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ABSTRACT

Theories are useful in predicting events and exploring alternatives only to the extent they accurately describe existing states of affairs. The development of a curriculum theory with predictive and exploratory power depends on accurately describing decision-making systems that result in curriculum -- however curriculum is defined. Three approaches to establishing this empirical base for curriculum theory are discussed: (1) "policy-capturing," a simulation of decision-making processes by means of a regression model; (2) studying decision making as a social influence system; and (3) exploring decision making in terms of information processing or communications systems. The discussion specifies objectives behaviorally, quantifies variables in the decision-making process, and determines the appropriate units of measure for certain qualitative variables. (Page three may reproduce poorly because of marginal legibility). (Author)

TOWARDS AN EMPIRICALLY BASED CURRICULUM THEORY: A GUIDE FOR RESEARCH

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Despite the volumes devoted to curriculum theory, the utility of these efforts has been limited at best. After reviewing the field of curriculum from 1960 to 1969, Goodlad concluded that

> In the realm of explaining curricular realities, however, we appear to know little more in 1969 than we knew in 1960. Curricular theory with exploratory and predictive power is virtually nonexistent.
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> (Review of Educational Research, Vol. 39, No. 3, June 1969, p.374)

Most of the efforts of curriculum theorists could better be described as prescriptive, as concerned basically with what ought to be. For example, Goodlad's ...Conceptual System for Dealing with Problems of Curriculum and Instruction deals with the continual re-specification of objectives at suceeding levels beginning with the society and ending in the classroom. Those who agree that the objectives of the classroom should be derivatives of the objectives of society will probably agree that Goodlad's system of derivation is an example of how this process ought to occur. Curriculum students spend a great deal of time and energy talking about what the curriculum ought to be like if one assumes certain objectives and certain facts about the nature of the society, the learner, and knowledge--curriculum's traditional trinity. Klohr candidly describes this tendency:

> The thesis, for example, that a teacher, or representative of teachers moves through a process of formulating purposes, to selecting and organizing content, and finally, to evaluating curricular outcomes simply is not useful. Despite this fact,

> this rationale underlies most of the professional literature dealing with curriculum. It is not the way curriculum development is. To continue to talk this way about the curriculum development process is to perpetuate a myth.[1]

Our failure to build curriculum theories with "exploratory and predictive power" is the result of our trying to build prescriptive theories without having first described the system for which we are trying to prescribe. The basic function of any theory is to describe some system of events well enough that the output of that system can be predicted. For example, theories about brain function are even now sufficiently descriptive to enable the researcher to predict the gross behavior that will result when an electrical stimulus is applied to certain areas of the brain. And this knowledge enables the researcher to explore additional events and thereby to create new knowledge by manipulating some variable in the system previously described by the theory. However both prediction and exploration come only after careful description of the system. Likewise to prescribe some action, some manipulation of variables within the system, is to combine the ability to predict system output with some set of values which establishes one kind of output as being more desirable than another. But intelligent prescription comes only after thorough and accurate description.

Because we have tried to substitute mythology, to use Klohr's term, about how curriculum comes about for careful description, our efforts to prescribe for improved curriculum have been largely lacking in intelligence and therefore have been ineffectual. The

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[1] ("Recent Curriculum Developments and the Teacher," in Curriculum Development in a Changing World. Edited by Howard L. Jones. Syracuse: Syracuse University Press, 1969, p. 1.)

dispatching of myths and the building of adequate descriptive theories are both best based on empirical observations; it is the purpose of this paper to propose some needed kinds of observations. We are intentionally avoiding extensive discussion of the definition of theory and of curriculum. For our purposes, we will consider a theory to be an explanation of the way certain events come to pass and curriculum to be the product of the decision-making process which curriculum theories try to explain. Thus we are proposing potentially fruitful ways of describing this decision-making process. Only when we understand the process by which curriculum does in fact come about will we be in a position to predict what curriculum decisions will be made or to explore the changes which result from the manipulation of variables in the decision-making process.

One potentially fruitful way to describe curriculum decision-making is in terms of social systems. Curriculum decisions will be made in different ways depending upon the nature and structure of the social system. Any social model must be flexible enough to represent these differences. For example, Gouldner[2] notes the rational model and the natural system model. In the rational model, which follows essentially Weberian principles of bureaucracy, curriculum decisions are made with high regard for normative or technical rules by specialists sensitive to their roles within a larger hierarchy. Generally, such an organization is characterized as methodical, slow, and predictable (mostly because other school systems have

[2] Alvin W. Gouldner, "Organizational Analysis," in Sociology Today: Problems and Prospects. Edited by Merton, Bloom, and Cottrell. New York: Basic Books, 1959.

already established precedents in dealing with the same or similar problems).

The natural system model of a social organization is one in which the group is maintained by the needs of the individuals in relation to the nature of the problems to be solved. These tend to be temporary social systems in that a team may evolve to solve a particular problem (e.g., develop a new curriculum) and then disband. Their decisions tend to be heuristically based and viewed as innovative, short term solutions; that is, viewed as a new idea by the larger social system. Individuals within the natural social system model would tend to have less ego involvement for long range solutions but would seem to be much more involved in the short range decision-making process because they operate within a person-to-person exchange of ideas with little reliance on past procedures and present rules.

Most organizations fall somewhere between the rational model and the natural system model, but the point is we know very little about how the nature of the social system doing the curriculum planning is reflected in the curriculum decision. It seems intuitively reasonable that a rigid, autocratic group of curriculum experts will develop a different curriculum structure than would an open, democratic group.

