TAXONOMY OF ADMINISTRATIVE INFORMATION NEEDS: AN AID TO EDUCATIONAL PLANNING AND EVALUATION

BY

JACK M. OTT
THE ONTARIO INSTITUTE FOR STUDIES IN EDUCATION

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In 1965, the federal government took steps to encourage constructive change in education through passage of the Elementary and Secondary Education Act. The act required that schools receiving funding provide an evaluation of their projects so that local school systems and responsible organizations at the state and federal level have feedback as to the effectiveness of various innovations.

Difficulties arose because school systems lacked personnel capable of carrying out a good evaluation. More important, it soon became apparent that little was known about educational evaluation.

In response to these problems, the Ohio State University Evaluation Center and the Columbus, Ohio Public Schools undertook a collaborative evaluation project. The purposes of the project were to evaluate the Columbus Public Schools' Title I Projects, to train Columbus Public School personnel in evaluation techniques, to provide a setting for research in evaluation, and to develop an evaluation department for the Columbus Public Schools. The writer's study of decision theory is an outgrowth of this collaborative effort.

The Ohio State University Evaluation Center postulated that the purpose of evaluation is to provide information for decision-making. An examination of the literature, however, revealed that the value of such a premise was limited because of several deficiencies in existing educational decision theory.

The writer identified two major inadequacies which were felt to hamper the task of evaluation. First, the literature did not offer a framework to help an evaluator anticipate the kinds of decision situations information

is to serve. Second, even if the decision situations were known, there was little in decision theory to help the evaluator decide on the information to provide.

In an earlier work, the writer attempted to provide a framework to aid in the anticipation of decision situations.[1] The purpose of this study is to answer the second need, the need for a framework to help evaluators and administrators anticipate information needs.

Such a framework would be a valuable asset to administrative decision making. Since the quality of administrative decisions depends in part on the information the administrator has, incomplete or wrong information will be reflected in his decisions. Thus, information needs must be anticipated in order that information gathering may be planned. An administrator who does not plan for feedback, is leaving it to chance that he will get the information he needs to run the project effectively. By so doing he is also leaving the direction of the project somewhat to chance. In practice, situations eventually become so serious that they attract the administrator's attention. But often much unnecessary effort could be avoided if the developing situation were spotted or anticipated earlier.

The following account describes an attempt to provide a framework to aid administrators and evaluators in anticipating information needs.

Objective

The purpose of the study is to develop a classification system covering the range of administrative information needs involved in the efforts of local school administrators to bring about positive changes in their school systems. The classification system should enlighten administrators as to

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1 Ott, Jack M. "A Decision Process and Classification System for Use in Planning Educational Change", produced and distributed by the Evaluation Center, The Ohio State University, 1967

tle information they ought to consider and evaluators as to the information they should provide.

Setting

The set of decision situations on which the study is based was collected as part of the Columbus Project.

The Columbus Title 1 Program consisted of an array of eight projects focused on specific problems common to disadvantaged children of the inner-city. The projects, as they operated during the school year 1966-67, when the present study began were:

> After-School Study Centers Project - to provide a place for study staffed by adults who would encourage and help students in the preparation of their homework assignments.
>
> Basic Mathematics Improvement Project - to provide remediation for inner-city pupils who were not achieving at a level commensurate with their ability.
>
> Reading Improvement Project - to provide concentrated reading instruction for disadvantaged students who were not reading at a level commensurate with their ability.
>
> Elementary Counseling Project - to provide counseling service for disadvantaged students in Kindergarten through sixth grade.
>
> Enrichment Unit Project - to provide additional instruction in language arts to disadvantaged children along with an administrative structure (four teachers for three classrooms) designed to allow primary teachers to make better use of their time.
>
> Health Services - to expand and refine the medical and dental services presently operated by the Columbus Public School System in order to provide more medical and dental care for disadvantaged students.
>
> Regional Service Centers Projects - to establish service centers throughout the inner-city for the purpose of providing resource materials and other curricular services in elementary school science, foreign languages, art, music, and physical education.

All eight Title 1 Projects were under the direction of Dr. Joseph Davis, Assistant Superintendent. Under Dr. Davis, were eleven project directors

(four for the Enrichment Unit Project and one for each of the other projects) who had primary responsibility for directing the projects.

