggested that it is unwise to dismiss Q methodology, as it presents many new opportunities for knowledge discovery.

Online archive
For related information visit our online archive and search using the keywords.