Drawing to Learn about Science Teacher Thinking

Science and Art Research for Creativity and Inclusion

Pre-Conference Workshop

NARST 2016 Annual International Conference

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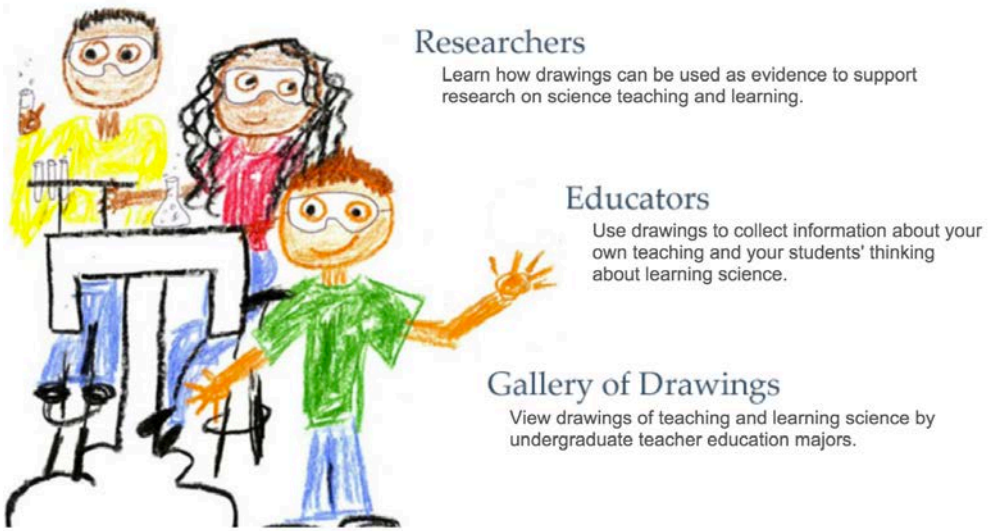
Presented by:

J. Randy McGinnis

Emily Hestness

Drawing to Learn about Science Teacher Thinking

Drawing as a method for accessing information about professional identity



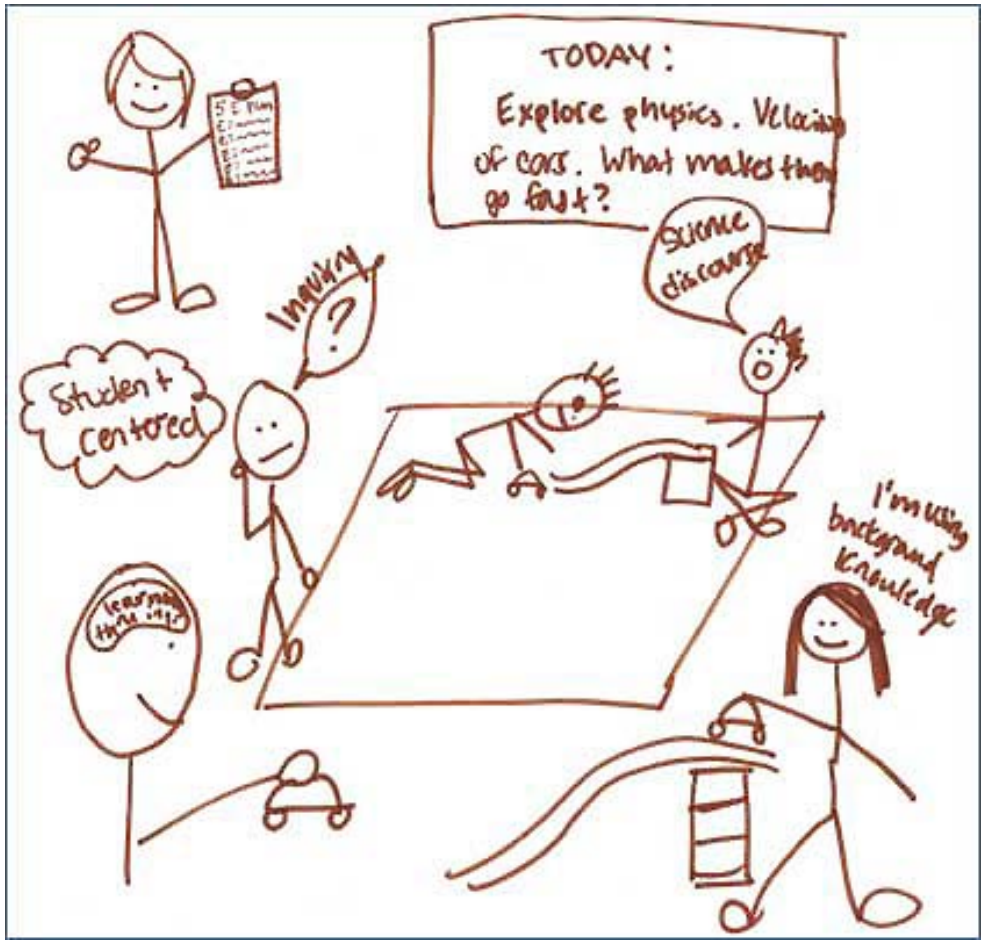
www.drawntoscience.org

Drawing Prompt

Draw yourself teaching science and your students learning science

Sample Drawings

Sample Drawings



Scoring Rubric

To what extent, if any, do drawings show evidence of teacher thinking related to the following goals?

- Experience excitement, interest and motivation to learn about phenomena in the natural and physical world [affective] (Goal 1)[1]
- Come to generate, understand, remember and use concepts, explanations, arguments, models and facts related to science [cognitive] (Goal 2)
- Manipulate, test, explore, predict, question, observe and make sense of the natural and physical world [implementation](Goal 3)
- Participate in scientific activities and learning practices with others, using scientific language and tools [social] (Goal 5)[2]

[1]From National Research Council (2009). Learning Science in Informal Environments: People, Places, and Pursuits. P. Bell, B. Lewenstein, & A. Shouse (Eds.). Washington, DC.

Example from the rubric

Manipulate, test, explore, predict, question, observe and make sense of the natural and physical world [implementation](Goal 3)

4 - Evidence in thought bubbles, comments, or activities of manipulating, testing, exploring, predicting, questioning, observing, or sense-making (4 or more present)
3 - Evidence in thought bubbles, comments, or activities of manipulating, testing, exploring, predicting, questioning, observing, or sense-making (3 present)
2 - Evidence in thought bubbles, comments, or activities of manipulating, testing, exploring, predicting, questioning, observing, or sense-making (2 present)
1 - Evidence in thought bubbles, comments, or activities of manipulating, testing, exploring, predicting, questioning, observing, or sense-making (1 present)
0 - No evidence of manipulating, testing, exploring, predicting, questioning, observing, or sense-making

Drawing to Learn about Science Teacher Thinking

Drawing as a method for accessing information about teachers' climate change ideas

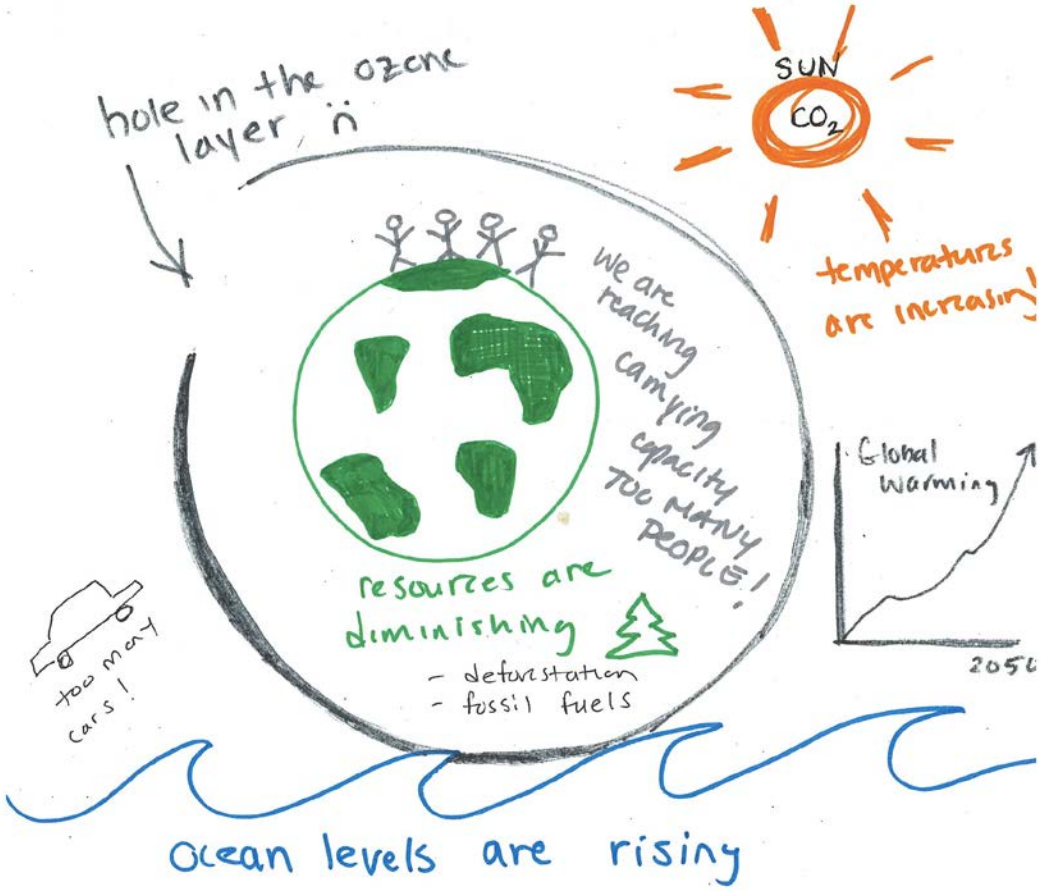
Maryland and Delaware Climate Change Education, Assessment, and Research (MADE CLEAR)

