

Components of a General Instructional Theory

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To free themselves from faddism and the lure of panaceas, school people must turn to the difficult task of designing the ingredients of meaningful instruction. We must synthesize a vast amount of research and experience into a general theory of instruction. This statement represents the major components of such a theory

MANY persons today seem to feel that changes needed in American education are coming much too slowly. Although this feeling is much stronger (and relates to different issues) among scholars and intellectuals than ordinary citizens, the public in general has become alert to the needs of schools both because of the persistent criticism and through their own personal experience with schooling.

I am less persuaded by the popular critics urging change than I am by the findings of a seasoned observer such as John I. Goodlad (1) whose visits to classrooms across the country revealed that unimaginative teaching most typified the schools he saw. My own studies (2) of innovative vs. traditional high schools in the late sixties revealed that the efficacy of innovation was not great. Except for some favorable differences in terms of reducing a feeling of regimentation among students, hoped-for improvements in student attitudes, achievement, and curricular programs had not been forthcoming. In both kinds of schools, very often

two-thirds or more of the students were indifferent or negative in their general attitudes toward high school.

Evidence shows that many schools ignore much of what is known about teaching and learning. Students are often taught via group-paced instruction using a common set of materials by teachers scheduled into classes, which are usually the same size regardless of the teaching activity.

School people have, I believe, been vulnerable to faddism and have themselves encouraged the pendulum swing by avoiding the difficult task of becoming much more proficient in designing the ingredients of meaningful instruction. We spend a great deal of time discussing new scheduling techniques, uses of technology, teacher evaluation techniques, or modern management concepts—as if each new device that comes along may provide a breakthrough in instruction. I do not believe any breakthroughs are imminent until the education profession is able to identify the conditions essential for an environment in which more effective learning is likely to take place.

We are overdue in synthesizing a vast amount of educational research and experience into a general theory of instruction for introduction and testing in the classroom. This article attempts to present the major components of such a theory, which I hope

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will be provocative, although I realize the limitation inherent in attempting to explicate theory in such a brief space. The term Instructional Theory (IT) is preferred over "theory of teaching"¹ only because the term IT implies to me a broader provision for the classroom environment than does teaching.

By instructional theory I do not mean learning theory—this distinction has often been made elsewhere. IT does not refer to the curriculum-making process except for the important program design element. That is to say, I do not refer to curriculum building processes such as needs assessment, goal setting based on society and learner needs, nor to evaluation issues. The concept of theory set forth by the ASCD Commission on Instructional Theory in recent years is useful:

In this document the term *theory* is used as it is used in the natural sciences to represent a set of interrelated generalizations derived from data, which permit some degree of prediction or control over the phenomena to which they pertain. Thus a *theory of instruction* would be represented by a set of statements, based on sound replicable research, which would permit one to predict how particular changes in the educational environment (classroom setting) would affect learning (3).

It should be noted that this group decided early not to commission people to construct instructional theory nor to do so themselves as a committee.

What Is Theory?

Considerable work has been done by way of conceptualizing what instructional theory ought to be or might be. Bruner (4) has formulated four components he believes are essential to a badly needed instructional theory: (a) factors which predispose a child to learn; (b) the structure of knowledge—its economy, productiveness, and power; (c) the optimal sequencing required for learning; and (d) formulations dealing with reward and punishment.

The requirements for rigorous research are well known to those who have been forced

to abuse them due to resource limitations. Such requirements also apply to instructional theory. Terms must be carefully defined. A reliable classification system is needed. A series of declarative sentences must be formulated which may be generalizations, laws, or tentative positions (postulates). These statements are sometimes referred to as the "explanans" or "... the class of those sentences which are adduced to account fully for the phenomenon" (5). In addition to the explanans, a series of "if-then" propositions is required if the theory is to have predictive value. The theory must also be capable of generating hypotheses about instruction.

Gage (6) has suggested that paradigms² are necessary and prerequisite to theory formulation and that they "... derive their usefulness from their generality." Because of the paucity of work done in actually formulating a general instructional theory, this concept may be more appropriate in describing the early work in such a theory. Obviously some of the components of instructional theory are going to be more powerful determinants than others, and we must be able early to sort out those which seem to make the most difference.

