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ABSTRACT

This paper discusses impact studies, an emerging evaluation and planning strategy evolving from required USDA reporting for extension services and agricultural experiment stations to a framework for evaluation/assessment planning. Impact studies can be useful for evaluating unit and individual performance, resource allocation, and planning. In higher education, impact studies can be used to demonstrate how work done by people on campus is worth continuing and how the work merits support from federal and state governments, funding agencies, students, parents, and the general population. The paper begins by defining impact studies, explaining that they provide a distinction between outcomes (achievements) and impacts. The next section discusses the development of a system of gathering and using impacts, focusing on problems and procedures and highlighting seven principles (e.g., if there is a lot of support for this activity, find something else to do; start with a likely success; become a master scavenger; commit to long-term follow-up; and expect expenses). The paper presents examples of impact evaluation, discusses relationships to other effectiveness and evaluation models, and notes pilot project results. (Contains 14 references.) (SM)

IMPACT ANALYSES: Concepts and Methods

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Abstract

This paper discusses an emerging evaluation and planning strategy evolving from required USDA reporting for extension services and agricultural experiment stations to a framework for evaluation/assessment/planning. "Impact" studies derive from definitions developed by Claude Bennett of the USDA and are useful for evaluation of unit and individual performance, resource allocation, and planning. The paper develops definitions, presents examples, discusses relationship to other effectiveness and evaluation models, and discusses pilot project results.

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IMPACT ANALYSES: Concepts and Methods

CONCEPTS AND MATTERS OF DEFINITION

The nineteen eighties and nineties were a time of shifting to the age of public scrutiny and accountability from Madaus, Scriven, and Stufflebeam's age of professionalism (1983). Accountability standards began to change from questions which could be answered by readily obtainable data about workload, outcomes, and accomplishments to questions which demand information useful for deciding institutional direction, allocating resources, and especially for communicating to external agencies. In a sense, the question is being altered from one of how we can demonstrate that people on our campuses work to one of how can we show that the work they do is worth continuing and that it merits the support of state and federal governments, funding agencies public and private, students and parents, and a general population which understands little of the broad functions of higher education.

What follows is an attempt to articulate a way of thinking and communicating about what makes our work important enough to warrant continued support. Looking at issues related to valuing research, public

service, and instruction from the view of their impacts permits one to move away from imposed and pre-defined standards and formulas as well as away from asking our critics and our constituents to take our self judgements on faith. The rather Cartesian "I think, therefore I am worthy of support" does not command much attention in a "What have you done for me, lately" world

For years, state level extension services and agricultural experiment stations have wrestled with federal requirements to document the "impacts" of their efforts (Bennett, 1976, 1979). An impact study responds to these questions: after all the work has been done, what were the results and were they important, or "so what", and what population is affected, or "who cares" (Ernst et al, 1998). Impacts can be intended or accidental, beneficial or destructive. The major foci in the extension literature on impact studies are societal (often meaning physical or mental well-being), economic, and environmental conditions (Bennett, Bennett, 1976; Bennett and Rockwell, 1995). For purposes of the university at large, knowledge systems (feedback into research and graduate training systems) and education should be added. Impact thinking is grounded in the belief that what we spend our time on

must be truly important; it asks the question of how different the world would be if this activity hadn't happened (Brandenburg, 1998).

Bennett's thinking defined the nature of impact projects. Elements of his hierarchy of activities involved in creating change are (bottom to top) resources; activities; participation; reactions; changes in knowledge, attitudes, skills, and aspirations (KASA); changes in practices, and the resulting changes in the environmental, social, or economic conditions. He points out that as one goes up his scale the cost of evaluation goes up and that at that top level, it goes up a lot. Expense and effort go a long way toward explaining why that level of evaluation is rare.