The staff of the Evaluation Center included Project Residents (Columbus Public School teachers and a school nurse on loan to the Evaluation Center) and Research Assistants who took primary responsibility for performing the evaluation of the Title I Projects and for reporting their findings. The evaluation structure was such that at least one Project Resident or Research Assistant was assigned to each project.

As evaluation data was processed, the results were reported at monthly sessions and in written interim reports submitted to the Columbus Public Schools. A final evaluation report was submitted at the end of the school year.

Procedure

The approach taken by the researcher assumed that the purpose of information is to aid in making decisions. Thus, an extensive list of administrative decision situations was formed by monitoring eight Title I projects (After-School Study Centers, Basic Mathematics Improvement, Reading Improvement, Elementary Counseling, Enrichment Unit, Health Services, Pre-Kindergarten, Regional Service Centers) of the Columbus, Ohio Public Schools as follows:

Evaluation report sessions, held monthly for each project were monitored for decision situations.

Project resident evaluators logged decisions situations which they saw arising outside the evaluation report sessions.

Project directors were debriefed monthly for decision situations which confronted them between meetings. (Later discontinued due to time required of directors.)

Evaluation reports were reviewed to identify potential decision situations.

The results of this monitoring, in conjunction with information obtained from the literature, were used to form an extensive set of decision situations arising from public school projects. This set and a rational decision process (recognizing and defining problem; establishing cause of problem; establishing criteria for judging innovations; exploring, choosing, and trying potential innovations; finalizing and implementing decision)[1] developed earlier by the writer provided the basis from which information needs were inferred and classified. A tentative form of the proposed taxonomy was distributed to members of the professional staff of the Ontario Institute for Studies in Education for their suggestions. When the researcher considered these suggestions constructive, they were incorporated into the classification system.

Results

In constructing a classification system, one faces the problem of defining meaningful and mutually exclusive categories. To this end the researcher has chosen to classify information needs according to the stage of the decision process in which the information is needed and according to focus of change, that is, the part of the project or school system for which change is being considered. The resulting taxonomy is given in Figure 1.

It should be noted that in developing the taxonomy the author has divided responsibilities in the decision process between the administrative staff and the evaluation team. According to the taxonomy the evaluation team is primarily responsible for locating present or potential inconsistencies and presenting them along with their probable causes and effects to administrators. These reports should be accompanied by the evidence and its source which an administrator can then accept or reject.

On the other hand, it has been assumed that it is primarily the responsibility of the administrator to make the subdecisions that are involved

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[1] Ibid., page 15

	1. Recognition of Problem (Present or Potential)	2. Definition of Problem	3. Establishment of Cause of Problem
Target (Who?)	Inconsistencies between target and student and community needs, capabilities, and desires; project capabilities, responsibilities and priorities; etc. (Are appropriate students included? Are important characteristics of the target group taken into account?)		
General Policy (What are the general project guidelines?)	Inconsistencies between general project guidelines and target and community needs and wants, priority of project, resource availability, best knowledge, etc.		
Objectives (What? To whom? How much? By when? With what priority?)	Inconsistencies between objectives and target and community needs and wants, project responsibilities and capabilities, best knowledge, etc. (Do objectives reflect the needs of the students and the responsibilities, capabilities and priorities of the project?)	Description of inconsistency. (What it is and what it is not) Details of present and potential effects of the problem with supporting evidence, i.e. past experiences and experience of others with similar problems, speculations of those closest to the problem, etc. (Carry problem to its end.)	Description of possible c problem with supporting i.e., past experience or th of others, simultaneous e theoretical relationships, of those affected, etc. (C to its beginning.)
Program (How?)	Inconsistencies between the program and desired outcomes, best knowledge, etc. (Does the program on the whole and in part do what is intended and is it the best way of doing it?)		
Resources (With what?)	Inconsistencies between resource performance, care, allocation, acquisition, and disposal and the efficient and effective running of the project. (Are needed resources available and functioning properly? Are better resources available? Are acquisition, maintenance and disposal procedures working?)		
Schedules (When?)	Inconsistencies between project schedules and project needs, competing schedules, etc. (Do project schedules conflict internally and externally and are they consistent with the efficient and effective functioning of the project?)		
Program Policy (What are guidelines for action within the project?)	Inconsistencies between established patterns of action and the welfare of all they affect. (Are established patterns of action the best given the circumstances?)		

