

Conceptual Systems Theory and Teaching

LAWRENCE FEDIGAN

CONCEPTUAL Systems Theory as a comprehensive theory of personality organization first appeared in 1961 (Harvey, Hunt, and Schroder). The authors postulated a concrete-abstract dimension basic to all behaviors and integrated existing research into a framework allowing the explanation and prediction of individual behavior in terms of conceptual level and the operational situation. In the past decade, their theory has undergone considerable empirical testing, and each of the original authors has developed a derivative theory (Hunt, 1970a).

Assuming that an individual interacts with his environment, Harvey, Hunt, and Schroder (1961) defined a conceptual system as "a schema that provides the basis by which the individual relates to the environmental events he experiences." Four levels were defined on the basic concrete-abstract dimension, and stage-specific characteristics and behaviors were postulated.

Stage-Specific Characteristics

Placed in opposition to abstract conceptual functioning, concrete functioning is characterized by: less self-delineation (Carr, 1963), a greater tendency toward extremes (Harvey, 1965; Ware and Harvey, 1965), and less flexibility in the solution of complex problems (Harvey, 1963).

In studies particularly pertinent to teacher education, Hunt and Joyce (1967) found that the more abstract a teacher candidate's conceptual level, the more likely he was initially to prefer a reflective style, and that a highly reflective environment encouraged the generation of hypotheses about the material in the lesson. Harvey, Prather, Hoffmeister, Alter, and White (1966) reported that more abstract teachers created a presumably more favorable educational climate than the more concrete teachers. Harvey (1970) found that abstract teachers were more cooperative, more involved in classroom activities, more active, higher in achievement, more helpful, less nurturance seeking, and less concrete in their responses than concrete teachers.

Significant differences in information processing between abstract and concrete subjects were reported by Joyce, Lamb, and Sibol (1966). They noted that only the former took more definite positions on a case as they received more information. Also, Murphy and Brown (1970), using selected verbal teaching behaviors, reported that as the abstractness of a student teacher's conceptual system increased, the proportion of information handled by "helping students theorize" and by "helping students toward self-expression" increased.

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Conceptual Systems Derivations

1. *Harvey's Four Systems*. The four levels or nodal points along the basic concrete-abstract dimension were defined as systems by Harvey (1966; 1970), and specifically related to teaching behaviors by Murphy and Brown (1970).

The latter derived the following characteristics: System 1 teachers view authority as the highest good, see questions as having one answer and thus discourage divergent thinking, and reward conformity and rote learning. System 2 teachers are characterized by inconsistency and uncertainty in functioning in a manner rather similar to System 1 teachers. System 3 teachers show high affiliative needs, based on mutuality and group consensus rather than rules. Being more abstract in functioning than System 1 or 2 teachers, they will encourage more pupil self-expressions. System 4 teachers regard knowledge as tentative rather than absolute, are able to consider situations from other points of view, and, being cognitively complex themselves, tend to encourage more complex functioning.

In a study of several thousand liberal arts students, Harvey (1970) found that 35 percent represented Section 1 functioning, 15 percent System 2 functioning, 20 percent System 3 functioning, and 7 percent represented System 4. Prospective teachers differed slightly from the liberal arts students; however, among practicing teachers the percentage of System 1 was 55, there were almost no System 2 teachers, System 3 teachers went down to 15 percent, and only 4 percent represented System 4 functioning. Also, 75 percent of principals and 90 percent of superintendents in Colorado, Wyoming, Utah, and New Mexico represented System 1 functioning.

In further studies, Harvey (1970) noted that liberal arts students and Air Force Academy cadets become significantly more abstract from the freshman to the senior year; whereas, at two major teacher training institutions, the incidence of System 4 individuals decreased from a high in the sophomore year all the way through graduate training. The result appears to be due to

socializing influences of the schools of education.

2. *The Information Processing Model* (Schroder, Driver, and Streufert, 1967; Schroder and Suedfeld, 1971). Schroder and Rotter (1970) found that flexibility is a kind of higher level behavior which consists of expecting change and looking for alternative pathways. Rigid behavior is typified by the absence of such learning, or by the expectancy of a single unchanging correct solution.

3. *The Matching Model*. Although Schroder, Driver, and Streufert's information processing model has been used to predict the optimal combination of environmental complexity and the integrative complexity of a person (Schroder, Driver, and Streufert, 1967; Schroder and Suedfeld, 1971; Fedigan, 1971), the most extensive investigation of the interactive effects has been reported by Hunt (1966, 1970a). His conceptual level matching model is part of the Teachers College, Columbia University, program (Joyce, 1971; Joyce, Weil, and Wald, 1972; Joyce and Weil, 1972), where it is one of the independent variables being considered in the relationship between several variables on the developing styles or behavioral patterns of teacher trainees.

In support of his model, Hunt (1966b) has found that teachers were able to describe some of the theoretically predicted stage-specific characteristics of groups and subgroups of students. Hunt and Dopyera (1964), using students grouped by conceptual stages, had teachers use postulated stage-specific characteristics to plan lessons and teaching strategies. They concluded that a highly structured classroom environment was most effective for low conceptual level students, while a more flexible classroom environment was most effective for high conceptual level students. Similar conclusions were reached by Tomlinson and Hunt (1970), investigating the differential effect of rule-example order as a function of learner conceptual level.

Evaluating a summer Upward Bound program, Hunt and Hardt (1967) found that students in matched programs showed significantly greater change than those in mis-

matched programs. Hunt (1970b) also describes an investigation of the interactive effects of learner conceptual level and variations in complexity of the instructional environment represented by a discovery (low structure, high complexity) approach. No differences were noted for the high conceptual level students, but the low conceptual level students performed significantly better with high structure (simple environment) than with low (complex environment).

Also investigating matching effects, Fedigan (1971) analyzed the results of non-directive (low structure) instruction in an interaction teaching task on the verbal behaviors of teacher candidates in a laboratory teaching situation. He found that high conceptual level candidates exhibited the desired verbal behavior before instruction, whereas the initial verbal behaviors of the low conceptual level candidates indicated a mismatch with the low structure environment.

Further Research

The effects of grouping students by conceptual level, and of systematically attempting to match the complexity of student, teacher, and instructional environment, clearly need widespread testing in nonlaboratory situations. However, answers to the disturbing questions raised by Harvey's findings also are required. Does, in fact, the teaching profession attract people of low conceptual level, and/or do teacher education programs encourage arrestation at a level of low conceptual development?

While the data already accrued are impressive and indicate that Conceptual Systems Theory offers a fruitful field of theory and research for teacher education, the differences between the three derivatives need clearly to be understood. Commenting on these differences, Hunt (1970) warns: "Unless these distinctions are made clear, and the derivative theories updated, other investigators, assuming that the earlier provisional statement (Harvey, Hunt, and Schroder, 1961) is still accepted, may design investigations which use the measures from one derivative to test hypotheses in another."

Now that more than ten years have elapsed since their opening statement, perhaps the time is ripe for the three original authors to clarify and compare their present positions and to offer some guidelines for future research and development.

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—LAWRENCE FEDIGAN, Assistant Professor of Education, Texas A & I University, Laredo.

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