

Improvement of Mathematics Literacy in African-American Students: Preparation for Algebra and Higher Mathematics

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Summary of Merit Review and Recommendation

Note to Reader: *This statement has been prepared by staff of the National Science Foundation in order to provide an illustration of the proposal review process and the award recommendation. While it draws on actual points made by the proposal reviewers, review panelists, and program officer, it is a synopsis and synthesis of the actual reviews and award decision. We recognize that all proposals and reviews have strengths and weaknesses. We therefore offer this only as an example of a “typical” set of points made for a funded proposal, and we hope this serves to illuminate the process and to provide helpful guidance to prospective investigators.*

The panel was in agreement that the potential impact of this study would be very great. The proposal seeks to study the factors that are contributing to the apparent success that four, almost exclusively, African American, urban school districts are having in teaching algebra. The research calls for a two-tier approach. In the first layer, the researchers will document and analyze the data in these schools. Based on these findings, they will examine dimensions and variables emerging from Layer 1 analyses in two sites, consider problems of measurement and operationalization for large-scale quantitative research, and develop indicators that will be pilot tested in the third site.

The reviewers agreed that there was a strong theoretical basis for the study and that the researchers had both the experience and capability of carrying out the study. The program officer agrees that the proposed study has the potential to advance understanding of the relationship between particular teaching practices and the understanding of mathematics by students. This proposal has the potential to help identify the factors that lead to successful learning of algebra by minority students. This is not an evaluation of the algebra project, but rather an attempt to understand the factors that lead to successful learning.

While there was greater support among the panelists for the Layer 1 study, the panel members did raise some issues for this tier which needed further elaboration: the theoretical basis of the algebra project, the range of implementation practices, the timing and nature of the videos, the details of the case studies, and the role of the advisory panel.

For the second layer, the panelists were concerned that they might not be able to develop the indicators in a timely fashion.

The program officer felt that the concerns raised by the panel were appropriate. In a telephone conversation the program officer communicated these issues to the principal investigator who promptly provided a response to the reviewer comments. In this correspondence the investigator provided greater detail about the five areas that will guide the case studies and that formed the basis for the development of the algebra project. They will focus not only on the teachers but also on the students. They do intend to have several researchers in the classroom when the videos are done, including an anthropologist in the site teams. In a second written response the investigator explained that they would reduce the emphasis on the indicator portion of the study. They will follow the advice of the panel and concentrate on more in-depth analysis of another site.

The panel was supportive of this proposal. In his two written responses, the principal investigator adequately addressed the issues raised in the panel discussion. The program officer concurred with the panel recommendations.