Taxonomy of Administrative Information Needs

3. Establishment of Probable Cause of Problem	4. Establishment of Criteria for Judging Alternative Innovations	5. Exploration of Alternatives	6. Design of Potential Innov
Description of possible causes of the problem with supporting evidence, i.e., past experience or the experience of others, simultaneous events, theoretical relationships, speculations of those affected, etc. (Carry problem to its beginning.)	Effects wanted and unwanted by those responsible for or affected by the project. Effects that should be sought or avoided according to experts or theory. Rationale or motivation for the above. Relative importance of possible effects according to those affected, those responsible for the project, experts or theory. Rationale or motivation for the above.	How others have dealt with similar problems. Suggestions by those involved with or concerned about the problem. Alternatives suggested by experts or the literature.	Experience of others (other s research, etc.) with similar in Outcomes of potential innova rationales as predicted by tho would be affected by or respo for the proposed innovations. Predictions of experts concer comes. Rationales for these predictio Description of available resou human and material). Description of relevant portio system in which an innovatio made.

Figure 1

Design of Potential Innovation

perience of others (other schools, earch, etc.) with similar innovations.
tcomes of potential innovations with onales as predicted by those who uld be affected by or responsible the proposed innovations.
dictions of experts concerning outnes.
ionales for these predictions.

scription of available resources (time, nan and material).
scription of relevant portions of the tem in which an innovation is to be de.

7. Trial

Description of proposed innovation.
Alternative ways of testing proposed innovation.
Requirements of and pay off for alternative modes of testing proposed innovation.

Description of system in which test is to be made.
Description of proposed trial.
Inconsistencies between the proposed trial and the system in which it is to be installed.

Problems of the implementation and trial processes and their probable causes and effects.
Alternative corrective measures and their probable effects.

8. Decision Point

Performance of the potential innovation on important criterion variables both anticipated and unanticipated.
Comparisons of potential innovation with other courses of action about which there is information.
Problems of design, implementation and functioning revealed in the trial.

9. Implementation

Description of proposed innovation.
Description of sub-system in which innovation is to be installed.
Inconsistencies between proposed innovation and sub-system.
Alternative strategies for resolving inconsistencies.
Requirements and probable payoff for each strategy.

Problems of implementation process and their probable causes and effects.
Alternative corrective measures and their effects.

Outcomes of implementation and corrective measures.

in the decision process such as establishing the criteria for judging alternatives, designing potential innovations, designing and implementing trial of potential innovations, and designing and implementing implementation procedures. The responsibility of the evaluation team is to serve these subdecisions by providing the necessary relevant information.

The author believes that if an administrator is able to anticipate problems or be aware of problems as they arise, his experience alone often provides him with sufficient knowledge to make many of the necessary adjustments. Thus, perhaps the most important though most difficult of the stages of decision given in the taxonomy is problem recognition. Because of its importance, a more detailed aid to problem recognition has been included in the appendix, page 11.

The relative importance of other phases of the decision process depends a great deal on the nature of the decision. For instance, the trial phase may be deemphasized or eliminated when maximizing utility is relatively unimportant (as in buying paper clips), too time consuming, too costly, etc., or when a trial is impossible (as in deciding whether students should be permitted to watch the launching of the first rocket to Mars or made to continue with their regular studies).

For this reason and others, the importance of information also varies with the nature of the decision. For example, an evaluator shouldn't spend too much time looking for alternative kinds of paper clips but should look extensively for potentially better ways of obtaining objectives.

The taxonomy will not help evaluators determine the importance of information. Two useful guidelines for this purpose are the importance of the decision being served and the relevance of the information to the decision.

