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Review of Eric Gutstein's "Teaching Mathematics and Developing Student Agency"

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### Abstract

Over a two year period, Eric Gutstein conducted practitioner research that explored the potential of mathematics education to enable middle schools students in Chicago to develop "social agency." By introducing social dimensions into the word problems, he was able to facilitate the development of social consciousness among many of his students while still achieving conventional academic success. Although the results he draws can only be considered provisional given the small sample, he does highlight that math education cannot help but enter into a political domain when it is grounded in "real-life" situations. Gutstein's use of local and global social issues to connect math to student's personal lives and experience can be widely applied in the middle school math classroom.

## Review of Eric Gutstein's "Teaching Mathematics and Developing Student Agency"

*Summary of Article*

Over a two year period in the late 1990s, Eric Gutstein conducted practitioner research in a middle school classroom at Rivera Elementary School in Chicago. Rivera's student body was 99% Latino. Gutstein's mathematics goals were that "students learn the subject, achieve conventional school success, and change their orientation toward mathematics away from a rote-learned, mechanical process to one that was relevant and meaningful" (p. 421). He adds that he had additional goals as well, "related to social justice." "These were that through the study of mathematics and within mathematics class, students develop sociopolitical consciousness, a sense of social agency, and positive social/cultural identities" (p. 421).

Gutstein's work is grounded in the Freireian concept that education is not just learning to "read the world", but also learning to "write the world." While Freire's work is generally associated with literacy, Gutstein argues that the same concepts can be expanded to include the teaching of mathematics as well. While working off of a standard Chicago Public Schools curriculum (*Mathematics in Context*), Gutstein enhanced the coursework with class projects "in which students investigated racism and other injustices using mathematics as a key analytical tool" (p. 426). Gutstein reports on two projects. The first involved researching the potential impact of a redevelopment project in the Morningside community where Rivera was located, including assessing the developer's claims regarding affordable housing in light of the students' own family experience. The second project that Gutstein describes was an analysis of map projections and their distortion of land surface area. Maps come to be seen by the students not as neutral representations, but artifacts laden with ideology.

Gutstein describes his work as practitioner research using "semi-ethnographic" methods, including observation, surveys, and analysis of students' journals and project work. Student test scores and subsequent high school and college careers provided a means of assessing if the baseline goals of standard academic achievement were met.

### *Critique of Article*

Gutstein anticipates many of the possible objections to his research, but glosses over some fundamental questions. One issue with Gutstein's research is its small and unrepresentational sample. Gutstein reports on 28 honors students. Gutstein refers to work he did with students in the general academic program at Rivera Elementary, and asserts that they "developed aspects of mathematical power" (p. 438), but not to the extent of his honors students. He analyzes the reasons for the differences in another article. Another possible objection to Gutstein's article is the challenge of measuring "agency," and determining the forces that contribute to its formation. Again, Gutstein acknowledges the issue, but still feels that "there is enough justification to warrant the provisional claim: teaching mathematics for social justice in urban, public schools -- in which developing agency is a central part -- can make a difference in students' lives beyond the classroom." (p. 444) Another possible problem with Gutstein's research is its age. The teaching work that he reports on took place almost 10 years ago, and most importantly before the advent of the "high stakes, punitive climate of No Child Left Behind" (p. 421). The No Child Left Behind Act (NCLB) has dramatically changed the nature of education work (Woolfolk, 2007), and it is unclear if Gutstein's extension of the math curriculum is even possible today with the heavy emphasis on standardized tests required by NCLB.

One deeper issue with Gutstein's research is the assumption behind his goal of changing students' orientation toward mathematics "to one that [is] relevant and meaningful." For Gutstein "meaningful" means confronting "racism and other forms of injustice" (p. 426). But an educator like Jamie York, whose series *Making Math Meaningful* (2006) is popular with middle school Waldorf teachers, probably has a different understanding of what makes math "meaningful." And an educator in a fundamentalist Islamic *madrassa* probably has still another conception of what "relevant" and "meaningful" is. Admittedly, it would be difficult for Gutstein to incorporate all of this thinking that leads him to his understanding of what constitutes "meaningful" mathematics in such an article, and so his research will be mainly of interest to educators who see and understand the world in a similar way as Gutstein, e.g., that the United States is a class society, that capitalism plays an important role in creating and extending poverty, that racism is part of the fabric of U. S. history and society, that the U. S. enforces the dramatic polarization of wealth and poverty around the world, and so on. Those educators will find his research especially of interest.

### *Implications for Teaching/Learning*

Despite these issues, Gutstein's research raises important issues for mathematics educators. The Illinois Learning Standards ("Illinois Learning Standards," 2007) emphasizes the application of mathematics to solve practical problems. Gutstein takes this charge one more step when he describes math projects that raise deep questions of social and political power by the selection of what practical problems -- e.g., urban redevelopment -- will be investigated. Gutstein reminds educators that they always have biases that inform their teaching, and these biases are especially evident in the narratives of word problems. Ideally, the teacher should be

aware both of his or her biases, as well as conscious of the reality of his or her students' lives, in order to construct meaningful for mathematics contexts -- no matter how the teacher understands "meaningful."

## References

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