

Supporting Environmental Educators to Shift Toward Inquiry-Based Instruction

Does a professional development program affect educators' beliefs, perceived competency, and instruction of science as inquiry?

BASING THE PROGRAM ON RESEARCH

Elements that have been effective in helping teachers reform their science teaching and were included as part of the UNLESS professional development program	
Build educators' value for teaching science as inquiry and address their concerns	Engage in inquiry as a learner and make connections to teaching setting
Involve educators in real research	Reflection on beliefs, learning, and future actions
Determine the goals of the training together	Mentoring to try new things and stimulate reflection
Collaborative work and sharing ideas	Long term program rather than a single day training

TREATMENT AND METHODS

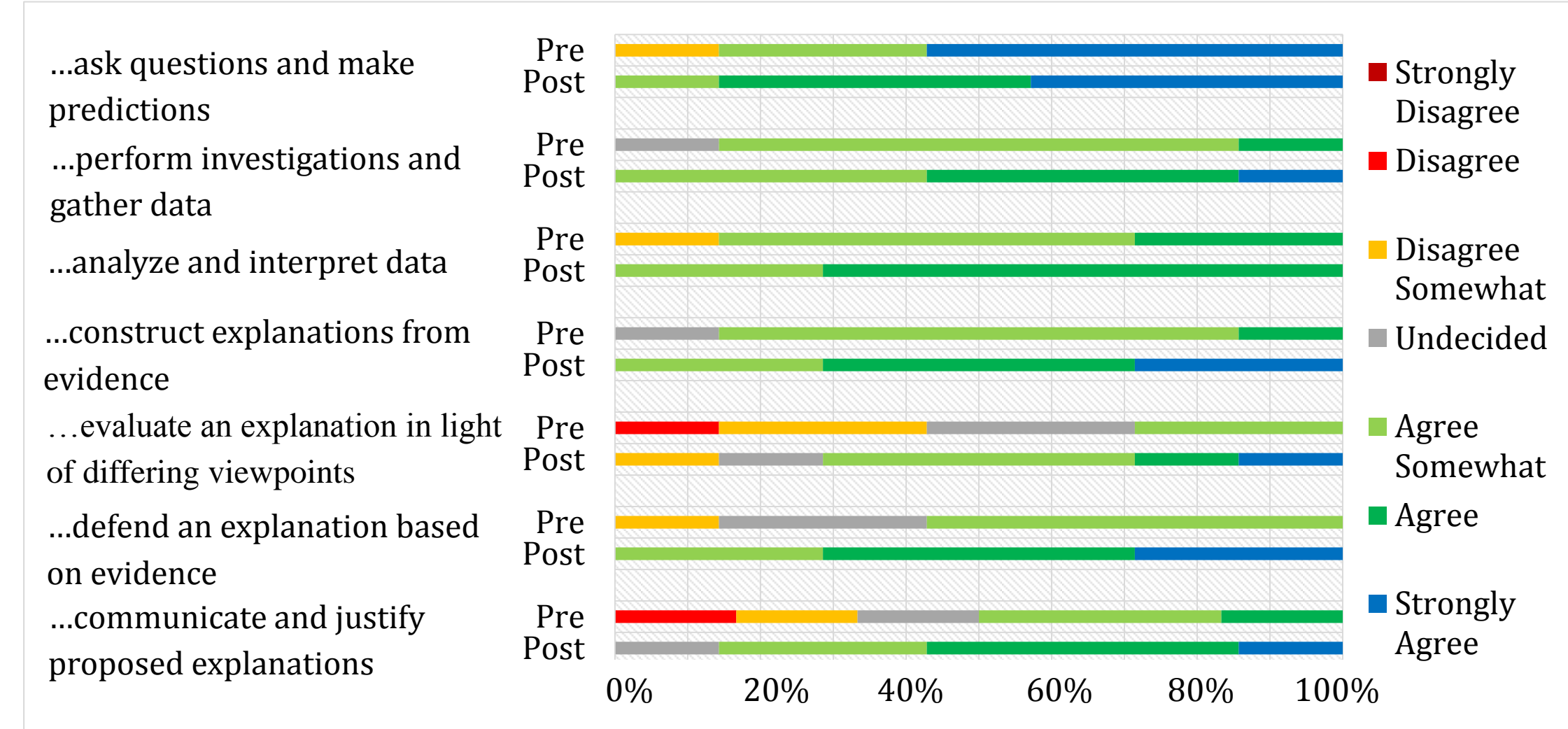
About the Understanding Newly Learned Environmental Science Skills (UNLESS) professional development program

- 11 educators chose to participate
- Workshops were once per month from October through March
- Fall semester workshops: Current research with the National Park Service and working together in an investigation related to these topics
- Spring semester: Working in small collaborative groups to lead the rest of the cohort in an inquiry-based lesson