Further, once the group has made its decision, the end product of that process will probably be modified to reflect the character of the instructional and/or administrative staff. Indeed, teacher training institutions often pride themselves on being able to subvert the most carefully done curriculum materials to suit regional

or local needs. The point is not whether this transmutation is desirable or necessary but rather what are the predictable patterns in the whole range of activities between the invention of the idea and its possible adoption and implementation. It is time we made a major effort to organize the social interaction data already collected, to fill existing gaps by carefully constructed research programs, and to assess systematically the relationships of the curricular decision-making process and its end products.

Another method of describing the systems which produce curriculum is called policy-capturing. It can be used independently of the techniques previously discussed, or the results of those techniques can be used as variables in the policy-capturing mechanism. Typically policy-capturing is an effort to simulate decision-making processes by means of a regression model.

> If it is possible to obtain all the information available to decision-makers and an adequate sample of their decisions, we usually can formulate a regression model that satisfactorily accounts for the decisions. Although this model may not use the items of information in the same way as human judges, it may be said to "simulate" their decision-making policy, for it leads to decisions similar to those in the sample. Once the model is formulated, we can use it to obtain innumerable decisions without the variability that results from fatigue and other factors that may affect human judgment. Furthermore, if the model predicts the sample of decisions accurately, it seems reasonable to use it to predict other judgments that would be reached in similar situations in which the same items of information are available.[3]

Although its primary use is to increase the consistency of a certain class of decisions and to free the original decision-makers from that task, this technique can also be used as the empirical

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[3] Robert A. Bottenberg and Joe H. Ward, Jr. Applied Multiple Linear Regression. Technical Documentary Report PRL-TDR-63-6. Lackland Air Force Base, Texas: 6570th Personnel Research Laboratory, 1963, pp. 119-120.

basis for building a descriptive theory of curriculum by identifying the variables which are in fact used in determining curriculum. It is possible (and perhaps probable) that if we could describe such a decision-making system we would find that curriculum decisions are based on determinants quite other than those which are discussed in curriculum courses or even those which the decision-makers suggest as the basis for their decisions. To begin the search, one might include as variables in the regression model the answers to the following kinds of questions:

Does the group see making this particular decision as its legitimate function?

Does the group's legitimizing body see this decision as one of the group's legitimate functions?

Were people outside the primary group involved in the decision-making process? If so, what was the relationship of the secondary group?

Were the people most directly effected by the decision involved in making it?

Is the decision-making body ad hoc or permanent?

What roles do individual group members assume? Do these roles change over time? Are these roles consistent with secondary group expectations?

Are there formal, printed rules to guide the function of the group?

Is intragroup communication written or oral? If written, individually written or mass duplicated?

To whom is the group's decision reported? In what format?

Does the legitimizing body evaluate reports by bureaucratic rules?

What is the origin of alternatives? If within the group, from which member(s)? If without the group, from above or below this group in the hierarchy?

Can one of the curricular alternatives be financed by some outside funding agency?

Who advocates each alternative? Are supporting arguments based on cost, tradition, "being innovative," personnel deployment, pupil needs, etc.?

Has this decision been made before by this group? Within the total social system?

Will a given alternative cost more than, the same as, or less than, what is presently being done?

How do groups of significant people feel about the alternatives? School board? Teachers in general? The teachers who will have to implement the decision? etc.?

Does the decision-making group see the alternative chosen as being innovative?

Does the legitimizing body see the alternative chosen as being innovative?

These questions are examples of the primitive hypotheses that might guide the kind of research being advocated. Educational researchers in administration, learning, instruction, and other areas will need to test similar hypotheses to identify the important elements in the decision-making processes that produce curriculum.

The list given above may contain several or none of the variables ultimately identified, but hopefully it illustrates the kinds of research which could be used. It is imperative to keep in mind that even though a decision-making process is reliably simulated, there is no assurance that the variables and weights used correspond to the actual process. All one can say is that the model closely approximates the results of the actual decision-making process. However, such a simulation should be a far better description than anything we have produced to date. Just as a number of studies of teacher behavior have discovered that the identity of the observer was a statistically significant information-contributor for predicting the

score assigned to a particular teacher, we might well discover that the identity of the decision-maker(s) or the means by which the alternatives are communicated are more important in capturing the process of curriculum decision-making than the decision-makers' beliefs about how people learn or about the goals of education.

However, the identification of variables which determine decisions is not the only problem to be solved; we must also find accurate ways to quantify the variables for use in the policy-capturing equation. In addition to traditional attitude scaling, problems, there exists the task of quantifying the relative positions of individuals or groups within larger social systems, the affective quality of both format and content of communications, etc. There is also the problem of finding adequate scales to describe relationships without having to resort to curvilinear models. For example, the law of diminishing returns would tell us that most relationships between practice time and the increase in speed in the skill being practiced will be curvilinear if we use an interval scale to describe time and increase in speed. However scales which take into account this phenomenon can be developed and will simplify policy-capturing procedures. As an illustration, in measuring time spent in typing practice, the scale used might resemble the following: n, $n + \log(n)$, $n + 2\log(n)$, $n + 3\log(n)$,..., as opposed to the usual interval scale. Using such a scale, the relationship between practice time and increase in typing speed could be expressed linearly. Thus one would describe practice time in terms of units of speed increase and thereby simplify the policy-capturing process. Similarly, we could describe task difficulty in terms of level of motivation or increases

in cost in terms of an attraction-revulsion scale applied to some reference group. This is really a search for the best means to express determinants in terms of relevant human behaviors.

No doubt there are other techniques for describing the decision-making systems that result in curriculum. However, our concern here is the necessity of studying that which is in order to build the kind of theory which will allow us to predict the kind of curriculum that will result when certain variables in the decision-making system are manipulated and then, given a value system, to prescribe for improved curriculum. Researchers, by identifying those variables which do in fact determine curriculum and by establishing the ways they interact, will provide the descriptive data which will enable us to build theories with predictive and exploratory power.