Academy of Management Review 1980, Vol. 5, No. 3, 445-447

Learning Style Theory: Less than Meets the Eye

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A learning style theory [Kolb, 1971] has been used for theory building, research, and to provide pedagogical advice. Supporting evidence comes from an unreliable instrument designed so that its results spuriously corroborate the theory. Independent research has not supported the theory and suggests its normative use should be suspended.

Management education needs theoretical formulations to assist educators in determining which pedagogical methods fit various situations. One such formulation considers learning style differences [Kolb, 1971]. This learning style theory and its associated Learning Style Inventory (LSI) have received considerable attention, exemplified by two papers in the *Academy of Management Review* [McMullan & Cahoon, 1979; Randolph & Posner, 1979]. Each of these papers uses the theory to provide pedagogical advice. Others have also used the theory or instrument for theoretical [e.g., Gray, Quick, & Laird, 1979] and research purposes [e.g., Catalanello & Brenenstuhl, 1978]. Kolb's learning style theory has become widely disseminated by its inclusion in popular experiential exercise books [Kolb, Rubin, & McIntyre, 1974; Hall, Bowen, Lewicki, & Hall, 1976].

Learning Style Theory

The theory is straightforward and has considerable face validity. Kolb [1974] theorizes that learning is a four-stage process that includes concrete experience, reflective observation, abstract conceptualization, and active experimentation. People are not likely to be equal in their emphasis in using each stage. Kolb claims that people can be categorized along two bipolar learning dimensions based on continua of active-to-reflective orientations and concrete-to-abstract orientations. This leads to a four-cell matrix that indicates different individual learning styles; diagonals reflect opposite styles (see Figure 1). Kolb explains these types and speculates on their consequences for learning and behavior. For example, Kolb [1974] indicates that the greatest strength of assimilators is in their ability to create theoretical models. They excel in inductive reasoning and integrating disparate observations. They are more interested in abstract ideas than people and they are more concerned with theoretical elegance than practicality. Accommodators tend to have opposite characteristics. Given such strong predictions, the interest in the theory is not surprising. If it can be empirically supported, then it would have utility for education and training as a framework for designing more appropriate pedagogical methods for different individuals and situations.

Various researchers have apparently accepted the theory and have applied it to improve management education. For example, McMullan and Cahoon [1979] argue the need to integrate abstract conceptualization with concrete experience. They claim that neither traditional teaching approaches nor experiential methods can alone integrate these learning styles. They propose a technique to accomplish this needed integration based on the assumption that the two learning styles are on opposite ends of a learning continuum and necessitate bridging.

Randolph and Posner suggest a broader appli-

	Active	Reflective
Concrete	Accommodators	Divergers
Abstract	Convergers	Assimilators

Figure 1
Kolb's Four-Cell Matrix of Learning Styles

cation of the theory. They propose a method for selecting appropriate pedagogical techniques according to situational contingencies. They state that "it is necessary to develop an appreciation of how pedagogical techniques might be related to different learning styles" [1979, p. 463]. They use learning style theory to develop such a framework.

The value of the above work and numerous other applications of learning style theory are contingent on the validity of that theory. Yet few users attend to this issue. Users seem to have moved from the speculative formulation of a theoretical relationship to applications without adequate evaluation and validation. They have apparently been satisfied with "what meets the eye." Unfortunately, what meets the eye may not be satisfactory.

Evaluation of the Evidence

Empirical evidence supporting learning style theory and the LSI has come from a single piece of unpublished research [Kolb, 1971]. Kolb evaluated construct validity by analyzing a number of variables that were hypothesized to covary with learning style (e.g., occupation, undergraduate major). He found a number of significant differences in the hypothesized direction. However, further examination of his data indicates that many of these effects were weak. We have compared LSI means of different undergraduate majors using two independent samples (n = 412, n = 1,179) and also obtained weak results [1978]. Less than 5 percent of between-group variance (undergraduate majors constituted groups) could be accounted for by learning style.

We have also analyzed the reliability of the LSI. Test-retest reliability for the two samples after only three weeks was low (median r = .50), suggesting that the LSI is rather volatile, unlike the theoretical constructs studied. Coefficient alpha results on the four scales of the LSI ranged from .70 for the abstract conceptualization scale down to .40 for the concrete experience scale. These results suggest that the LSI is not a reliable instrument, and they *are* consistent with the low reliabilities reported by Kolb [1971].

Factor analysis provided weak support for the theory in that the two bipolar dimensions that emerged accounted for only 20.6 percent of the item variance. Much of this accounted-for variance may be a function of the ipsative scoring system used with the LSI [Freedman & Stumpf, 1978]. Because the four scales are interdependent, high scores on one dimension *force* lower scores on other dimensions. This raises the conceptual issue of why people high on one dimension should necessarily be low on other dimensions? Inasmuch as Kolb's supporting evidence consists of LSI data, the scoring system may lead to erroneous support of the theory. If the LSI variance is simply a function of the scoring system, then the theory has yet to receive empirical support.

Lamb and Certo [1978] compared LSI results for a sample using both the LSI and then the same items scored using seven-point Likert scales. They found the LSI to provide results equivalent to those of previous research. However, the modified instrument produced different results. They concluded that the support for learning style theory may be due to instrument bias.

In a follow-up study, Certo and Lamb [1979] generated responses to the LSI using a Monte Carlo technique which generated random data. Again, Kolb's learning style theory received support, this time by *random* responses! Apparently the LSI cannot fail to support the theory on which it is based.

Conclusions

The utility of Kolb's learning style theory should be evaluated in light of the available empirical evidence. Essentially, we have a theory whose supporting empirical evidence comes from an unreli-

able instrument designed in such a way that its results spuriously support the theory. One must conclude that the instrument is invalid and that little empirical evidence currently supports this theory of learning styles.

Researchers and theoreticians appear to be using the theory as if its insights are valid, a questionable premise indeed. The use of the theory as a basis for making normative judgments about educational practices should be suspended until the above problems are rectified. This may be brought about by modifications in the theory, or by new methods of measuring learning styles.

Although learning style theory is the current issue, we have found similar problems to be endemic to the field of management education (1979). There is a need in management education for theories that integrate situational elements with pedagogy — in particular, a theory that accounts for variance in learning styles among individuals. This need still remains to be satisfied.

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Received 8/31/79