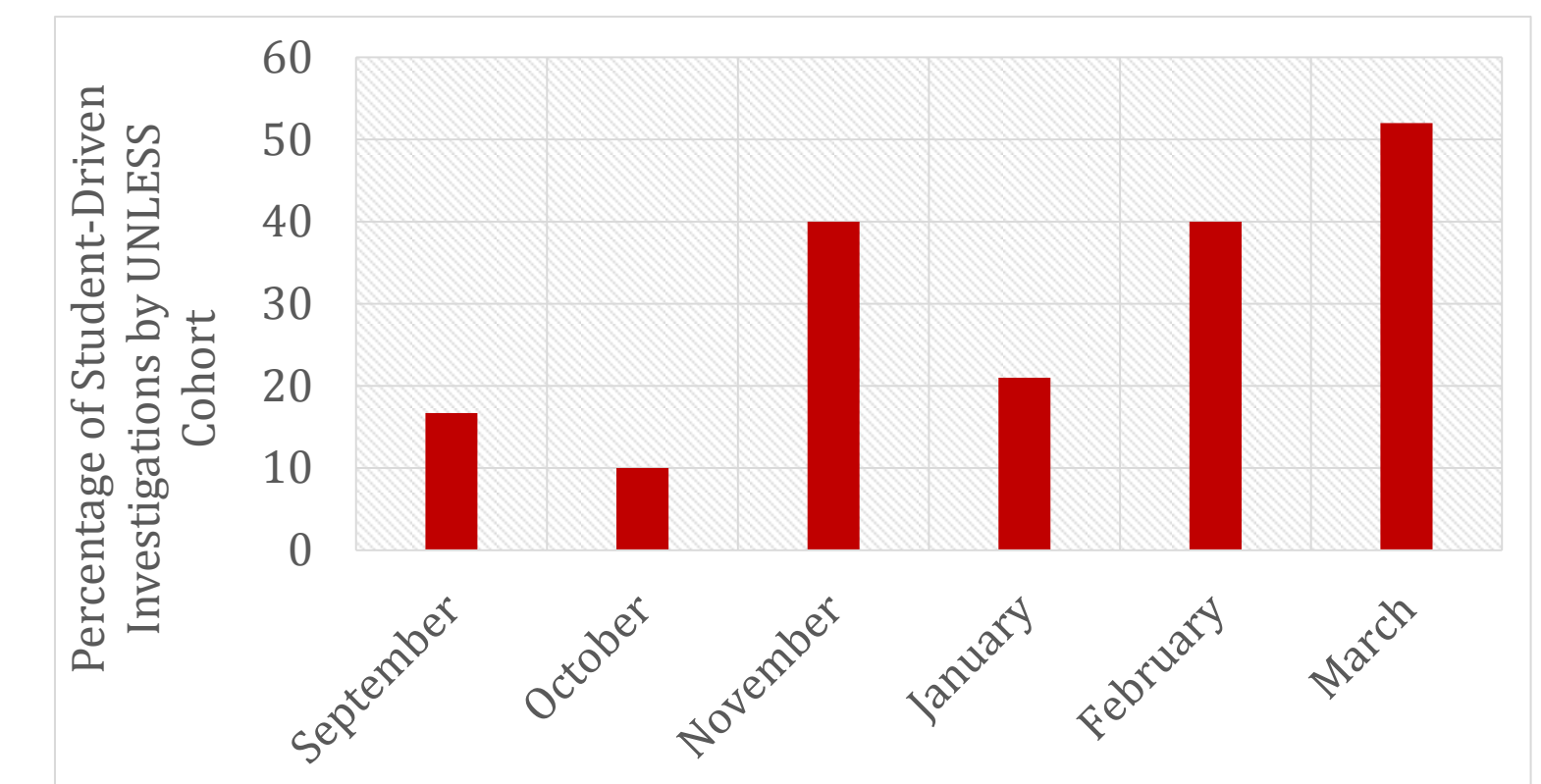
Educators engaged in an inquiry-based lesson presented by their peers



RESULTS



Likert items from the Pre- and Post-UNLESS Surveys related to educators' instruction in elements of inquiry, specifically what they currently support their students to do as part of their science teaching, (N=7).



Percentage of student-driven investigations per month as reported by UNLESS educators after each NatureBridge program with the Science Investigation Tracking Form, (N= 86).

WHAT IS NATUREBRIDGE?

- Residential environmental education organization that operates in national parks
- Mission: Foster environmental literacy to sustain our planet
- Recent focus on increasing rigor of environmental science programs through having each student participate in a science investigation
- In Yosemite National Park, NatureBridge employs 40 Environmental Science Educators



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Focus Questions	Data Source 1	Data Source 2	Data Source 3	Data Source 4	Data Source 5
Primary Question: What are educators' beliefs, perceived competency, and implementation of inquiry instruction before, during, and after UNLESS?	Pre- and Post-UNLESS Survey	Interviews during and after the program; Post-observation interviews	Pre- and Post-UNLESS Concept Maps	Reformed Teaching Observation Protocol	Science Investigation Tracking Form
Secondary Question: What challenges are educators facing in reforming their teaching after being in this program?	Pre- and Post-UNLESS Survey	Post-treatment and observation interviews	Pre- and Post-UNLESS Concept Maps		

CONCLUSIONS

- Educators believed in doing inquiry before and after the professional development program and mostly felt like they had the skills to do inquiry.
- Inquiry instruction increased during and after the program. Educators realized inquiry can be simpler than they thought.
- Some challenges went away after the program while others still existed. Remaining challenges to doing inquiry with students included: weather, time, teacher and school requests, and students' prior knowledge.