

Qualitative Research as a Tool for Agricultural and Extension Education

Michael Campbell, Research Assistant
Robert Martin, Associate Professor
Iowa State University

In the opening of his essay, "Disciplines of Inquiry in Education," Shulman makes two important points. The first is that, because education has been tied to psychology as a foundation discipline, it has adopted, from psychology, the scientific, experimental method of research. The second is that methodology determines the kinds of questions a researcher is able, or at least is likely, to ask (Jaeger, 1988).

We in agricultural education are, in a sense, doubly caught in this net of scientific inquiry, because our field of study is not only based on the foundation discipline of psychology, but on that of agriculture as well. It can be noted here that scientific inquiry, as we know it, stems directly from the plant genetics work of Mendel. Agricultural education comes by these empirical practices legitimately. They have served us well up until now. But do they remain the best possible choices?

It is the essence of our questioning that this article will focus its attention. It is our observation that, as regards international agriculture and extension education, the "donor nations" have often been guilty of asking the wrong questions in their approach to world agriculture problems. In this article, it will be argued that by expanding our research methodology, we can re-order our line of questioning, and in so doing, be better able to serve our international clientele.

Quantitative and Qualitative Research

There are, generally speaking, two ways of looking at the world. The first is the traditional, empirical-reductionist view of the world, as it is described by quantitative research methods. The second is the rational, wholistic view of the world, as it is often described by qualitative research (Usher and Bryant, 1989).

It is important that we look closely at these two "world views", or paradigms, as they are not called. The empirical view of the world is based on a "positivistic" view of reality, which rests on the idea that only that which can be sensed by the five senses is real. Furthermore, if it can be sensed, and is real, it can be broken into its parts, and those parts can be measured, i.e., it can be quantified. Generally speaking, quantities can be compared, and values assigned.

The corollary of this line of thinking is that, that which can not be broken down and measured, at least theoretically, is not real, hence, it has no value. Science is based on this concept of breaking things down and measuring them (Hayward, 1987). In its place, this has great value. One need only look at the progress of scientific medicine to see that. It also has its limitations. For our purposes, these limitations have to do with human behavior.

The Behaviorist Model

Behavior, as it has been observed from a scientific, reductionistic point of view, comes under the discipline of behavioristic psychology (Hayward, 1987). Within a certain context, there are benefits to this approach in observing nature. Much has been learned

about what makes humans do what they do, both individually and collectively, by making scientific observations. Progress in human relations and communications, and particularly in education, is directly attributable to behavioral studies. Yet, because these kinds of studies rely totally on observable phenomena, they necessarily miss much that is human. For being human includes the ability to think, to reason and to make judgements, none of which are directly observable phenomena. The results of these actions can be measured, the phenomena themselves can not.

So how do we account for those sorts of human-like tendencies? Or, as Plato might ask, "How can we account for such "Qualities" as "Truth," "Beauty," and "Justice"?" This analysis brings us back to our original question, "what is the essence of our questioning?"

International Development

Current literature concerning "development" and "technology transfer" is full of stories of the failure of the western scientific establishment to solve many of even the simplest problems with which the world's poor and hungry are burdened. Although many of the best minds in the world have tackled these problems, with huge budgets, and all the latest techniques, the number of undernourished and starving people continues to grow. The problem may not be so much with technology, per se, as it is with our methodology of research, and particularly with the types of questions that our methodology permits us to ask. We have made great progress in quantifying the world's problems. Maybe it is time for us to ask those other questions, the ones having to do with quality.

Qualitative Methodologies

It may be instructive for us to review three selected research projects that used qualitative methods to derive questions, and perhaps answers, that were missed using strictly quantitative research methodology.

Case Study One

The first study was conducted by A. C. Elliot. This study was a measure of capacity-building, which is defined as "the development of the conscious capability to establish a foundation for development, which will be self-sustaining after the withdrawal of donor input" (Elliot, 1989, p. 4).

The purpose of the study was to develop a framework for evaluating the capacity-building components in rural development projects and to determine which factors contributed to the successful implementation of these components.

The study was a meta-evaluation, in that it consisted of comparing already completed evaluations of eight different rural development projects, five in developing countries and three in the United States. A naturalistic, qualitative documentary analysis of the administrative records of the eight projects was performed. The development of capacity-building was one of the overall goals in each of these projects.