NSF Phase I & II Climate Change Education Partnership (CCEP) grant

Drawing Prompt

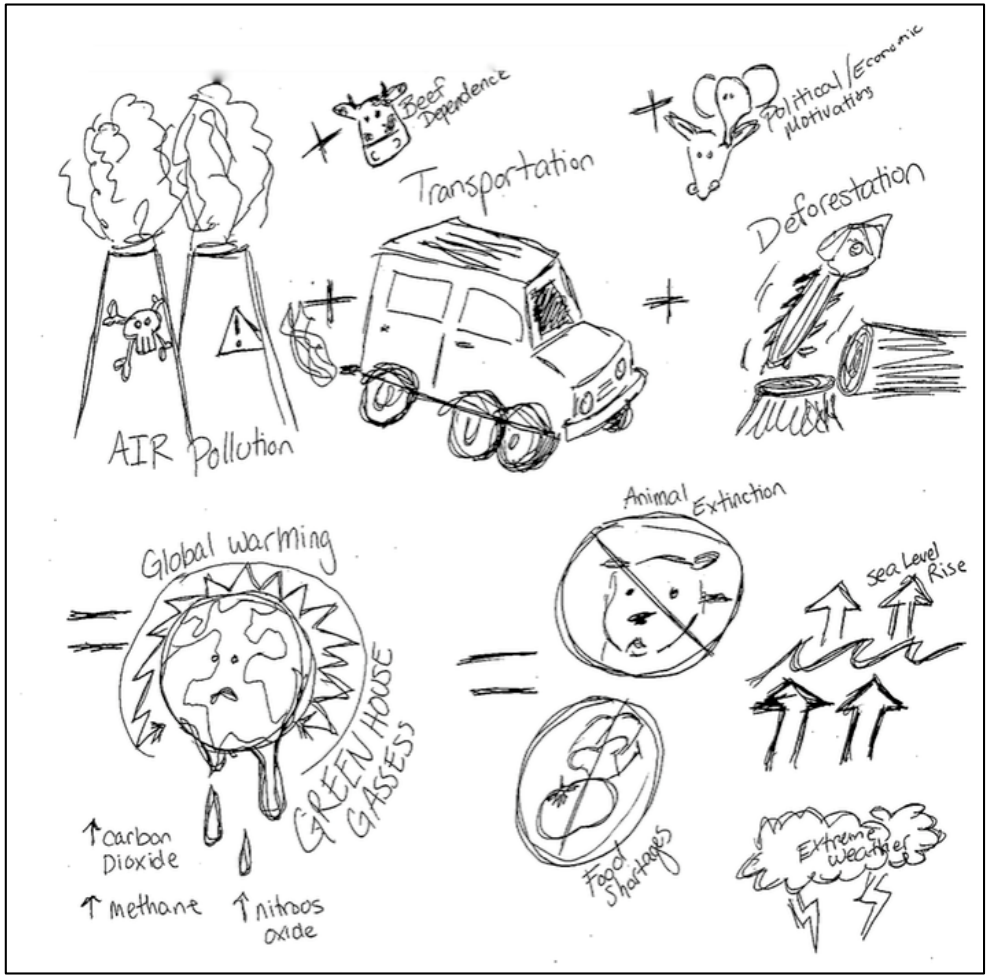
Draw all that you know about the causes and effects of climate change.

Sample Drawings from Teacher Candidates



Sample Drawings from Teacher Candidates

"With a lot of the solutions to [climate change], …we know what the solutions could be, but there are political and economic reasons why we don't do those things" (Melissa, interview data).



Analysis

Phase 1: Open coding – "Salience" (i.e., What aspects of climate change were salient to teacher candidates in their drawings and accompanying written explanations?)

Phase 2: Categorizing salient elements into "affective" (feelings of good/bad; optimism/pessimism; empathy) and "behavioral" (actions impacting environment positively or negatively) dimensions

www.ClimateEdResearch.org
www.madeclear.org

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