As extension offices and experiment stations developed systems of compliance, impact discussions spread to the research/development and instructional communities within related agricultural colleges. (Oregon State University's "Oregon Invests!" (Dutson and Evans, 1998) was to my knowledge the first large scale project developed to meet these needs. Web sites from the Universities of Nebraska and Minnesota are also interesting examples.) The terminology and concerns of impact thinking are beginning to affect discussions at the university level. There seems to be some recognition that shifting standards of accountability cannot be met by

traditional measures of effort and accomplishment. For example, the assessment movement of the past twenty years has represented an attempt at moving past asking the question of how much did we do in the classroom to asking if what we did made some worthy difference. Traditional productivity measures have become topics for discussion. For example. "books published" is a valued traditional measure of productivity, in part because it is relatively easy to count, but many institutions have given more weight to such categorical variables than makes sense. Clearly, there is a difference between Rachel Carson's Silent Spring and a book I co-edited some years ago on data issues. One has had incredible impact and continues to generate "impacts" even after fifty years. The other is, at best, little known. Thinking in these terms makes it difficult to justify counting each as "one" in the books published column.

A key definitional issue, then, is the distinction between "outcomes" (or "achievements") and "impacts". In the 1980's "outcomes" became a catchall name for attempts to assess results, but the term, as it has been used, encompasses too much. For purposes of this discussion of an impact approach, it is productive to think in terms of just two domains: precursors and impacts. Outcomes, in this way of looking at matters, are part of the

domain of precursors, which includes all the efforts and all the products (papers, pamphlets, books, specches, pesticide-sprayers, concerts, new varieties of grass secd, grant dollars, etc.), preparation, training, knowledge gained, attitudes changed, and the efforts it took to produce them (Bennett's hierarchy helps to make this clear). This doesn't mean that precursors are not important; it just says that they are not impacts and that they do not address some critical accountability issues. In academia our tradition has been to justify our work on the basis of such precursor/causal elements. Our approach has becn to focus on internal audiences to show that we did the work of the academy (SCH, papers, books) and that the work had merit according to the standard of collegial approval (grants, prestigious publications, awards). The demand from the outside (funding agencies, taxpayers, legislators), though, drives the necd to respond to the question of "What have you done for me lately" and to do so in plain language. Traditionally, the academy has asked its publics to take on faith the merits of its work. In the current atmosphere, honest and well expressed appraisal within the framework of a clearly articulated value system will be a key to survival.

Impact analysis is related to forty years of thinking about evaluation (Chronbach, 1963, Dressel, 1976, Madaus, Scriven, and Stufflebeam, 1983), to cost benefit analysis, institutional effectiveness, logic models, academic assessment and evaluation, planning models, and so on. In general, impact analysis is the step past which most approaches stop (that their authors did not intend for them to stop short of impacts is a separate issue. Dressel (1976) clearly articulates the necd to address long term implications. For reasons discussed below, reviews often stop short of such goals). Evaluating from the perspective of impacts (Any students of Bennett's reading this far will note that I have diverged from his work. Looking at the complexities of university efforts and operations versus looking at the focused and planned activities of extension operations is the basis for this difference) differs from most other approaches by asking what happened, not what did we want to happen, nor what did we plan to happen, nor what do we think should have happened, nor what happened that made us look good, nor how much effort did we expend. Those questions can be asked after we know what really happened. Finding out what really happened is not easy and has drawbacks: it is expensive, risky, and often requires long term study. Its merits are that it can incorporate qualitative and quantitative information, it is a powerful management tool, and it is a powerful communications tool, unlike many

traditional measures. Impact analysis' ability to show what did not work as well as what did will be seen as a drawback or a merit depending on one's situation, and there will be resistance because it can be used for personnel and program allocation decisions (Dressel, 1976). Raising critical questions and provoking their answers, both of which happen as one reviews impact analyses, cannot please everyone, but they can provide meaningful guidance for reshaping our institutions. In addition, they provide material useful for presenting results appropriate to the project rather than reports shaped by standardized formats.

