

DATA EXPLORERS: EMPLOYING SOCIAL JUSTICE DATA INVESTIGATIONS TO EMPOWER UNDERSERVED TEENS

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THE NEED

Data understanding is critical to future work and life, yet teens rarely have opportunities to engage in relevant ways with data addressing issues they care deeply about. The NetApp Data Explorers program aims to empower teens to discover and develop critical data science skills in ways that prepare them to thrive and take action in a data-driven world.

DESIGN/APPROACH

NetApp has partnered with leading STEM education and youth development nonprofits to test hands-on data learning experiences with 12-16 year-olds, leveraging data sets aligned with the UN Sustainable Development Goals to engage students in underserved communities through out-of-school-time learning experiences. The program aims to inspire exploration, investigation and problem-solving using data about relevant social issues, and to help students learn about the role of data in diverse careers. NetApp employees coach students in team-based capstone projects. NetApp Data Explorers tested two models in parallel, one in Bangalore, India, with the India STEM Foundation and one in Durham, NC, with TERC's Data Clubs curriculum and the Concord Consortium's data exploration tool, CODAP. This poster reports on the latter of these two models.

OUTCOMES

The program explored changes in students' knowledge about data and statistics, their sense of efficacy about working with data and making a difference through social action, and their attitudes about data and collaboration/ teamwork. Results showed that students enjoyed the experience describing it as "fun" and "a great experience", with some waxing quite enthusiastic, saying they "love this program" that it's "A great program about data" or that "I would recommend [it] to anyone who likes data and would like to find ways to find it to their life."

Students appreciated learning about how to use data, finding CODAP challenging, but also really appreciating it. They also liked the opportunity to engage socially with peers. A few noted how data can make a difference in the world saying, "I also know how data is truly important [to the] community and the world," and "how you can utilize it [data] to help change things."

Students had statistically significant increases in their sense of data efficacy, and small but not statistically significant increases in their knowledge about data as measured by items drawn from the LOCUS scale, as well as their data attitudes, sense of social efficacy, and views about working collaboratively. Sixth grade students had lower LOCUS scores than their older peers, but gains were comparable. There were no significant gender differences in these scores.

CONCLUSION AND IMPLICATIONS

Educational approaches engaging teenage learners with data hold significant value for the field. Identifying key elements, replicating and scaling them is essential to bring more teachers into data science education and to prepare more learners for data-rich futures. Evaluation from this model shows promise for developing students' sense of data efficacy and knowledge about data as well as other important attitudes and habits of mind. We expect that future findings from ongoing work toward these approaches will shed light on engaging learners with data in informal settings, the intersection of data exploration and social justice issues, and the training, curricular supports, and background necessary to help such approaches succeed.