The decision process has been presented as if it proceeded in a continuous fashion from Problem Recognition to Implementation. This is misleading, for decision-makers often find a need to reassess and alter the results of some previous stage. For example, the search for alternative courses of action or the trial phase may uncover or bring to mind criterion variables of importance to the final decision that were overlooked when the criteria were first established. Subsequent phases of the decision process may also shed new light on the relative importance of the criterion variables. What this means to an evaluator is that his task is not a linear one either. In other words, during each phase of the decision process the evaluation team should continually search for information that indicates that a reassessment of an earlier phase is needed.

Finally, the writer would like to comment that although the Taxonomy of Administrative Information Needs assumes that the goal of the decision-maker is one of maximizing utility in terms of criterion variables, it is often true that one of the criterion variables is the satisfaction or reaction of school constituency. Thus, the author claims that satisfying or bargaining models are a special case of the model presented in Figure 1.

The taxonomy must be used flexibly but where the stakes are high, every effort should be made to follow all applicable steps of the taxonomy closely.

Discussion

The author believes that the area of greatest potential for the Taxonomy of Administrative Information Needs lies in its use as an evaluation model. Formal evalaution is becoming more and more necessary as the demand for excellence increases and school systems become too large for administrators to remain informed without assistance.

According to the taxonomy the evaluation team assists the administrator by examining the target, general policies, objectives, program, resources, schedules, and program policy for internal and external inconsistencies (problems). Examples of inconsistencies that the team may detect are failures to meet the needs of some groups of students, failure to produce the results specified by the objectives, discovery of a potentially better way of producing the desired results, etc. Such inconsistencies are brought to the attention of administrators along with their possible causes and effects. The initiative then becomes the administrator's, as it is his responsibility to decide what action, if any, should be taken.

As the administrator initiates the change process the evaluation team must be ready to supply him with the information he needs to make sound decisions. The taxonomy suggests that information relevant to a decision may include the effects desired by those closely related to the problem, changes suggested by those affected by the problem, strategies others have used in dealing with similar problems, a description of the system to be changed, etc.

Related work which may be of interest to the reader are partial listings of information needs by Foley[1], and Hammond[2], and the evaluation strategies of Provus[3], Stake[4], and Stufflebeam[5].

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1 Walter J. Foley, "Educational Information Project", pp. 177-185.

2 Robert L. Hammond, "Evaluation at the Local Level", produced and distributed by The Evaluation Center, The Ohio State University, pp. 7-9.

3 Malcolm Provus, "Evaluation of Ongoing Programs in the Public School System", Educational Evaluation: New Roles, New Means, The Sixty-Eighth Yearbook of the National Society for the Study of Education, Part II, pp. 242-283, 1969.

4 Robert E. Stake, "The Countenance of Educational Evaluation", Teachers College Record, LXVIII(7), pp. 523-540, April, 1967.

5 Daniel L. Stufflebeam, "The Use and Abuse of Evaluation in Title III", Theory Into Practice, VI(3), pp. 126-133, June, 1967.

The work of Stufflebeam is of special interest as it proceeded on the premise used in this paper, that the purpose of evaluation is to serve the information needs of decision makers.

The writer believes that the classification system for decision situations[1] developed earlier by the author and the taxonomy of administrative information needs developed herein will greatly facilitate the work of evaluation teams. Much remains to be done however, for there is still little direct help for the evaluator in determining how to gather information or where to find information.

Additional research and development is needed in these areas as well as in testing and refining the proposed taxonomy and classification system.

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[1] Ott, op. cit., pp. 87-91.

APPENDIX

AN AID TO PROBLEM RECOGNITION

Jack M. Ott and Sheila Fletcher

1. Target (Who?)

   A. Appropriateness of Target - Does the target include those and only those who should be included?

   B. View of Target (homogeneous, grouped according to ability, etc.) Is view of target consistent with target group characteristics which are important to the best functioning of the project?

2. General Policy (What are the general project guidelines?)

   A. Project Responsibility - Is area and extent of project responsibility consistent with the total school and community program, target and community needs and wants, and project capabilities?

   B. Project Restraints (funds, time, space, etc.) - Are restraints placed upon the project consistent with requirements of area and extent of responsibility, priority of project and resource availability?

   C. Program Construction - Are the guidelines for program construction consistent with project restraints, area and extent of responsibility, target characteristics, and best knowledge?

