A Critique of the Research on Learning Styles

Like the blind men in the fable about the elephant, learning styles researchers tend to investigate only a part of the whole and thus have yet to provide a definitive picture of the matter before them.

The primary objective for the study and application of learning styles has been to improve the immediate and long-term results of general teaching-learning episodes (for example, Biggs 1988, Papalia 1978, Smith and Renzulli 1983). Specifically, the field claims to influence four aspects of teaching and learning in schools: (1) curriculum design (Popkewitz et al. 1982, Wang 1980); (2) instructional methods (Corno and Snow 1986); (3) assessment methods; and (4) student guidance (Snow 1986). These claims for affecting the primary processes of schooling are indeed big. How good are they? Is this a new elephant we are blindly examining, or has the old beast just rearranged itself?

General Problems
The operationalization of learning style theory encompasses three pervasive general problems: (1) confusion in definitions, (2) weakness in reliability and validity of measurements, and (3) identification of relevant characteristics in learners and instructional settings.

The first issue is the bewildering array of definitions surrounding learning style conceptualizations. There is wide variation in the scale and the scope of learning, in school achievement, and in other behavior predicted by the various learning style concepts. Some definitions claim to predict only an individual's free choice between a lecture-style instructional method ver-
sus small-group instructional method (Friedman and Stritter 1976); others endeavor to predict habitual response across all learning acts (Yando and Kagan 1970). Definitions of operation also vary widely, with loose distinctions made between style, strategy, and tactic. There may be some convergence emerging in the literature toward using style to refer to information processing routines that function in a trait-like manner at the personality level (Entwistle 1981), strategy to refer to cross-situational consistency in how students approach school learning (Entwistle 1988, Ramsden 1988); and tactic to describe the specific, observable activity of learners in a specific learning situation (Snowman 1989).

Weakness in the accumulated evidence for the reliability and validity of measurements is the second continuing problem. Users of educational and psychological tests should routinely expect any conceptualization and measurement scheme to indicate that the test meets minimum standards for use and interpretation. The developers have collected varying degrees and types of evidence to support their various conceptualizations and measurement systems. The tendency among the learning styles researchers, however, has been not to pursue the necessary iterative pattern of hypothesis-investigation-modification but rather to rush prematurely into print and marketing with very early and preliminary indications of factor loadings based on one dataset. This haste weakens any claim of valid interpretation from the test scores. Nor have writers and researchers in learning style theory and measurement consistently pursued methods to carefully distinguish among like concepts in order to collect construct-related evidence. Thus, the test user has little or no indication of the degree of overlap across the various learning style conceptualizations nor much convincing evidence that the interpretations are valid for the test results observed.

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also diminished by the following problems. These external threats to validity are ignored in the research designs presently used in learning style research.

1. Many studies in the learning styles literature have been conducted by graduate students preparing their Ph.D theses under the direction of faculty members with a vested interest in substantiating a particular learning style conceptualization.

2. A recurrent design problem, when comparison groups are selected on the basis of extreme scores, is the potential for statistical regression toward the mean, which subsequently biases interpretation of results.

3. Few of these studies estimate the reactive effects of pretesting for learning style, which may sensitize students to experimental instructional conditions.

4. Students may also be reacting to the experimental arrangement instead of to the experimental variable (Hawthorne effect).

Alternate Explanations
The results observed in present studies of learning style could be, and have been, achieved through more direct mechanisms: general intelligence effects, principles of adaptive education, and instructional alignment. First, to the extent that learning styles correlate with general intelligence (Witkin’s field-independence, for example), then school achievement will be highly predictable. Most learning style theorists have not distinguished their constructs sufficiently from measures of intelligence.

Second, the concept of “adaptive education” has enjoyed a long history (Snow 1980, Corno and Snow 1986) and has undoubtedly been practiced by insightful teachers throughout the ages, although tailoring instruction for individual learners has frequently received little support. During the ‘60s and ‘70s, for example, “teacher-proof” curriculum packages ignored the individual effects of teacher perceptions and knowledge about their students. Any modification by teachers was considered, at least potentially, substandard education.

Now we expect that when a student either does not master the necessary content background or supporting knowledge/skill set or has not developed skill in the information processing approach required by a curriculum, the teacher can concentrate on direct training of the missing content knowledge/skill set or information processing (McCombs 1981, 1982a and b, 1984; Palincsar and Brown 1984; Dansereau 1988). Alternatively, the teacher can choose to proceed in a manner that avoids the missing content knowledge and the inexperienced information processing, in order to preserve student motivation and self-esteem while missing links are learned. Either choice requires information about the student and about the new learning task; and both require teachers comfortable with modifying curriculum guidelines to suit individual students. These teacher-initiated adaptations are very much like the various instructional variations suggested by the learning styles literature.

Third, “instructional alignment” might also account for learning style-like results. This concept grew from earlier ideas of curricular alignment (Levine 1982) to focus on the idea of specifying desired outcomes sufficiently well to allow both teachers and students to efficiently arrange learning conditions to achieve those outcomes. In 1989 Cohen and colleagues reviewed results from the leading published learning style theorists as compared to studies deemed to have the critical instructional elements (task clarity, feedback, opportunity for practice) sufficiently aligned. This critique found essentially no effects due to learning style alone, but substantial effects when instruction and testing met the following criteria for alignment: (1) the stimulus condition and content were precisely defined; (2) instruction was designed to present those critical features and reinforce behaviors that attend to those features; (3) the same critical features occur both in the instruction and in the assessment. The argument is that those learning style studies showing effects achieve the effects by aligning instruction, not by matching instruction and style.

Old Elephants or New?
The conceptualizers, instrument developers, and researchers in the learning styles field promise to deliver the power for students, teachers, and parents to take control of learning environments and interactions. But, in general, the learning style conceptualizations, and the claims made on their behalf, remain to be systematically and comparatively evaluated in practice. Until the fundamental concepts of validity and reliability are established and until each competing concept is carefully investigated, researchers and users alike will continue groping like the five blind men in the fable about the elephant, each with a part of the whole but none with full understanding.

References


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Author's note: My synthesis of research, Learning Styles in Secondary Schools: A Review of Instruments and Implications for Their Use, is available from the National Center on Effective Secondary Schools at the University of Wisconsin—Madison. To order a copy, send a check or purchase order for $9, payable to Center Document Service, to Center Document Service, Rm. 242, 1025 W. Johnson St., Madison, WI 53706.

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