

A MODEL FOR GATHERING STAKEHOLDER INPUT FOR SETTING RESEARCH PRIORITIES AT THE LAND-GRANT UNIVERSITY

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Abstract

The American public is demanding higher accountability from land-grant universities as evidenced by declining financial support for higher education where the majority of agricultural research is conducted. Reasons for declining financial support may be a perception of disenfranchisement and concern by stakeholders that public dollars spent on research only benefits a narrow segment of the economy.

In light of declining public support for publicly funded research, the 1998 Farm Bill (Public Law 105-185) stated that stakeholder input must be collected when setting research priorities. This paper advances a model for collecting and implementing stakeholder input into setting research priorities at land-grant universities that is grounded in Guba and Lincoln's Fourth Generation Evaluation theoretical model (1989).

The proposed model describes a process that will streamline and facilitate gathering stakeholder input in a direct and user-friendly manner. This model should be tested and further refined at other land-grant institutions to meet the current and pressing need for greater public accountability. Implications of this study include a discussion of the importance of collecting stakeholder input and consequences of operating without community participation.

Introduction

Stakeholders of the land-grant university system have benefited greatly in the past century as evidenced by the green revolution. Just two farmers can produce enough food and fiber for 100 urban and suburban dwellers, freeing them to pursue other vocations. Although agricultural research and development activities are not eminent to most stakeholders, the agricultural industry accounts for nearly 13.5% of the gross domestic product and employs 18% of all U.S. workers (Lechtenbert, 1998). In spite of the agricultural advancements made over the past century, urbanization and technology have continued to distance Americans from their agricultural heritage. It is not surprising that the public demands increased accountability from publicly funded research institutions evidenced by declining financial support for higher education where the majority of agricultural research is conducted (Altschuld & Zheng, 1995).

In this vein, the 1998 Farm Bill (Public Law 105-185) required that stakeholder input be collected when setting research priorities. Section 102c, Priority Setting Process, specifically stated (italics added):

Effective October 1, 1999, to obtain agricultural research, extension, or education formula funds from the Secretary, each 1862 Institution, 1890 Institution, and 1994 Institution shall establish and implement a process for obtaining input from persons who conduct or use agricultural research, extension, or education concerning the use of the funds.

This legislative mandate focused on two important criteria required for land-grant institutions to obtain research funding from the USDA: (1) setting priorities for agricultural research, extension, or education (accomplished through the Plan of Work established by the Government Performance and Results Act); and (2) obtaining

stakeholder input when setting priorities for research, extension, or education. Operating without stakeholder input poses a serious threat to continued public funding for agricultural colleges.

With the U.S. Congress requiring stakeholder input at the national level (PL 105-185), a paradigm shift must occur from traditionally top-down priority setting by college deans and advisory groups to a more inclusive and democratic action research methodology for determining the direction of publicly funded research. Typical Plan of Work strategies have included both internal and external methods for assessing stakeholder input. Communication has been filtered from department heads to the dean's office for consideration when setting research priorities. Externally the deans' advisory councils, often representing major state commodity groups, have provided input on key planning issues.

These strategies are important for collecting stakeholder input, but they represent those stakeholders who are already committed and highly vested in the process. An expanded methodology was needed that would not only include agents and beneficiaries of university programming, but also engage underrepresented citizens who have lost opportunities as a result of university programming (Guba & Lincoln, 1989).

An enhanced and stable model for obtaining stakeholder input should be developed; one that could be implemented, replicated, and refined at every land-grant institution that receives public funding. Developing a model for gathering stakeholder input should be comprehensive and address all agricultural commodities for each state. The Oklahoma State University Forestry Department was chosen as a case study to develop a pilot model for gathering and implementing stakeholder input into research priority setting using Guba and Lincoln's (1989) *Fourth Generation Evaluation* theoretical framework.

Purpose and Objectives

The purpose of the study was to introduce a pilot model for collecting and implementing stakeholder input into setting research priorities at all land-grant

institutions in an effort to meet the mandate of the 1998 Farm Bill (Public Law 105-185). The specific objectives were to:

1. Establish a need for the model and demonstrate application of theoretical principles for collecting stakeholder input.
2. Develop a streamlined pilot model for collecting stakeholder input in research priority setting.
3. Outline the pilot efforts that have been completed at Oklahoma State University regarding collecting stakeholder input for setting research priorities as a case study.

