GAGE

National Science Foundation's Geodetic Facility for the Advancement of Geoscience

Fostering Computational Skills in Secondary Education Earth Sciences through Jupyter Notebooks

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UNAVCO

Workshop Information

Educator Workshop
ESIP Summer Meeting
July 17, 2019
Tacoma, Washington

Title:
Data to Action with Jupyter Notebooks to Explore Atlantic Storms

Goal:
»Provide secondary geoscience teachers experience with running and modifying code within a Jupyter environment

Learning Objectives

» Find Jupyter notebooks on Github

» Feel comfortable opening & running a Jupyter Notebook

» Build confidence in changing parameters in code cells (fail & break the code in a safe environment)

» Gain familiarity with interpreting and coding cell content

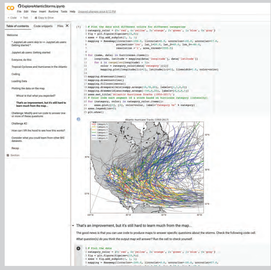
» Manipulate code to develop maps as outputs to analyze data

» Create conversations with data - ask and answer your own questions.

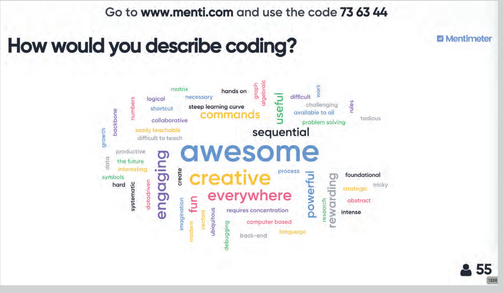
Take-away

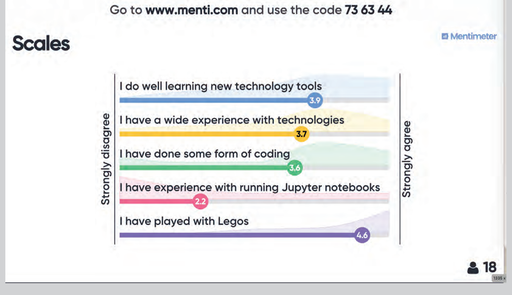
Secondary-level Earth science **educators are interested, excited,** and **need significant support** to successfully **implement Jupyter notebook** based learning activities.

SCAN ME

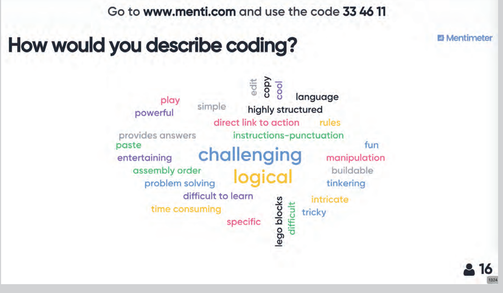


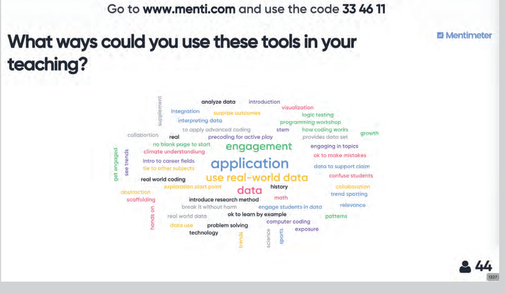
Preworkshop Survey:





Post Workshop Survey:





Comments

"I appreciated the content and organization but some of the technical (coding and usage) I was unfamiliar with. I do **see value and application** in the classroom. **Next step is how to implement.**"

"Excellent use of real world coding example **emphasizing mistakes are part of learning**!"

"Some concepts (coding) difficult. **Will require time to feel comfortable**"

"I **need one-on-one support** to understand fully."

"**Need more time** to understand how these things ... function."

Challenges

» Educators need a completely online, savable Jupyter environment available, free of charge.

» Pulling in libraries is a barrier to use.

» Time to implement vs learning value.

» Basic finding files, calling files, etc.

Next Steps

» Implement best practices in future GeoSciFramework and other project Jupyter notebooks.

» Redesign current notebooks to pre-load libraries.

» Assess feasibility of block-coding in Jupyter.

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