DEVELOPING A SYSTEM: PROBLEMS, PROCEDURES, PRINCIPLES

There are two real problems in trying to develop a system of gathering and using impacts. The first is that most of the people one deals with have no concepts around which to build a discussion. Most have been part of a system which values outputs for so long that it is hard to shake loose from the belief that articles or books or credit hours represent the only ways of looking at productivity.

The other side of this coin is that others do have concepts, ones which are rigid and narrow. Many believe that an "impact system" is a website or

other communications process for displaying "success stories" for purposes of public relations. Although the results of an impact project may be used in that way, they may be used in many other ways, and, if honestly done, not all will lend themselves to public relations.

I find myself thinking of impacts in terms of recipes for salmon. The first step in any recipe for salmon, albeit rarely stated, is this: first you must get a salmon. Catch it, buy it, borrow, or steal it; no salmon, no point in talking about what you should do with it. Now, if you actually have a salmon, you can prepare it in many ways, plain and fancy, raw or cooked, grilled or poached, and so on. You may even choose to toss it in the garbage and go out for steak or tofu, as you see fit.

Impacts are much the same. First you must determine what they are. Then you may determine how each will be used. The majority will have a place in program review. Some will have a place in communicating to funding agents and other constituents ways in which programs have met their needs or solved their problems. Most will have a place in evaluation. None will be of value to anyone until they have been "caught". Getting past all the discussion of what to do with the material long before there is any is a challenge.

A thorough, competent, and honest approach will certainly reveal some project which has had a negative impact (perhaps an economically positive move has resulted in a serious pollution problem, for example). To suggest that this should go automatically to the front page of an impact web site or to the front page of the ***Inquirer*** is naïve. To suggest that this should be the start of a program to fix the problem is, of course, appropriate and desirable.

Pilot project experience suggests the following:

PRINCIPLE 1. If there is not a lot of support for this activity, find something else to do. It's difficult enough to make major cultural changes if there is support from the top (Moses discovered this to be true), but without help at the department chair levels and consultation with faculty, you are just another person asking others to do more work.

PRINCIPLE 2: Start with a likely success. The impacts of technology transfer are ***relatively*** easy to determine. They tend to be concrete, estimable in the early stages, and measurable during follow up. The impacts of knowledge transfer are much more difficult, although Bennett's hierarchy provides real guidance. Therefore, start with technology transfer. When you get to the issue of classroom instruction, aside from the vast body of

literature on assessment, Scheffer and Rubenfeld's work on critical thinking in nursing education is not limited to their discipline.

PRINCIPLE 3: Become a master scavenger. Much of what you want exists; the problem is finding it. Ask no one to duplicate reporting efforts. Use existing material to every degree possible. Asking faculty to modify an existing report, web page, required information, or other existing information may not get you a really bad reaction. On the other hand, asking for the same information which someone has already filled out (often more than once) will cause people to dig in their heels, and that will be the end of that.

PRINCIPLE 4: Analysis of impacts should be an important part of planning. One of the issues of our time will be (or is, depending on your situation) that of a coordinated and targeted program at one extreme versus a policy of chasing funding wherever it takes a department at the other. Asking the impact question can provide a standard of measure for discussing this issue. It will not solve the issue, just provide some measures, but that's a move forward (see principle six) . Adding impact concerns to annual reviews and promotion and tenure reviews within departments can make them a regular part of the planning cycle at little additional effort cost on the part of department chairs.

PRINCIPLE 5: Commit to long term follow-up. "Impact" and follow-up are virtually synonymous. For good or bad, only the perspective of hind sight permits one to view impacts realistically. Not doing the long term follow-up robs policy makers at the next go around of information they necd. Consider the history of grants to increase milk production, surplus dairy products, subsidies, and long term health issues related to animal fats in the diet, for example.

Curriculum reform would be a good case for an impact study. Baseline measures followed by long term study of those who were affected by the reform would make some sense. For the most part, however, curriculum reform decisions are based on the "Think Method" (Willson, 1957)

PRINCIPLE 6: The pilot project suggests that what you are likely to get requires that you think in terms of threc phases:

Phase 1. In phase 1 you havc to ask people to think about evaluating what they've already donc. Part of the job in this phase is to get people thinking in terms of building an impact based design into the beginning of their next projects or programs.

