Is Science for Me? Promoting Science Identity Following Climate Change Disasters in College Students

Natural disasters, including those linked to climate change, such as hurricanes, can have lasting impacts on a community as well as the youth in the community. The damage after a disaster can lead to more stress for students and can affect how they perform in school (Joseph, 2012; Le Brocque et al., 2017; Richardson et al., 2015). However, there is not much research on how this affects college-aged students and how informal learning can help them recover after a disaster. This research evaluated how participation in informal learning experiences after an ecological disaster affected students' persistence, resilience, and STEM identity. Students who were impacted by Hurricane Florence from a large Southeastern University were recruited through Listservs, the Residential Villages, and through the TRIO and McNair programs. Selected participants engaged in an informal experience where they worked in pairs over 2 weeks to collect community-relevant forestry data in their home communities. The informal learning experience took place following the Spring of 2019 semester and participants received a $1000 stipend for participation. Students were given many different opportunities to participate in the informal research, such as collecting oral histories related to forest damage, photographing the forestry damage following the hurricane, using geospatial analytic techniques to map hurricane impacts, and analyzing current forest management policies. Pre- and post-test measures were used to evaluate changes in students' learning, science identity, persistence, and resilience. These measures included a measure of science identity(London et al., 2011), The College Persistence Questionnaire (Davidson et al., 2009), and The Academic Resilience Scale (ARS-30)(Cassidy, 2016). Analysis was conducted on the data of the 42 participants that completed both the pre- and mid-test surveys. Results showed that there were no significant differences in the pre- and mid-test scores for persistence and resilience (all $ps > .05$). However, for STEM Identity there was a significant increase between the two time points (pre-test: $M = 5.07$, $SD = 1.94$, mid-test: $M = 5.93$, $SD = 1.75$) for white males ($p < .05$). This change was not significant for non-white or female students. Further, science identity significantly predicted participants' judgments that they can make a difference in their community through science and that research can address relevant problems and that. While participation is still ongoing (participants are preparing a traveling exhibit of their findings currently), the data suggest that science identity is critical for promoting perceptions of science relevance, and that promoting science identity for those traditionally marginalized from science (women and ethnic minorities) may prove more difficult than for white males.

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