Elliot used a qualitative tool called the CIPP Model to collect and analyze the data. The CIPP model of evaluation (Schufflebeam, 1983) provides a conceptual framework for investigation and was designed to formulate questions for data recording and analysis. CIPP stands for Context, Input, Process, and Product.

The contents of the agency documents were analyzed and categorized to provide detailed descriptions of the development of each project, with particular reference to capacity-building. The findings from the projects were then compared and synthesized.

To accomplish this synthesis, the following initial steps were taken: 1) a planning process for rural development was described; 2) by doing a review of literature, the practices in that process, which facilitated or constrained the building of capacity, were identified, and 3) specific indicators of capacity-building were identified. These findings were then examined, using the CIPP framework.

From this analysis, Elliot developed a set of questions which were designed to establish how an increase in capacity-building was encouraged and monitored during the evaluation process. To accomplish this task, an emergent approach was used, i.e., the plan was modified in relation to the information discovered in the records.

The CIPP framework proved to be a valuable tool for evaluating the capacity-building components of the various projects. Elliot revised the original framework so that it would:

Establish capacity-building objectives and was of evaluating their achievement.

Consider external factors affecting the project. This information allowed for making use of those elements which facilitated, and minimized those factors which constrained, capacity-building.

Develop a strategy and method for the implementation of capacity-building.

Plan and implement a monitoring and evaluation system.

Utilize indigenous institutions.

Plan and conduct management training.

Plan and implement a process approach to development.

Consider the evolution of the development process to gain insight into the success and future direction of the project (Elliot, 1989, p. 110).

Although Elliot's study was of a naturalistic nature, steps were taken to guarantee its authenticity. Stability and consistency were provided by use of an "audit trail" in the form of the conceptual framework, research questions, a matrix, and descriptions of the methods used. Steps were also taken in the study so that it could be used by other researchers.

Confirmability was insured. This was done by using documentary data, which, because it was unaltered, was less subject to bias. In addition, Elliot worked with university faculty and development project members to insure reliability. Finally, the study tried to be as rich in detail as was possible, in order that other researchers could study the findings and compare projects for relevancy.

Case Study Two

The second study was by M. G. Land and R. P. Cantrell. Lang is an economist; Cantrell an agronomist. The study concerned a farming systems-grain research project in Burkina Faso, Africa.

The project involved the introduction of a cash crop to a group of subsistence farmers. As with Elliot's work, the researchers were concerned with developing a system which would be adopted by indigenous farmers.

They quickly discovered that they needed to "forego complex data management and analysis in favor of simple and useful research that is readily adaptable to settings where skills in data management and analysis are limited" (Lang and Cantrell, in Matlon, Cantrell, King, and Benoit-Cattin, 1984, p. 68).

During the first growing season a socioeconomic survey was conducted. The survey collected data on the number of active workers per farm, the amount of livestock and equipment, labor and nonlabor inputs for all farm activities. Decision-making interviews by the economist, concerning the goals and objectives that affect the farmers resource-use decisions, were also made as were agronomic surveys concerning field sizes and yield, etc.

What the researchers discovered was that because the people were truly subsistence farmers, cash crops were not a major goal for them. Labor was an issue, particularly at the time of the first weeding. To switch to a cash economy required taking financial risks, for fertilizers and extra labor and these costs needed to be justified in order to make a cash crop worthwhile.

There are several points that deserve attention. The project began as an interdisciplinary, farming "systems" project, in which data from several foundation disciplines were examined, via interviews and empirical data collecting methods. Although this information proved of some value to Land and Cantrell, and then to other researchers that followed, it consumed both time and financial resources. The solution which they developed was what they called "one shot" interviews. These interviews drew directly on the farmers' knowledge as well as on the survey data.

While subjective, these ethnographic case-studies, as they are called in qualitative research, were thorough, and the responses were internally consistent among farmers. From these interviews, the researchers learned that crop risk and ownership of livestock (for field preparations) were factors in the farmers' decision-making. They came to understand that the relationship between the farmer, the market, food security, labor, and capital resources needed to be taken into account, as well as agronomic field tests, for development specialists to be most effective. The researchers then added a monthly interview with their indigenous assistants to their research agenda. In these meetings, "interviewers presented, to the entire staff, a critical, qualitative assessment of the data they have gathered during the month. In addition, they also work with the data-processing personnel to explain 'gaps' or inconsistencies. . . ." (Lang & Cantrell, 1984, p. 69).

