

# **Using Q Method for the Formative Evaluation of Public Participation Processes**

**Short title: Using Q Method for Evaluation**

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## **Abstract**

Public participation can benefit from formative evaluation to learn from experience and recommend improvements to the participation process as it's happening. Q method is a promising tool for conducting formative evaluations. It specifies the different perspectives held by participants about the process and clarifies the sources of their agreement and disagreement. Further advantages are that the technique relies on a minimal number of research participants and can be very efficient. Shortcomings are that Q method does not permit generalization to a population and requires considerable expertise to carry out. Results can also be sensitive to the particular individuals selected to participate.

**Keywords:** Q method, evaluation, public participation, social learning

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## **Introduction**

Increasingly, federal, state and local agencies are adopting different approaches to public participation. However, comprehensive efforts to evaluate “what works” and translate this information into improved practices are still lagging (Chess and Purcell 1999; EPA 2001; Halvorsen 2006; NRC 1996; NRC 2001). Formative evaluation -- evaluation conducted while the process is ongoing -- offers a means for adapting public participation efforts in response to experience and opportunities for learning that can be transferred to new efforts (Posavac 1994).

Focus groups, interviews, and surveys are proven evaluative tools. Without discounting their value, in this Research Note we assess the use of Q method for formative evaluation and consider the possible advantages and disadvantages of this less well known evaluation tool. We used Q method to demonstrate how to conduct formative evaluation of the clean-up of two contaminated industrial sites in the U.S.

## **Introducing Q Method**

Q method is a technique for revealing shared viewpoints that exist on an issue or topic (Brown 1993, Dryzek 1996, McKeown and Thomas 1988, Webler and Tuler 2006, Woolley and McGinnis 2000).<sup>1</sup> The technique has been used to investigate many environmental issues (e.g. animal rights, sustainability, climate change policy, forest management policy, and so on), although it originated in the field of psychology and is more widely used in that domain. It begins by selecting a sample of statements about an issue of interest and a group of people with clearly different opinions, who are asked to express their opinions about the statements by rank ordering them. This creates a “Q sort” for each person. The Q sorts are factor analyzed to find

patterns in how statements are related. Each pattern is presented as a perspective on the issue. Q method uses an “inverted factor analysis” to find patterns in the ways people sort the statements. A Q factor analysis correlates *people’s Q sorts* across the sample of *Q statements*, rather than the usual correlation of *statements* across a sample of *people* (the normal approach in survey research, which the Q literature calls “r” studies, after Pearson’s product-moment correlation coefficient). Q method takes the name “Q” to emphasize that it uses factor analysis differently from “r” studies. Consequently, Q method requires more statements than study participants (typically 1 participant for every 3-5 statements), the inverse of the requirement in “r” factor analysis.

Using a defined set of statements and factor analysis gives Q method some advantages over qualitative methods for identifying viewpoints. Because the found perspectives are all comprised of the same Q statements, they can be compared more consistently than findings from qualitative discourse analysis. Because each Q statement is sorted relative to all other Q statements, the method preserves the holistic nature of a viewpoint better than reductionist methods, such as surveys. Of course, every method has strengths and weaknesses and Q method cannot replace surveys or qualitative discourse analysis. This Research Note focuses on using Q method as a tool of formative program evaluation.

### **An example**

We investigated using Q method for formative evaluation in the cleanup of Waukegan Harbor in Illinois, USA.<sup>ii</sup> From interview transcripts with participants, we selected 49 statements that covered the breadth of salient issues. While it is possible to use a prefabricated set of statements, results can be more useful if new statements that directly address the major issues in the case at hand are generated from interviews. Nineteen stakeholders did Q sorts. Factor

analysis revealed two core perspectives in Waukegan about the harbor cleanup participation process. Each perspective is an idealized Q sort, giving the researcher an easily comparable description of each perspective. We summarize those perspectives here.

The **first perspective** focused on widely involving the public. It highlighted:

- using multiple outreach strategies,
- involving the Latino community,
- reaching out to parents through activities in schools,
- establishing a positive atmosphere for cooperation,
- getting support from local leaders,
- taking on reasonable goals, and
- leaving technical matters to the experts.

The **second perspective** focused on effective governance. It highlighted:

- having key governmental parties present and committed to seeing the process through,
- maintaining commitment to the process,
- being clear about goals and responsibility,
- keeping the public informed about what is going on,
- sharing information among governmental units, and
- taking a holistic approach to the entire area, rather than tackling clean-up of specific sites separately.

Insights about how the process is working and recommendations for improvements can be drawn from looking at three different kinds of results:

- consensus points -- statements that all perspectives ranked similarly high or low,

- compromise points -- statements that one perspective ranked high but another ranked low, and
- non-consensual and non-compromise points.