Guba and Lincoln's Model for Collecting Stakeholder Input

To collect stakeholder input for research priority setting, this study used a modified fourth generation evaluation model outlined by Guba and Lincoln (1989). The pilot model includes adjustments to Guba & Lincoln's processes and roles of participants. The purpose of making the adjustments was to increase stakeholder representation and to increase the acceptance and implementation of the model.

Guba and Lincoln's (1989) model provided both the needed historical context and a detailed methodology described in *Fourth Generation Evaluation*. As implied by the name of their model, Guba and Lincoln outline three forerunner generations of evaluation. The first generation was termed "measurement" and involved the use of IQ tests, examinations, and other forms of educational measurement techniques. The evaluator assumed the role of an unbiased technical expert who administered, scored, and reported test results. The second generation was descriptive in nature and cast the evaluator in the role of observer/describer of programs and individuals in relation to definable objectives. The third evolving generation of evaluation was "judgment", which cast the evaluator in the role of expert. As expert, the evaluator made judgments on the merit and worth of the program in light of its described strengths and weaknesses relative to the objectives or outcomes expected of the program.

These three generations included boundaries and parameters for evaluation that were established *a priori*, or through deductive reasoning, where boundaries were established through negotiations between the client and the evaluator. Fourth generation evaluation was termed “responsive constructivist” as it exemplified a responsive approach by negotiating parameters and boundaries of the study through an interactive process involving all stakeholders. This emerging generation of evaluation is constructivist in that the methodology employed has its roots in inductive analysis. It has also been termed “interpretive” and “hermeneutic” as well.

Fourth generation evaluation is a four-phase iterative process with a variety of steps in each phase. The first phase involved identifying stakeholders and eliciting their claims, concerns, and issues (CCI). A claim is an assertion made by the stakeholder that is favorable to the program; a concern is an assertion made by the stakeholder that is unfavorable to the program; and an issue is any state of affairs about which reasonable people may disagree. Guba and Lincoln (1989) described stakeholders as falling into three broad categories: agents are those persons involved in producing, using, and implementing the program; beneficiaries are those persons who profit in some way from the use of the program; and victims (hereafter referred to as underrepresented) are those persons who are negatively affected by the program.

The second phase of fourth generation evaluation involved opening circles of stakeholders to other groups of stakeholders and new information. It is thought that by exposing stakeholders to new information, resolution and consensus will occur. In the third phase, the evaluator engages in information-gathering with the expectation that further dialog will occur between the different stakeholder groups to address the unresolved CCI's. The fourth phase involves debate between stakeholders led by the evaluator using information gathered from the third phase in an effort to reach consensus on each disputed item.

From the negotiation process in the final phase of the evaluation, three possible outcomes may result: (1) full resolution and

consensus on claims, concerns and issues, which leads to action; (2) incomplete resolution where action is delayed until further information is obtained; and (3) no consensus is reached and no action is possible. An important aspect of fourth generation evaluation is that evaluations will “never stop, they merely pause” (Guba & Lincoln, 1989, p. 226).

Modified Model for Collecting Stakeholder Input

Several procedural modifications to Guba and Lincoln's four-phase model were made for the explicit purpose of streamlining the process (Table 1). We eliminated the hermeneutic circles (discussion groups) in phases one and two. As social science researchers, we chose to collect the CCI from stakeholders directly through interviews and presented the data to the department faculty. This change addressed the issue of obtaining stakeholder commitment for participation and reduced participant attrition (Greene, 2000). The affect of eliminating the hermeneutic circles served to reduce participant burnout and to economize the data collection and analysis process.

Privileging the evaluators to make judgments regarding the legitimacy and inclusion of stakeholders reverts the process back to third generation evaluation and is clearly problematic. It denies stakeholders the opportunity to self identify and engage in the democratic process (Laughlin & Broadbent, 1996). While we sought to address this concern by deprivileging the client (Forestry Department faculty) and evaluators in phases II and IV, we do call for interpretive filtering of the data (synthesizing data collected) in phase III of our model to expedite the process of implementing stakeholder input into priority setting. This modification is also consistent with eliminating the hermeneutic circles in the modified model.