They stated that: "The approach currently used draws heavily upon subjective information from farmers but retains a focus on the collection of objective, empirical data to test hypotheses generated through such interview (Lang, Cantrell, 1984, p. 69).

Lang and Cantrell concluded by writing, "we are increasing our reliance on "one-shot" research methods because: they introduce flexibility; they allow for researchers to draw more upon farmers' knowledge to formulate hypotheses, which can then be tested; these were the primary sources of information used to shape agronomic trials during the previous year; the data can be rapidly processed and analyzed with basic computer skills, and the maintenance of computer hardware is not critical (Lang, Cantrell, 1984, p. 70).

Case Study Three

The third study is entitled "A Grounded Theory Describing Factors of the Adoption Process of the Alley Farming Technology by Yoruba Women in Nigeria," by K. Cashman. Cashman used the grounded theory method (Glaser and Strauss, 1967) to develop a theory of agricultural change. She used that theory to provide a framework for alley farming research and extension, and particularly to clarify Yoruba women's role in farming.

Cashman explained that "grounded theory strives to be paradigm-transcending. . . such research goes beyond existing theories and preconceived frameworks, in search of new understandings of social processes in natural settings." (Stern, Allen & Moxley, 1967 in Cashman, 1989, p. 8).

Grounded theory is defined as theory generated or developed from data systematically obtained and analyzed through the constant-comparative method. The constant-comparative method is further defined as a process in which data collection, coding analysis, and theorizing are simultaneous, interactive and progressive.

After collecting the data, it was processed using the Concerns Based Adoption Model (CBAM), (Hall, Wallace, & Dossett, 1973), which Cashman defined as "a standard classification system for describing the perceived attributes, concerns, and uses of innovations" (Cashman, 1989, p.38).

CBAM incorporates a participatory process, where the problems and concerns that individuals experience during the adoption process are resolved during the time of adoption. One can see how this solicitation of farmer's opinions works well in developing new theories.

As to the checking for validity and reliability, Cashman did the following. Plausibility, sturdiness, and validity were checked by confirming research observations with the participants in the study. Consistency was checked by repeating information questions, using different words during the varied interviews. Due to the nature of this internal kind of check and balance system, grounded theory research is not considered to be generalizable to any great extent.

Cashman conducted on-site research in 1984-1986. She then went back to do a follow-up study in 1988. Her research identified the following factors as the most important in influencing the diffusion of alley farming:

- The clarification of Yoruba women's role in farming
- Focusing on women in alley farming research
- Socio-cultural issues
- An understanding of local realities and
- The affect of outsiders on the cultural system.

Conclusions

We have studied three fairly different research projects having to do with development in Third World countries. The first focused on how development specialists can insure some success in the adoption of technology infusion. The other two were concerned with the adoption of specific agronomical goals; in Land and Cantrell's project, the development of a cash crop; in Cashman's work, the adoption of the alley farming system.

The following types of qualitative research methods were used by these researchers. Elliot used a qualitative documentary analysis of previous evaluations as the main source of information, then analyzed it within the CIPP framework. Lang and Cantrell developed their "one-shot" interview technique, and relied on the opinions' of their assistants, in monthly meetings to streamline their work. And Cashman used grounded theory, with

constant-comparative information processing, and the Concerns Based Adoption Model to collect and process information.

We can conclude from these studies that adoption does not take place immediately and that researchers need to have great flexibility in their approach. We can also conclude that the researchers need to understand both the opinions of the people with whom they work and the particular world and cultural views held by those cultures.

To be effective as agricultural and extension educators, one must attempt to adjust technology to fit people and their cultures, and avoid changing people to fit the technology. To do this work, we must use research techniques that allow us the flexibility to discover which questions to ask, so that we can adjust our technology accordingly.

In summary, the kinds of questions that lead to an understanding of people in "nonhigh tech" cultures are not typical questions in the traditional scientific, reductionistic view of research. It is important that we follow the kinds of examples cited in this paper, and begin to incorporate qualitative research methods into our research projects, if we are to be of service, as educators, to our international clientele.

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