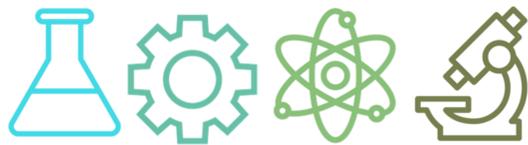


## Introduction

- Dramatic job growth in science-related fields (Langdon et al., 2011) over the past decade has led to a renewed focus on science education (DOE, 2015).
- Informal science experiences at home foster learning in familiar, culturally-relevant ways that classrooms cannot (Bell et al., 2004).
- Science learning at home is associated with higher child interest, confidence, and achievement in science at school (National Science Teachers Association, 2009; National Research Council, 2012).
- However, limited research has examined the home science experiences of elementary-school-aged children.



## Current Study

- The current study explored parents' reports of elementary school children's home-based science experiences.

### Research Questions

- What are parents' views about supporting their children's science learning at home?
- How confident are parents in supporting science learning?
- Who prompts engagement in science activities: parents, teachers, or children?
- How do views about and engagement in science differ from views and engagement in math, reading, and writing?
- What types of science activities are children engaging in at home?

## Method

### Participants (N = 189)

- 91% mothers, 82% White, and 77% college-educated.
- 50% of children were female, 36% first/second grade, 40% third/fourth grade, and 24% fifth/sixth grade.

### Measures

- Online survey distributed via Qualtrics.
- Data drawn from larger study of academic engagement at home.
- Survey included rating scales and open-ended questions.
- E.g., "How confident are you in your ability to support your child's science learning at home?" and "How important is it for you to support your child's science learning at home?"

## Results

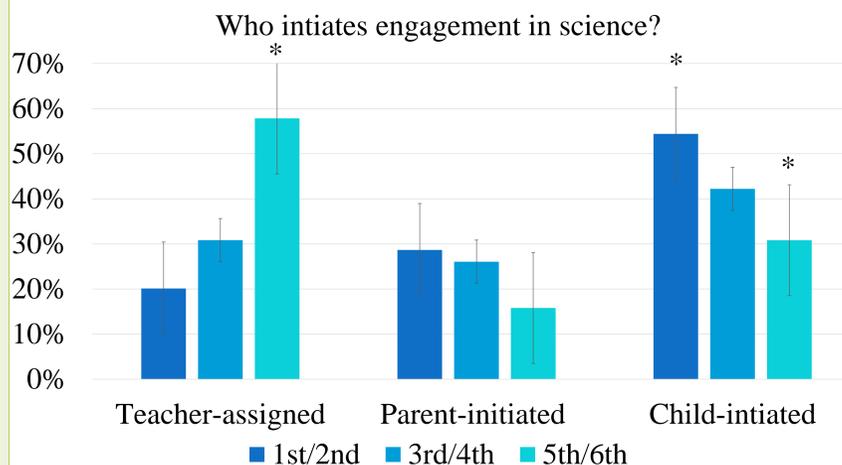
### Parents' Views of Science at Home

- 77% of parents said science is *important/very important* to do at home.
- Compared to other subjects, parents rated science as the *least important* subject to do at home compared to math ( $p < .05$ ), reading ( $p < .001$ ), and writing ( $p < .05$ ) [ $F(3,172) = 4.41, p < .05, \eta^2 = .025$ ].
- 75% of parents reported children found science *very/extremely enjoyable*.
- Compared to other subjects, parents rated science as children's *most enjoyed* subject compared to math ( $p < .001$ ), reading ( $p < .05$ ), and writing ( $p < .001$ ) [ $F(3,174) = 14.20, p < .001, \eta^2 = .075$ ].

### Confidence to Support Science

- 66% of parents said they were *confident/very confident* in their ability to support their children's science learning
- Compared to other subjects, parents were *less confident* in their ability to support science than reading or writing ( $p < .001$ ) [ $F(3,158) = 4.71, p < .05, \eta^2 = .029$ ].

### Science Engagement at Home



- Teacher-assigned work was most common in 5<sup>th</sup>/6<sup>th</sup> grade ( $p < .05$ ).
- Parent-initiated *decreased* across grade but not significantly.
- Child-initiated activities were more common in 1<sup>st</sup>/2<sup>nd</sup> than 5<sup>th</sup>/6<sup>th</sup> ( $p < .05$ ).

### Science Activities (N = 169)

We asked parents, "Please describe the typical science activities your child does at home."

- "Experiments" ( $n = 83; 49%$ )
- "He likes to make DIY (do-it-yourself) projects such as slime, constantly looks at how things interact with each other, and how they work."
- "Creating science experiments like creating slime or growing crystals."

## Results (cont'd)

### Science Activities (cont'd)

- Science kits ( $n = 30; 18%$ )
  - "Science kits for making anything from soda to lip gloss."
  - "Sometimes I buy science kits (make a geode, KiwiCrates) and we do them together."
- Observational/explorative learning ( $n = 57; 34%$ )
  - "Mixing colors. Playing in the water with things that sink and float."
  - "I like to encourage environmental science exploration in our local area (parks, yard)."
- Use of digital or print media ( $n = 40; 24%$ )
  - "He watches YouTube kids videos, Nova on PBS..."
  - "Reading Popular Science and Muse magazines."
- Homework ( $n = 34; 20%$ )
  - "Science homework worksheets."
- Cooking/baking ( $n = 23; 14%$ )
  - "We love to bake in my house, so we are often mixing ingredients to make different baked goods."
- Does not engage in at science at home ( $n = 18; 11%$ )
  - "I guess he's too young for science?"
  - "Not much, most of her science is done in school."
- Types of science mentioned
  - Life science ( $n = 39; 23%$ )
  - Engineering and technology ( $n = 23; 14%$ )
  - Physical science ( $n = 22; 13%$ )
  - Earth and space science ( $n = 10; 6%$ )

## Discussion

- Most parents reported engaging in a variety of science activities at home.
- Few parents indicated that no science was occurring at home ( $n = 18; 11%$ )
- Parents reported that children enjoy science more than other academic subjects. However, parents were less confident in their ability to support science than other subjects.
  - Parents and educators should seek to capitalize on children's enjoyment of science.
  - Educators may want to encourage parents to foster science at home by providing simple ideas/materials for use.
  - Well-made science media may also be a useful tool to help support children's science engagement at home.
- Future research should consider more socio-economically diverse samples and conduct interviews to learn about the quality of engagement.