In phase IV of the modified model, democratic conversations among stakeholders at all levels of the process were encouraged through negotiation sessions. We also added the element of debate to help facilitate action alternatives regarding change to research priorities to phase IV

through small group interactions. This modification was in contrast to Guba and Lincoln's belief that action alternatives will naturally result from the consensus obtained through a hermeneutic dialectic process.

Instead of recycling the entire process within hermeneutic circles, which is resource and time intensive, we proposed to establish an on-going communication network to facilitate future priority setting. This network may take any number of forms such as an Internet chat room, online conferences, workshops, newsletters, and email exchanges among stakeholder groups. The point being that gathering stakeholders synchronously is expensive and time consuming for all parties involved. Allowing stakeholders to contribute to the ongoing dialog asynchronously serves to facilitate a democratic process, while freeing participants to enter and exit the activity at their convenience.

To further streamline the model, Laughlin and Broadbent (1996) suggested that the views of professional experts be privileged in contrast to Guba and Lincoln's model. This change was made with several conditions attached: (1) that the expert does not abuse the privilege; (2) that prior discourse and agreement among all stakeholders be obtained; and (3) that an understanding of fairness issues are clearly

understood. Privileging experts served to facilitate the process in that not all elements of research priority setting need to be democratically resolved. For example, the department chair could take stakeholder input and work with faculty to establish a research agenda that is sensitive to stakeholders' needs while working within the confines of the university system.

This project adopted Babiuch and Farhar's (1994) proactive position for collecting and analyzing stakeholder priorities for university research with the explicit purpose of setting future-oriented strategic goals for research expenditures. Guba & Lincoln (1989) provided categories of stakeholders to be included in the study (agent, beneficiary, and underrepresented), and provided components from their twelve-step evaluation model for inclusion in this study's four phases. While the modified model sacrificed a measure of democracy by eliminating the hermeneutic circles, it has resulted in a more direct and linear approach for collecting stakeholder input for research priority setting. The proposed model represents a simpler process that should benefit land-grant institutions seeking to include stakeholders when setting research priorities (Table 1).

Table 1
Comparison of Theoretical Model with the Modified Model for Collecting Stakeholder Input

Guba & Lincoln's Theoretical Model	Modified Model
Pre-evaluation work:	Pre-evaluation work:
a. Initiate contact with client	a. Initiate contact with client
b. Select and train team of evaluators	b. Select and train team of evaluators
c. Make entry and logistical arrangements	c. Make entry and logistical arrangements
d. Assess local political factors	d. Assess local political factors
I. Identify stakeholders and elicit their claims, concerns and issues (CCI)	I. Identify stakeholders
a. Mount continuing search strategies	a. Mount continuing search strategies
b. Establish hermeneutic circles	b. Identify potential stakeholders through staff and self identification procedures
c. Shape the emerging joint construction	c. Arrange interview appointments with agents, beneficiaries, and underrepresented stakeholders
d. Assess trade-offs and sanctions	
e. Formalize "conditions" agreement	

Table Continues

Table 1 (Continued)

Guba & Lincoln's Theoretical Model	Modified Model
<p>II. Stakeholder groups engage in dialog about CCI in order to arrive at consensus</p> <ol style="list-style-type: none"> a. Make the circles again b. Interplay of interview and observation c. Literature analects d. Evaluator's etiologial construction e. Sort out resolved CCI 	<p>II. Information gathering & analysis by evaluation team</p> <ol style="list-style-type: none"> a. Interview stakeholders and elicit CCI <ol style="list-style-type: none"> 1. Forestry Dept. faculty 2. Private land owners (NIPF) 3. Industry representatives 4. Government forestry agents 5. Associations serving forestry b. Document analysis for CCI <ol style="list-style-type: none"> 1. Newsletters 2. Brochures 3. Fact sheets 4. Professional journals 5. Departmental records c. Recording of observations <ol style="list-style-type: none"> 1. Interviews 2. Conference proceedings 3. On-site (businesses, plants, farms, forests, offices, and labs)
<p>III. Evaluator collects information about unresolved CCI</p> <ol style="list-style-type: none"> a. Prioritize unresolved items b. Collect information c. Utilize further hermeneutic circles d. Gather existing information e. Perform special studies 	<p>III. Data analysis – Interpretive filtering</p> <ol style="list-style-type: none"> a. Analyze interviews for emerging CCI b. Confirm hypothesis about CCI with stakeholders (two-way negotiation process between stakeholders and evaluators)
<p>IV. Negotiation among stakeholder groups to reach consensus about disputed CCI</p> <ol style="list-style-type: none"> a. Define unresolved items b. Illuminate, support, refute items c. Provide sophistication training d. Test agenda e. Carry out negotiation 	<p>IV. Negotiation between beneficiaries and underrepresented stakeholders and agents to reach a consensus about setting research priorities</p> <ol style="list-style-type: none"> a. Disseminate negotiation agenda b. Test agenda c. Debate within and among groups d. Implement research priorities
<p>Post evaluation work:</p> <ol style="list-style-type: none"> a. Report findings b. Recycle the entire process 	<p>Post evaluation work:</p> <ol style="list-style-type: none"> a. Report findings to all stakeholders b. Establish on-going communication networks to facilitate future priority setting