   D. Resource Acquisition, Storage and Disposal - Are guidelines for the establishment of resource acquisition and disposal procedures consistent with needs, school policy, legislation, and the best interests of all affected?

   E. Resource Care and Maintenance (repairs, in-service training, etc.) - Are guidelines for the establishment of resource care and maintenance procedures consistent with needs, resource characteristics, costs, and resource values?

   F. Scheduling - Are general guidelines for scheduling consistent with project needs, target needs, project priority, and other competing schedules?

3. Objectives (What? To whom? How much? By when?, With what priority?)

   A. Content - Are objectives consistent with project responsibilities, and the needs and aspirations of the target members and community?

   B. Operationalization - Are ways of monitoring target progress efficient and consistent with best knowledge concerning observation and the best interests of those affected?

C. Desired Extent - Are desired extents of changes consistent with target needs and capabilities, project capabilities, and time allotment?

D. Priority - Is the relative importance of objectives consistent with the relative importance of target and community needs and interests?

4. Program (How?)

A. Treatments (curriculum content, etc.) - Are treatments consistent with objectives, target characteristics, available resources, and present state of knowledge? (Do they work and are they the best available considering the situation?)

B. Treatment Organization (prerequisites, year offered, etc.) - Is treatment organization consistent with target characteristics, objectives, available time and resources, and the present state of knowledge? (Are treatment arrangements the best for the situation and purpose?)

C. Personnel Classes and Roles - Are classes of personnel (administrators, teachers, supporting staff, etc.) and their roles consistent with project needs, capabilities of available personnel, and the principle of efficiency?

D. Physical Resource Type and Use - Are types and actual and potential uses of physical resources (classrooms, tables, books, experimental apparatus, etc.) consistent with project needs, resource capabilities, and the principle of efficiency?

E. Resource Obtainment and Storage Procedures - (Internal resources, e.g., movie projector or chalk from supply) - Are procedures for obtaining and storing resources internally consistent with project and personnel needs, resource characteristics, and the principle of efficiency?

F. Cooperating Outside Groups - Is the project's co-operation with outside groups consistent with outside group interest and relative contributions, project needs, and the principle of efficiency?

G. Cooperating Outside Group Roles - Are roles of cooperating outside groups consistent with the best interests of both the project and the outside groups?

H. Evaluation Information - Is evaluation information collected consistent with the information needs and wants of the project staff, school staff, staffs of cooperating groups and organizations, and school publics?

I. Information Collection and Analysis Procedures - Are information collection and analysis procedures consistent with information needs and wants, characteristics of subjects and information users, and the state of knowledge concerning appropriate procedures?

J. Information, Storage and Retrieval - Is information storage and retrieval efficient and secure?

K. Communication Channels - Do communication channels work and are they consistent with the best functioning of the project?

L. Forms of Communication - Are forms of communication efficient and achieving the desired impact?

5. Resources (With What?)

A. Fund Allocation -Is allocation of funds for salaries, purchases, etc. consistent with the market, the needs and priorities of the project, and the availability of funds?

B. Standards for Resources - Are standards for beginning and continuing employment of personnel and the purchase and continued use of physical resources consistent with the supply, value and desired role or function?

C. Resource Allocation - Is assignment of resources to specific roles and functions consistent with supply, resource capabilities, and the needs and priorities of the project?

D. Resource Performance - Is the performance of each resource consistent with that expected or desired in its role or function?

E. Resource Improvement and Maintenance - Is resource maintenance and improvement consistent with project needs and priorites and resource needs and characteristics?

F. Resource Acquisition and Disposal Procedures - Are acquisition and disposal procedures effective, efficient, and consistent with the best interests of all affected?

G. Time Allotment - Is time allotment consistent with project needs and priorities, available time, and the best interests of those affected?

6. Schedules (When?)

Are the time schedules in each phase of the project consistent with the efficient and effective running of the project, the needs and wants of the target and staff, and competing schedules of other school and outside groups?

7. Program Policy (What are the guidelines for action within the program?)

A. Present Policies - Are present policies consistent with the need for policy and are they the best in terms of all affected?

B. Policy Enforcement - Are set policies known and enforced?

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