Coleman and others have already attempted to isolate the factors (which fall in the presage criteria class) that have the most effect on achievement in cognitive skills, and we must now move toward formulation and testing of classroom teaching-learning processes over which the teacher has control.

While there are differences between the sciences and the field of education, we should note the value of theory to investigation as described by Toulmin:

The heart of all major discoveries in the physical sciences is in the discovery of novel methods of representation, and so of fresh techniques by which inferences can be drawn—and drawn in ways which fit the phenomenon under investigation (7).

My impression is that the current accountability stress will not produce any fresh insights into instruction unless we get on with the task of theory building. However,

¹ As referred to by Getzels, Gage, and others.

² Models, patterns, or schemata.

if we are able to formulate a model of the learning process from the IT ingredients I shall suggest, we must still look at the fiscal implications of such a theory. Atkinson (8) has already conceptualized from "optimal control theory" work a method of assigning costs to alternative instructional strategies. I anticipate that interest will and should continue in the cost/benefit analysis area when formulations have been made within the component areas of a general instructional theory and when provision has been made for them in the classroom setting and school policy.

Theory building in curriculum and instruction has been no less deficient than in school administration. This has been due to the low priority that theory building has been given by the federal government and the lack of any sustaining effort or unifying direction among university scholars. The problem was well stated by Halpin:

We have directed a disproportionate amount of research energy to isolated problems

and peripheral studies rather than to central investigations which yield conclusions of broad generalizability (9).

Component Areas

The components in Figure 1 represent a suggested classification of research areas which comprise the ingredients of a general instructional theory. A classification system is not intended as a theory itself, but rather as a starting point from which hypotheses can be generated by manipulation of variables within the component areas. I believe that instructional research which does not make provision for important findings within these fields will be unable to discern repeatedly which elements are most powerful. There is an obvious interrelatedness among the component areas—for example, well formulated learning strategies have relied on findings in other component areas.

Figure 1 is clearly not intended to be inclusive insofar as representative scholars

Component Areas	Representative Researchers	Implications for Instructional Practices or Policy
1.0 HUMAN GROWTH AND DEVELOPMENT 1.1 Individual differences 1.2 Rate of learning 1.3 Stage of development	Bloom, Piaget, Erickson, Kagan, Gordon, Kohlberg, Cronbach, White and Watts	Selection of learning strategies, starting age for schooling, basic approaches to learning
2.0 MOTIVATION 2.1 Readiness to learn 2.2 Self-concept 2.3 Need, drive, anxiety, incentive	Frymier, Spence, Weiner, Atkinson, McClelland, Chapman and Hill	Student participation in goal selection, marking system
3.0 ORGANIZATION 3.1 Teachability grouping 3.2 Ability grouping 3.3 Staff utilization 3.4 Student learning styles 3.5 Classroom observation systems	Thelen, Anderson, Trump, Ryan, Oliver and Shaver, Bellack, Medley, Flanders, Hunt	Organizing teachers and students together for greater efficiency, productivity, and rapport
4.0 CONCEPT CHOICE AND SEQUENCE 4.1 Concept alignment 4.2 Structure of disciplines 4.3 Sequencing	Bruner, Divesta, Jackson, Atkinson, Gage, Gagné	Determining of most productive concepts and optimizing their sequence
5.0 MATERIAL SELECTION 5.1 Grade placement 5.2 Technology value 5.3 Material verification with reference to specific goals	Lumsdaine, Klare, Michaelis, McGuire, Travers, Edling, Hoban, Chu, Torkelson, Baker, Dick	Determining material designed for achieving identified goals and placing the material into optimal sequence
6.0 LEARNING STRATEGIES 6.1 Inductive reasoning 6.2 Inquiry approach 6.3 Individualization approaches 6.4 Informal education 6.5 Reflective thought 6.6 Creativity	Joyce, Smith, Taba, Carroll, Suchman, Snow, Torrance, Barth, Skinner, Rogers, Ausubel, Schwab, Bruner, Thelen, Nuthall and Snook	Selection of a teaching "method" designed to be most appropriate for certain kinds of goals or students
7.0 LEARNING THEORY 7.1 Reward-punishment 7.2 Problem solving 7.3 S-R and field	Hilgard, Maier, Shulman, Glasser, Getzels, Mowrer, Krumholtz, Schrank, Skinner	Determining appropriate elements of learning strategies
8.0 ENVIRONMENT 8.1 Climate-humanistic 8.2 "Hidden Curriculum" 8.3 Institutional press	Maslow, Fox, Heath, Coleman, Pace, Amidon	Consideration for overall impact of school policies and curriculum on students