Research Design

We employed a qualitative case study approach to gain an in-depth understanding of the situation, values, and opinions of stakeholders within a bounded timeframe (Stake, 1995). Case studies are particularly suited to situations in which it is impossible to separate the phenomenon's variables from their context (Yin, 1994). Qualitative case studies can further be described as particularistic, descriptive, and heuristic: *particularistic* referring to a focus on a particular situation, event, program, or phenomenon; *descriptive* meaning that the end product of a case study is a rich, thick description of the phenomenon under study; and *heuristic* indicating that case studies illuminate the reader's understanding of the phenomenon (Merriam, 1998).

Qualitative data collection is about "asking, watching, and reviewing" (Wolcott, 1992, p. 19); therefore, data were collected

through interviews with faculty members and stakeholders, observations, and analysis of existing documents (public records, personal documents, physical materials within the study setting, and researcher-generated documents). Non-structured interviews rooted in the constructivist paradigm were used to obtain data from faculty and stakeholders (Guba & Lincoln, 1989). Interview questions were initially developed from the research questions and were refined throughout the interview process.

The case study was conceptualized as a four-phase iterative process (Table 2). The four phases were designed to provide other researchers with a framework for collecting stakeholder input that would encourage democratic conversation among diverse stakeholder groups at all levels of the process.

Table 2
Four Phases for Collecting Stakeholder Input

Phase	Objective of Each Phase
I	Identify and select stakeholders who fall into agent, beneficiary, and underrepresented categories.
II	Collect stakeholder input. Early stakeholder involvement establishes legitimacy and reinforces the perception that dialogue is critical for success.
III	Assimilate and implement stakeholder input into university research priority setting activities.
IV	Continue ongoing communications with stakeholders. Dialogue among stakeholders will be continued through networks affording multiple opportunities for stakeholder engagement.

The Case: Population, Sampling, Data Collection, and Analyses

We began the project by obtaining political and financial support from the Agricultural Experiment Station director and the Forestry Department head. We chose the Forestry Department at Oklahoma State University for three reasons. First, the department has 12 faculty members currently conducting basic and applied forestry related research, providing a manageable number for qualitative data collection. Second, most of the forest

industry exists in the southeast region of the state, further lending this case to a contained and manageable population. Third, most of the Forestry Department's research funding was provided by the USDA through McIntire-Stennis funding, holding the department accountable to the 1998 Farm Bill mandating the collection of stakeholder input for setting research priorities. The pilot study would not only help the Forestry Department meet the legal requirement of PL 105-185, but also would provide improved communication and public relations with departmental constituents. As

a result, faculty members of the Forestry Department were willing to participate in the study. We were granted time on the Forestry Department faculty meeting agenda in early spring 2000 to present our research agenda and, at that time, were given access to the research site.

