

Zbl 0961.00006**Martin, Danny Bernard****Mathematics success and failure among African-American youth. The roles of sociohistorical context, community forces, school influence, and individual agency.** (English)

The Studies in Mathematical Thinking and Learning Series. Mahwah, NJ: Lawrence Erlbaum Associates, Publishers. xii, 202 p. \$ 39.95 (2000).

“No matter how mathematics achievement and persistence are measured, African-Americans lag behind their peers. Instances of success can be found, but disproportionately poor results remain the norm despite promises of change found in mathematics education reforms and significant advances in mathematics education research” – thus runs the initial paragraph of this beautiful book, whose author (himself an African-American and a mathematician with ample teaching experience at all levels from junior high school to university) investigated the reasons for these deplorable facts (and the equally deplorable fact that African-American students achieve in average below their actual ability) in his dissertation work at University of California, Berkeley. The book describes his research and conclusions in a way which soon makes the reader forget that it is a revised dissertation.

The research consisted in ethnographic participant observations in the classes of a predominantly African-American junior high school (grades 7-9) in Oakland, California, combined with open in-depth interviews with the three mathematics teachers and with select parents and students. As emphasized by Martin, this provides no representative view of the issue, but it allows to highlight factors beyond those pointed at in earlier studies: socio-economic background and family situation, culturally inadequate curriculum, miserable or badly financed schools, biased a priori expectations or outright discrimination on the part of teachers.

Such factors of course remain valid. As Martin points out, however, studies that concentrate on these alone do not take into account that all such factors do not shape students' performance directly but only through the way students (and their social environment, family and teachers) react to them, collectively and individually; they are therefore unable to explain why some students succeed in spite of adversary conditions, and thus help little in choosing workable strategies.

As revealed by the interviews, the parents of the student group had generally been exposed to discriminatory mathematics teaching, and their life experience had been that certain careers were closed to African-Americans irrespective of formal qualifications. Some therefore passed on to their children the implicit or explicit message that mathematics was not worth too much effort. Others (possibly a small minority, but highly visible because of the way interviewees were selected) reacted in opposition, pursuing further education in order to be able to assist their children or in order to improve their own career possibilities.

A similar polarization was found among the students. The majority reacted to their situation in agreement with the principle “we don't need no education”, doing worse most of the time than they turned out at some happy moments to be able to – deserting class, disturbing or not working when present, teasing or harassing those who tried to work. A minority reacted against this aspect of the “community forces” and performed at their best (and very well), demarcating themselves consciously from the majority of their peers, choosing their friends among their own kind in order to be able to neglect accusations of “being nerds” or “acting White”. As it turns out, this demarcation was general, the “mathematics identity” (beliefs about one's ability to perform within mathematical contexts, and about the nature and importance of mathematics) of these students being closely linked to their over-all academic identity and to their senses-of-self broadly; they “engaged in what might be termed self-definition by opposition, resisting

not only the dominant underachievement norms that existed among their peers but also those negative elements of their community that are often thought of as inescapable or ensuring failure” (p. 123). The interviews suggest that the students belonging to this group lived with parents or other family which could shield them against this latter aspect of the community forces: the experience that mathematics (or, generally, school work) is not worth the effort. Some assisted the work of their children or followed their progress directly, others seem to have encouraged (or at least to have presented alternative models) without feeling any need to monitor.

One of the three teachers was African-American, one was from Nigeria and one from Sierra Leone; none was thus likely to be biased against the possibility of Black students to perform well, and all were highly engaged in their teaching and in a curricular experiment (“Algebra Project Transition Curriculum”, designed to “help Black students mathematize their experiences in real-world contexts” (p. 2)). The interviews with them confirm the picture derived from the interviews with students and parents and illustrate the obstacles which the community forces presented. One of the teachers also points out that the underachievement norm was often chosen because of the stress of the moment: in Martin’s words, “when students received the attention and assurance they apparently wanted, they often proceeded with their work and demonstrated the levels of understanding that were expected of them. When left on their own to struggle through some of the new practices, some students’ frustration levels grew and they were more inclined to adopt an ‘I don’t care’ or ‘This isn’t math’ or ‘This is boring’ attitude” (p. 181).

Martin modestly hopes that his framework “may be of use in its own right in analyzing the educational situations of other groups for whom history and context play important roles, such as the Native Americans in the United States, the Aborigines in Australia, and the Maori in New Zealand” (p. xi). The reviewer hopes, on his part, to have illustrated that this is much too modest (recognizing not a little of his own experience when teaching decades ago in a class of 10th-grade Danish middle class girls who reacted to having been put on what they themselves characterized as the “garbage track”).

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- 01A80 Sociology (and profession) of mathematics