Figure 1. Suggested Classification of Research Areas Comprising Ingredients of a General Instructional Theory

are concerned but rather is meant as suggestive for selected important researchers in these areas. A few significant efforts have already been made at synthesizing the research base in these component areas, but such projects usually stop short of the next and most important step: formulating at least some tentative positions on the implications of these areas for classroom teaching or school policy which can be tested in the field.

Citation of only contemporary researchers does not ignore earlier works but rather implies that current or recent research is building on prior knowledge.

In summary, we must begin now, I believe, to work toward a synthesis ³ of the substantive research efforts that have been done in the eight areas described. Possibly we can then proceed to design educational programs based on knowledge, and to conceptualize theories of instruction (or teaching). Perhaps we can also hypothesize about the relative strength of certain components, while holding others constant.

Quite obviously, certain components will be more appropriate than others depending on student age or the subject matter under consideration. The learning strategies component, for example, will be more interchangeable, while provision in the learning environment for other components will be more constant.

This paper does not argue for a return to Herbartian steps in strengthening learning experiences, but rather for provision to be made in the teaching situation for each of the components. While such an effort may well be crude initially, a start must be made. I believe that scholarly work in these areas, which results in the formulation of postulates in terms of classroom practice or school policy, should be of value to:

1. The efforts now being made to identify competencies essential to effective teacher education programs

2. Supervisors and curriculum workers responsible for program design and evaluation

3. Those responsible for in-service education or staff development activities

4. Persons conducting research for more effective "methods" or analyzing the cost-effectiveness relationship among alternative programs.

I believe it is possible to deal with the problems of definition and classification which are inherent in theory building. A sustained effort in this direction is essential lest we witness another decade of the kind of research which has failed to yield information on the relative strength of the component area variables described.

References

1. John I. Goodlad and M. Frances Klein. *Beyond the Classroom Door*. Worthington, Ohio: Charles A. Jones Publishing Co., 1970. p. 120.
2. Gordon Cawelti. "The Effectiveness of Innovation." *Nation's Schools* 79: 56-74; April 1967.
3. Ira J. Gordon, editor. *Criteria for Theories of Instruction*. Washington, D.C.: Association for Supervision and Curriculum Development, 1968. p. 3.
4. Jerome S. Bruner. "Needed: A Theory of Instruction." In: Robert R. Leeper, editor. *Curricular Concerns in a Revolutionary Era*. Washington, D.C.: Association for Supervision and Curriculum Development, 1971. pp. 97-104.
5. Carl G. Hempel and Paul Oppenheimer. "The Logic of Exploration." In: Herbert Feigl and May Brodbeck, editors. *Readings in the Philosophy of Science*. New York: Appleton-Century-Crofts, Inc., 1953. p. 321.
6. N. L. Gage. "Paradigms for Research in Teaching." In: N. L. Gage, editor. *Handbook of Research in Teaching*. Chicago: Rand McNally & Company, 1963. p. 95.
7. Stephen Toulmin. *The Philosophy of Science*. New York: Harper Bros., 1953. p. 34.
8. Richard C. Atkinson. "Ingredients for a Theory of Instruction." In: M. C. Wittrock, editor. *Changing Education: Alternatives from Educational Research*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1973. pp. 65-82.
9. Andrew W. Halpin. *Theory and Research in Administration*. New York: The Macmillan Company, 1966. p. 70. □

³ A process of reasoning in which the conclusion is reached directly from given propositions and established or assumed principles.

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