Two points of consensus were: (1) to have all important stakeholders involved and committed to the process and (2) to have clear support from key government programs such as Superfund. Based on these two statements, an evaluation might recommend that: *the process periodically review who is missing and work to find ways to ensure that all key governmental parties are active and committed.*

We found only a few points of disagreement between the two perspectives. One important difference was whether the process should address all the contaminated sites at the same time, or deal with each independently. The second perspective felt there were economies of scale in dealing with everything at once. The first perspective was concerned that this would amount to too much work. This suggests the following formative action: *establish benchmarks for progress on the cleanup of the harbor; allow the agencies to work on all parts of the site in a holistic manner provided that the benchmarks are being met.*

Non-consensual and non-compromise points are beliefs found in one perspective, but not in another. For instance, perspective 1 highlighted not pursuing the cleanup as a criminal case. Perspective 2 did not react strongly to this opinion one way or another. Therefore, accepting this as a recommendation may improve the satisfaction of those who subscribe to the first perspective.

### **Strengths and weaknesses of Q method**

Based on our experience in this and other projects using Q method, we believe the method has numerous advantages for evaluating public participation. Q method allows

participants to express their viewpoints with minimal researcher interference. It also forces people to prioritize their preferences. It is effective with a smaller number of people than a survey, because only a few individuals are needed to define each factor, whereas surveys require large sample sizes to produce statistically valid results (see especially Brown 1980 for the mathematical justification of this point). A Q study clarifies areas of agreement and disagreement. It summarizes the many viewpoints held by individuals into a few shared perspectives. It can be useful in contexts where conflict is high and focus groups run the risk of degenerating into shouting matches.

Q method also has weaknesses. Often evaluators will want to know how prevalent a point of view is in a population. A survey is much more appropriate method to answer this question. Q method can miss important social perspectives if the people participating do not fully represent the views held in the population of interest. Q studies limit people's expression to the pre-selected Q statements. They also lack the advantage of peer stimulation that a focus group has. Finally, Q method requires a moderate amount of effort, but demands experienced researchers to do the analysis.

### **Feedback about Q method**

Using a questionnaire, we obtained feedback about the method from people who participated in our study. Later, we presented our draft findings to a group of key players in the site cleanup (who had also participated in the Q study) and solicited their comments both in a group meeting and privately. This group included representatives of federal, state, and local government as well as various citizen organizations that had been involved in the cleanup.

From Likert-scaled questions on the questionnaire we learned that most participants felt they were able to express themselves adequately through their Q sort. They felt that it was a good

use of their time, though they sometimes indicated that it took too much time (it generally took 30-60 minutes to complete a Q sort). Participants believed the method would provide useful feedback about the cleanup and the participation process. On the other hand, they had mixed feelings about whether doing the Q sort stimulated their own thinking or changed their views of the cleanup. This opinion was based solely on the experience of completing one's own Q sort, prior to seeing any of the analysis and results.

Participants in the feedback group had generally positive views of Q method. Its main strength, as they saw it, was that it brings out the different perspectives people have and allows them to be compared. This could help predict future conflicts. Some suggested that Q method could be usefully combined with a focus group or survey. We found this suggestion intriguing and are experimenting with using Q method to inform the development of interview guides and survey instruments. Our feedback group also raised concerns that the Q results were difficult to understand, because the method is unfamiliar. Some were worried about the possibility that the analyst could manipulate the results. They also noted that a successful Q study depends on having a well-defined group of knowledgeable stakeholders. Therefore, it would be less useful in a situation where interest and involvement is weaker.

## **Conclusion**

Public participation is an integral part of making environmental decisions for many reasons. Formative evaluation ensures that public participation meets the needs of the participants and the program organizers. Surveys, questionnaires, focus groups, and qualitative analyses will continue to be useful tools for those charged with doing formative evaluation. Q method can be added to this list of tools. It offers participants a concise and reliable way to express their viewpoints. It has the advantage over surveys of needing relatively few research

participants, and over qualitative methods of enabling clear and consistent comparison of viewpoints. Q requires a certain degree of skill on the part of the researcher, but these skills are not difficult to learn.

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<sup>i</sup> Interested readers will find valuable information at <http://www.qmethod.org>.

<sup>ii</sup> Our website includes a) a guidance document for practitioners (<http://www.seri-us.org/pubs/QMethodGuidance.pdf>), b) a primer for graduate students and faculty (<http://www.seri-us.org/pubs/Qprimer.pdf>), and c) an article comparing the use of surveys, focus groups, and Q method for evaluation of community involvement (<http://www.seri-us.org/pubs/3methodscomp.pdf>).