This phase produces a mixed bag of responses, many of which will not go past the point at which we tend to wash our hands of projects or which will

veer off into "accomplishments". A good example is that of a project to train low income families to become active in community politics. The project coordinator reported that the "impact" was that all who stayed in the training program were now trained to become active. Whether any of them became active or was effective was not considered. Whether the community changed was not addressed.

Some reports will come in as very complete impact reports. They will tend to be ones for which there are clear economic measures.

Phase 2. This is tough, because one has to go back to faculty and administrators and tell them that they did not do well enough. In some cases, they didn't do well enough because not enough time had passed for effects to occur. Helping them to articulate potential impacts and commit to actually looking after an appropriate time is critical. It can be a hard sell until people begin to see that their impact statements are useful to them and are being used to improve their situations.

Phase 3. Reliance on self reporting is essential in any large organization. Pragmatic issues of cost, time, and significance make this so. However, many projects/programs will require more thorough and more credible evaluation. Finding competent evaluators is not a problem. Rewarding them sufficiently that they can afford to participate is. Having a team of

evaluators which can assist, counsel, and provide external perspective is necessary to get past problems ranging from inexperience to a "no bad news" orientation.

PRINCIPLE 7. Determining institutional values is essential to making use of impact results. When you have discovered that there is little if any measurable impact to the university's carillon, that alumni contributions seem unrelated to its being played or not played, that it makes just as good a logo whether the bells ring or not, the decision to fund the carrilloneur and annual maintenance must come down to institutional values. The same application of institutional values is true for the decision to support basic research projects versus applied, courses in Urdu versus extra freshman writing labs, and so on. Determining the impact provides information for discussion about such decisions. Institutional values determine how that information is viewed.

PRINCIPLE 8. This is going to cost.

SOME PHASE 1 EXAMPLES. These are abstracts of reports on several recent or current projects with editorial comment.

1. Air curtain sprayer development. Pesticide reduction in orchard industries.

   Reduction of pesticide sprayed on orchard crops through innovative sprayer development has economic and

environmental impacts estimated at up to $22 million . New industrial development and better health in orchard industry communities as well as increased fruit production and decreased expcnse for pesticides are among the anticipated benefits.

This is an interesting project which has the potential for environmental, social, and economic impacts, but the orchard industries in the areas of the country which need it the most are in a period of economic difficulty and may not be able to afford the technology. Impacts are dependent on the adoption of the technology; until that happens estimates and potentials are all you can talk about.

l Michigan Groundwater Stewardship Program Evaluation

As a result of evaluations, the risk of pesticide and nitrogen contamination in the groundwater in Michigan is being reduced. Seventy-five percent of the 8,600 farmers who have completed on farm risk assessments have implemented at least one stewardship practice. 4,100 abandoned wells have been plugged, eliminating direct conduits for contaminants to reach groundwater; 4,000 working wells have been protected through the addition of anti-backflow devices; 3,600 leak eliminating improvements have becn made to chemical application equipment; 276,000 pounds of unused pesticides have been collected for safe disposal; and 302,000 plastic pesticide containers have becn recycled saving over 3,100 yards of landfill space. Follow up studies will determine long term impact on the environment.

Recognition of the necd for follow up is important. Each of these actions secms very positive. The question of whether they made a difference remains.

1. Hispanic/farm and farmworker community study

Preliminary study identifying the problems and issues confronting the Hispanic population of the County. Meetings will be held to address the results of the study. Follow-up will be necessary to assess impact.

Once again, the recognition that the project is a part of something larger and that it does not represent a stopping point is important. In other contexts it would be logged as an activity or accomplishment. Recognizing that it is not at an end point should be part of a planning process which asks how resources will be used.

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