

# Christine Hirst Bernhardt



Picture captured by students with their own old GoPro on a high altitude balloon that landed on a backyard barbeque.  
*W.R.A.P. students, 2014*

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# My journey

- Wanted to work in space
- Music major; then geology
- Educator since 2004:
  - Outdoor ed, high school, college
- Students are my driver
- Teaching space globally
- Astronomy Ed Projects
- Space as a STEM gateway



May 18, 2018



Humans to Mars



# Authentic opportunities to do science



# Earth and Space = Fewest Women and POC

- ~15% of global astronomers (Cesarsky & Walker, 2010)
- <100 PhDs granted to African American Women (*Women in Physics and Astronomy, 2019*)
- Non-white PhD in astronomy 1%-5% (NRC, 2013; (*Women in Physics and Astronomy, 2019*)
- IAU Membership is 21% women-but changing!



offer no  
biology  
courses



offer no  
chemistry  
courses



offer no  
physics  
courses

*Science course offerings in schools where at least 80% of students are Black, Latino/a, or Indigenous.*

# NASEM Call to Action for Science Education

Substantial, disproportionate opportunity gaps to learn science:

**Elementary school is CRITICAL!**

- STEM Identification (Kim & Sinatra, 2016)
- Resources
- Qualified teachers
- Diverse educator work force

*Journal of Science Policy & Governance*

POLICY POSITION PAPER: SCIENCE EDUCATION

**Hardwired to learn science but left out of the landscape: the role of expanding access to quality science education in America for elementary learners**

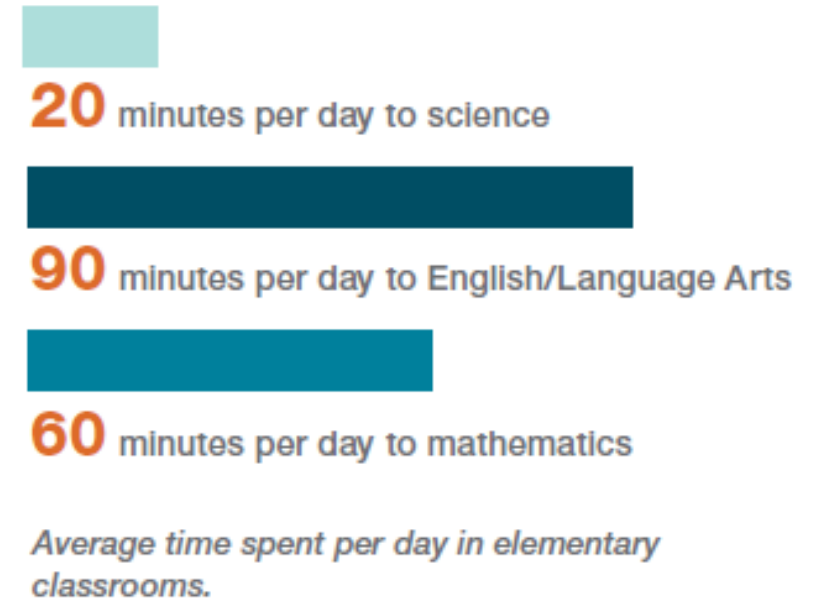
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# Academic Prioritization Problem

- No AP Course
- Lowest level science
- Not counted towards University
- Lowest number of credentialed



## ESS: Earth and Space Science

Show Tips

### ESS1: Earth's Place in the Universe

ESS1.A: The Universe and Its Stars

ESS1.B: Earth and the Solar System

ESS1.C: The History of Planet Earth

ESS2: Earth's Systems  
ESS2.A: Earth-System Interactions  
ESS2.B: Earth's Surface Processes

ESS3: Earth and Human Activity

ESS4: Earth and the Sun's Systems



Want to collaborate?

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# Space For All: A Multinational Study in Astronomy Education

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