

(Banks, 2004a; May, 1999; Nieto, 1999). Research and practice will also improve if we more clearly delineate the boundaries and dimensions of multicultural education.

This [article] defines and describes each of the five dimensions of multicultural education. The knowledge construction process is discussed more extensively than the other four dimensions. The kind of knowledge that teachers examine and master will have a powerful influence on the teaching methods they create, on their interpretations of school knowledge, and on how they use student cultural knowledge. The knowledge construction process is fundamental in the implementation of multicultural education. It has implications for each of the other four dimensions—for example, for the construction of knowledge about pedagogy.

LIMITATIONS AND INTERRELATIONSHIP OF THE DIMENSIONS

The dimensions typology is an ideal-type conception. It approximates but does not describe reality in its total complexity. Like all classification schema, it has both strengths and limitations. Typologies are helpful conceptual tools because they provide a way to organize and make sense of complex and distinct data and observations. However, their categories are interrelated and overlapping, not mutually exclusive. Typologies rarely encompass the total universe of existing or future cases. Consequently, some cases can be described only by using several of the categories.

The dimensions typology provides a useful framework for categorizing and interpreting the extensive and myriad literature on cultural diversity, ethnicity, and education. However, the five dimensions are conceptually distinct but highly interrelated. Content integration, for example, describes any approach used to integrate content about racial and cultural groups into the curriculum. The knowledge construction process describes a method in which teachers help students to understand how knowledge is created

and how it reflects the experiences of various ethnic, racial, cultural, and language groups.

THE MEANING OF MULTICULTURAL EDUCATION TO TEACHERS

A widely held and discussed idea among theorists is that, in order for multicultural education to be effectively implemented within a school, changes must be made in the total school culture as well as within all subject areas, including mathematics and science (Moses & Cobb, 2001). Despite the wide acceptance of this basic tenet by theorists, it confuses many teachers, especially those in subject areas such as science and mathematics. This confusion often takes the form of resistance to multicultural education. Many teachers have told me after a conference presentation on the characteristics and goals of multicultural education: "These ideas are fine for the social studies, but they have nothing to do with science or math. Science is science, regardless of the culture of the students."

This statement can be interpreted in a variety of ways. However, one way of interpreting it is as a genuine belief held by a teacher who is unaware of higher-level philosophical and epistemological knowledge and issues in science or mathematics or who does not believe that these issues are related to school teaching (Harding, 1998). The frequency with which I have encountered this belief in staff development conferences and workshops for teachers has convinced me that the meaning of multicultural education must be better contextualized in order for the concept to be more widely understood and accepted by teachers and other practitioners, especially in such subject areas as mathematics and the sciences.

We need to better clarify the different dimensions of multicultural education and to help teachers see more clearly the implications of multicultural education for their own subject areas and teaching situations. The development of active, cooperative, and motivating teaching strategies that makes physics more interesting for students of color might be a more important goal