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Learning Styles
Concepts and Evidence

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Abstract

The term “learning styles” refers to the concept that individuals differ in regard to what mode of instruction or study is most effective for them. Proponents of learning-style assessment contend that optimal instruction requires diagnosing individuals' learning style and tailoring instruction accordingly. Assessments of learning style typically ask people to evaluate what sort of information presentation they prefer (e.g., words versus pictures versus speech) and/or what kind of mental activity they find most engaging or congenial (e.g., analysis versus listening), although assessment instruments are extremely diverse. The most common—but not the only—hypothesis about the instructional relevance of learning styles is the *meshing hypothesis*, according to which instruction is best provided in a format that matches the preferences of the learner (e.g., for a “visual learner,” emphasizing visual presentation of information).

The learning-styles view has acquired great influence within the education field, and is frequently encountered at levels ranging from kindergarten to graduate school. There is a thriving industry devoted to publishing learning-styles tests and guidebooks for teachers, and many organizations offer professional development workshops for teachers and educators built around the concept of learning styles.

The authors of the present review were charged with determining whether these practices are supported by scientific evidence. We concluded that any credible validation of learning-styles-based instruction requires robust documentation of a very particular type of *experimental* finding with several necessary criteria. First, students must be divided into groups on the basis of their learning styles, and then students from each group must be randomly assigned to receive one of multiple instructional methods. Next, students must then sit for a final test that is the same for all students. Finally, in order to demonstrate that optimal learning requires that students receive instruction tailored to their putative learning style, the experiment must reveal a specific type of *interaction* between learning style and instructional method: Students with one learning style achieve the best educational outcome when given an instructional method that differs from the instructional method producing the best outcome for students with a different learning style. In other words, the instructional method that proves most effective for students with one learning style is not the most effective method for students with a different learning style.

Our review of the literature disclosed ample evidence that children and adults will, if asked, express preferences about how they prefer information to be presented to them. There is also plentiful evidence arguing that people differ in the degree to which they have some fairly specific aptitudes for different kinds of thinking and for processing different types of information. However, we found virtually no evidence for the interaction pattern mentioned above, which was judged to be a precondition for validating the educational applications of learning styles. Although the literature on learning styles is enormous, very few studies have even used an experimental methodology capable of testing the validity of learning styles applied to education. Moreover, of those that did use an appropriate method, several found results that flatly contradict the popular meshing hypothesis.

We conclude therefore, that at present, there is no adequate evidence base to justify incorporating learning-styles assessments into general educational practice. Thus, limited education resources would better be devoted to adopting other educational practices that have a strong evidence base, of which there are an increasing number. However, given the lack of methodologically sound studies of learning styles, it would be an error to conclude that all possible versions of learning styles have been tested and found wanting; many have simply not been tested at all. Further research on the use of learning-styles assessment in instruction may in some cases be warranted, but such research needs to be performed appropriately.