Identification of stakeholders has been problematic in past participatory evaluation studies (Greene, 1988). Therefore, the first step in this study was to identify and select stakeholders based on theoretical definitions of stakeholders. Guba and Lincoln (1989) place stakeholders into the three categories of agent, beneficiary, and underrepresented. *Agents* are those persons involved in producing, using, and implementing the program; *beneficiaries* are those persons who profit in some way from the use of the program; and *underrepresented* are those persons who are negatively affected by the program. In addition, Greene (1988) defined appropriate stakeholders for participation in priority setting as those who (a) have legitimate stake in the outcome, (b) have sufficient program knowledge to contribute to the process in meaningful ways, and (c) have a high self-defined stake in university research. Ideally, stakeholder representation in a participatory model should be based on relative stake in the outcome and a commitment to the process, rather than on superficial diversity criteria; embracing core values of equity, parity, and justice (Greene, 1988).

The initial population of bona fide stakeholders was the faculty members actively engaged in research, who were categorized as agents. After the introductory faculty meeting, we made appointments with each of the 12 faculty members and conducted one-hour face-to-face interviews. Interviews were designed to familiarize participants with the priority setting process, to elicit their concerns about the process, and to stimulate thinking about the issues (Guba & Lincoln, 1989). We also asked the faculty members to identify potential stakeholders that would be categorized as other agents, beneficiaries, and underrepresented (staff identification of stakeholders). The faculty provided us with mailing lists and directories and they identified nine categories of individuals or

organizations that held a legitimate stake in their research. They included (1) nonindustrial private forest landowners (NIPF); (2) government organizations such as the state and federal forest service; (3) private organizations that serve the forest industry; (4) tree farmers; (5) forest managers; (6) other academics and scientists; (7) those involved in urban forestry; (8) wildlife conservationists; and (9) students. Native American tribal members and NIPF's were categorized as underrepresented stakeholders. Thank you notes and a copy of the transcripts were sent to the faculty interviewees for verification of accuracy. Two transcripts were returned for grammatical corrections.

From faculty identification, including the Experiment Station Superintendent who was located in the Oklahoma forest region, 63 purposively selected individuals who had a legitimate stake in forestry research were interviewed. Purposive sampling was used because it was more important to have a range and salience of perceptions than to have quantifiable measures of the distribution of stakeholder input (Babiuch & Farhar, 1994; Greene, 1988).

The 75 audiotaped interviews and field notes were transcribed verbatim, cleaned, and loaded into a qualitative data analysis software program called ATLISTI.ti (available at www.atlisti.de). The data were analyzed following Miles and Huberman's (1994) memoing and matrix techniques. Codes (units of meaning) were developed using the broad research purpose as a guide for identifying themes within the data set. Themes centered on stakeholder problems and information needs surrounding forestry issues. The coded data were then isolated, reviewed, and interpreted by the researchers, who met regularly to discuss and negotiate findings and conclusions. Preliminary findings were presented to the Forestry Department faculty during a faculty meeting on October 6, 2000, which resulted in several changes in the manuscript to accurately reflect participant's responses.

Findings from the 63 stakeholder interviews were synthesized into a final report that was distributed to the Forestry Department faculty members December 2000 (Kelsey, Pense, & Maringer, 2000).

The report included the following topics: population and stakeholder connection to the forest industry; stakeholder information needs; stakeholder perceived problems; sources of information used by stakeholders; stakeholder use of OSU cooperative extension services; stakeholder based recommendations for the OSU Forestry Department; ways to package and promote information; and changes in practice. After the data set was presented, a formal letter was sent to the department head by the evaluation team requesting that a smaller working group be established to continue the iterative, dialogic process of implementing stakeholder input into research priority setting.

Plans for reengagement are in place for early spring 2001 and include forming a working group to assimilate the findings and establishing ongoing communication channels with stakeholders. At this writing, the Forestry Department head has identified four faculty members who are interested in participating in the working group. The evaluation team plans to serve in a facilitator role throughout the process, aiding and serving but not involved in decision-making (deprivileging the evaluators). The hoped for outcomes of this work are that the faculty will proceed with their daily business in a more enlightened fashion with the needs of stakeholders firmly in mind, sensitive to serving those who provide the financial support for their positions at the university.

Validity and Reliability

The study's strategy for enhancing validity included four methods endorsed by Merriam (1998). *Triangulation* strengthened the overall validity by obtaining data from multiple sources. In this case, 75 interviews were collected from stakeholders along with document analysis and written observations by the research team. *Member checks* added rigor to the study by asking participants to examine the findings for accuracy. As participant observers in the field, we engaged in *long-term observation* of the case. *Peer review* also added to validity by submitting early drafts of the research findings to peers for review and feedback.

