NEPC
NATIONAL EDUCATION POLICY CENTER

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Newsletter

Can "Syncretic Learning" Improve Math Instruction?

Math is sometimes presented to students as impersonal and isolated from real life. The Writing Data Stories project aims to alter that approach by using a "syncretic" approach to learning. This method encourages students to integrate everyday personal and cultural experiences with school-based academic concepts. The goal is to deepen comprehension, provide opportunities to apply what's learned in different disciplinary areas and aspects of civic life, and demonstrate how different texts and information are valued or devalued in different spheres. Dual language learners are a major focus, so students are encouraged to produce work that incorporates home cultures and languages.

The project involves 2,500 San Francisco-area students and 20 teachers who are provided with professional development and curricular resources. Funded by the National Science Foundation, the three-year project co-led by NEPC Fellow Kris Gutiérrez is a collaboration between the University of California, Berkeley, North Carolina State University, University of Texas at Austin, and the Concord Consortium.

Here's an example of how the project works. Students started by creating paper-based data sets consisting of nutrition labels from foods they ate for breakfast. Finding this cumbersome, they then used the Common Online Data Analysis Platform to incorporate the information they had collected into an existing data set of the nutritional values of breakfast cereals, in the process adding variables such as taste and cost. The free, open-access tool was developed as a data-science learning tool for students in grades six and up. Students can investigate research questions by analyzing, sorting, and filtering information, using the software's Story Builder tool to visualize and share their results with narratives, graphics,

still images, and videos.

Other examples of projects students have produced include explorations of the correlation between pollution, race, and socioeconomic status, and examinations of the ways climate change impacts different areas of the world—especially those of personal interest to the students.

The Writing Data Stories project aims to address shortcomings in many current efforts to incorporate data analysis into the K-12 curriculum. Too often these lessons are limited to short, isolated activities, basic skills development, or specialized computing and data science classes that only a subset of students take. As the co-investigators write in their NSF grant application, "Preparing today's students to work with data fluently is critical to ensuring a scientifically literate and empowered citizenry."

NEPC Resources on Math Education

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