Lincoln (1999) recommended the terms *rigor* and *adequacy* to address reliability in

qualitative research designs. Four criteria for judging rigor and adequacy include *credibility*, *transferability*, *dependability*, and *confirmability* (Guba & Lincoln, 1989, p. 236-243). *Credibility* refers to the accuracy with which the research team has represented the views of the subjects in their conclusions. Credibility was enhanced in this study with prolonged engagement, persistent observations, peer debriefings, progressive subjectivity, and member checks. *Transferability* is only possible when the results of this study can be applied to similar settings. Descriptive details of the case will allow others to decide if the findings are applicable to their situation. This study did not intend to generalize to other populations, but some analytical generalizations may be drawn to the extent that this case resembles the reader's situation (Yin, 1994). *Dependability* refers to the extent to which people not involved in the study can track the research process and determine which raw data were used to reach corresponding conclusions. Detailed records of the data collection process and analyses procedures were kept by the research team, allowing interested people to reference exact quotes and corresponding interpretations. The archived documents and notes all served to strengthen the study's dependability. *Confirmability* refers to the process of checking interpretations and conclusions for researcher bias. Bias can never be completely removed from an individual, but such biases were duly acknowledged during the course of the study and analysis of the findings.

Summary

This paper outlined the work that has been completed at Oklahoma State University regarding collecting stakeholder input for setting research priorities within one academic department. Appropriate modifications to Guba and Lincoln's (1989) *Fourth Generation Evaluation* model (Table 1) were presented and justified. Guba and Lincoln provided the primary framework and operative definitions for the modified model, while others provided direction and modifications that were appropriate for our purposes (Babiuch & Farhar, 1994; Hallett

& Rogers, 1994; Laughlin & Broadbent, 1996; Mathie & Greene, 1997).

Without a model for collecting stakeholder input in research priority setting, researchers risk losing USDA research funding, as mandated by the 1998 Farm Bill. By having a model to obtain stakeholder input, researchers can identify and address those issues needed by the constituency of the land-grant institution and thus, strengthen their relevancy.

Recommendations

Given the legislative requirements under the 1998 Farm Bill for including stakeholder input into research priority setting, this model for collecting and implementing stakeholder involvement should be further developed and tested by individual departments of land-grant institutions. Refinement and eventual adoption of the model may result in increased accountability for publicly funded research activities, increased communications between land-grant researchers and their constituency, and may assist in the identification of research topics that are currently valued by stakeholders.

The political pressures of voters (PL 105-185) have called for greater accountability among the ranks of the professorate. Given the importance of this movement, a top-down movement from the appropriate dean's office is necessary to give the work political and financial support.

The model for obtaining stakeholder input into research priority setting advanced in this paper is a complex endeavor, but of great importance for continued public support of the land-grant university. Therefore, colleges should employ social scientists to implement and facilitate the process and give this effort the highest priority.

Implications

When stakeholders are asked to participate in research priority setting, a greater understanding between groups may result (Mathie & Greene, 1997). Thus, soliciting stakeholder input into agricultural research priority setting can greatly contribute to developing a research agenda that genuinely serves constituents' needs.

Such a participatory process adheres to the core values of equity, parity and justice, and can lead to democratic conversations that result in resource and power sharing among participants (Guba & Lincoln, 1989), which in turn leads to greater intellectual and social transformation both among the research community and those who benefit from the newly acquired knowledge.

When colleges neglect to gather a range and salience of stakeholder input for setting research priorities, they put themselves at risk in several ways. Without fulfilling the mandate of the 1998 Farm Bill, colleges risk losing research funding from the USDA. Without stakeholder input, programs will not be sensitive to emerging needs of industry and individual constituents. Without including stakeholders in the research-planning loop, citizens will be underrepresented and underserved by the land-grant institutions designed to serve them. Most importantly, the land-grant university may risk losing community support and thus subject itself to the criticism of irrelevancy, a claim already made by one vocal agricultural group vested in the land-grant university (Dale, 2000).

Acknowledgement: This research was paid for by the Oklahoma Agricultural Experiment Station, Division of Agricultural Sciences and Natural Resources, Oklahoma State University.

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