

# Science, Equity and Afterschool

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Educational Equity Center  
at the  
Academy for Educational Development  
(EEC/AED)

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- Why is Science so Important?
- Why Equity in Science is important?
- Why Afterschool is key for science equity?
- What can equitable science experiences look like in afterschool?

## Why is Science so Important?

- In 2004, the National Science Board reported that eighty percent of all occupations require science and engineering skills.

## Why is Science so Important?

Science processes develop the advanced skills required by jobs, such as the ability to reason, think creatively, make decisions, and problem-solve.

## Why is Science so Important?

- Scientific knowledge is a necessity when making personal choices that arise in everyday life.
- Scientific knowledge is a necessity to engage intelligently in public discussions, debates and decisions about important issues that impact our lives and the lives of others.

## Why is Equity in Science so important?

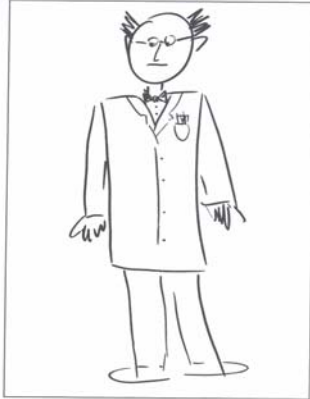
Close your eyes...

Imagine a scientist...

Take a snap shot of that image....

## WHO DOES SCIENCE?

This group activity helps students become aware of stereotypes they may hold about who does science and gives them an opportunity to broaden their views. As the first activity, "Who Does Science?" focuses on the importance of science equity, and forms the foundation for the ten activities that follow. If you do this activity fully, you will have introduced your students to science learning that opens their minds to new possibilities for future jobs and careers.



*A composite drawing of a stereotypical scientist, generated by participants at an After-School Science PLUS training session.*

## Who is missing from the picture?

Underserved groups (women, people of color, and people with disabilities) comprise a disproportionately low percentage of the SMET workforce.

## Startling Statement

There are 2083 full professors in the mathematics departments of the top 50 universities in the United States.

What percent are women?

Less than 10%!

A survey of the top 50 universities in the United States reveals that while half of the recipients of a Bachelor of Science degree in math are women, they make up less than 10% of the faculty (Nelson Diversity Survey 2004).

## Startling Statement

About 5% (more than 40,000) of the students taking the 2000 SAT were students with a disability.

What percent of the students with disabilities graduated from college with a degree in science or mathematics in 2004 (4 years later)?

Less than .0001% (one ten thousandth!) of college students with a disability graduated with a degree in science or math—although they represented 4.8% of all graduates.

## Startling Statement

- In 2004, the National Science Board reported that eighty percent of all occupations require science and engineering skills.

What percent of those entering the workforce in 2004 were women, people of color, or people with disabilities?

In 2004 almost 85% of the workforce in the United States was comprised of women, people of color, and people with disabilities.

We are shortchanging these individuals as well as the United States.

## Startling Statement

According to the 2004 US Census 27.9% of the population are African-American, Latino, or American Indian.

What percent of all science, math, and engineering degrees were awarded to African-Americans, Latinos, and American Indians in 2004?

African-Americans, Latinos, and American Indians combined received just 12% of the total Science Math and Engineering degrees awarded (National Science Board).

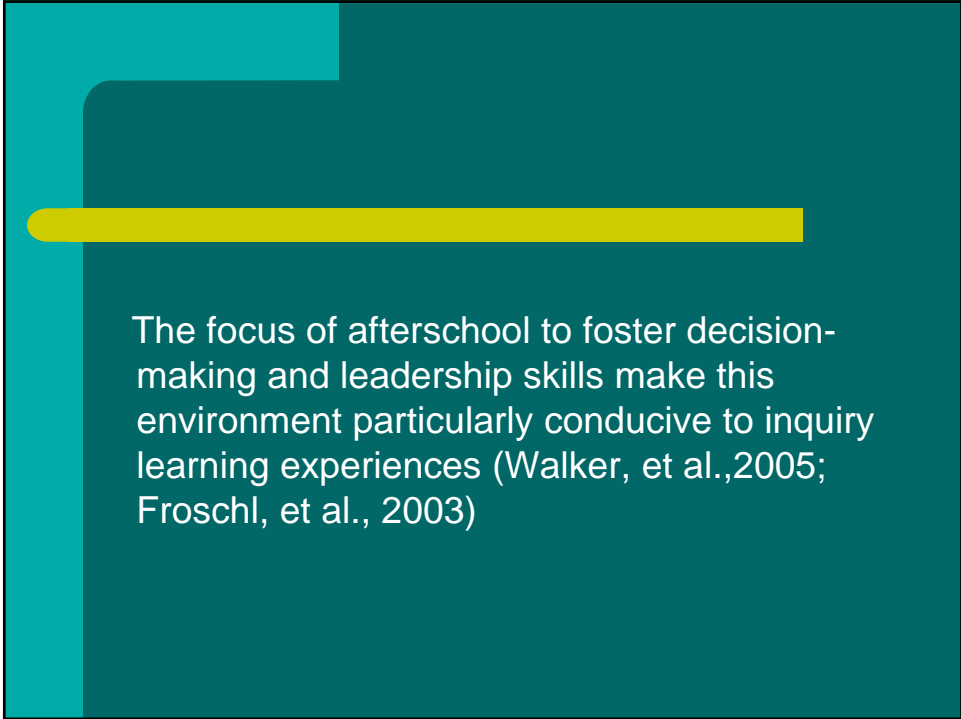
## Why Afterschool is key for science equity?

The freedom and flexibility of the afterschool setting allows for learning experiences not possible during the day. Afterschool settings provide the opportunity for experiential learning that supports academic achievement. (NASA and Afterschool Programs: Connecting to the Future, 2005)

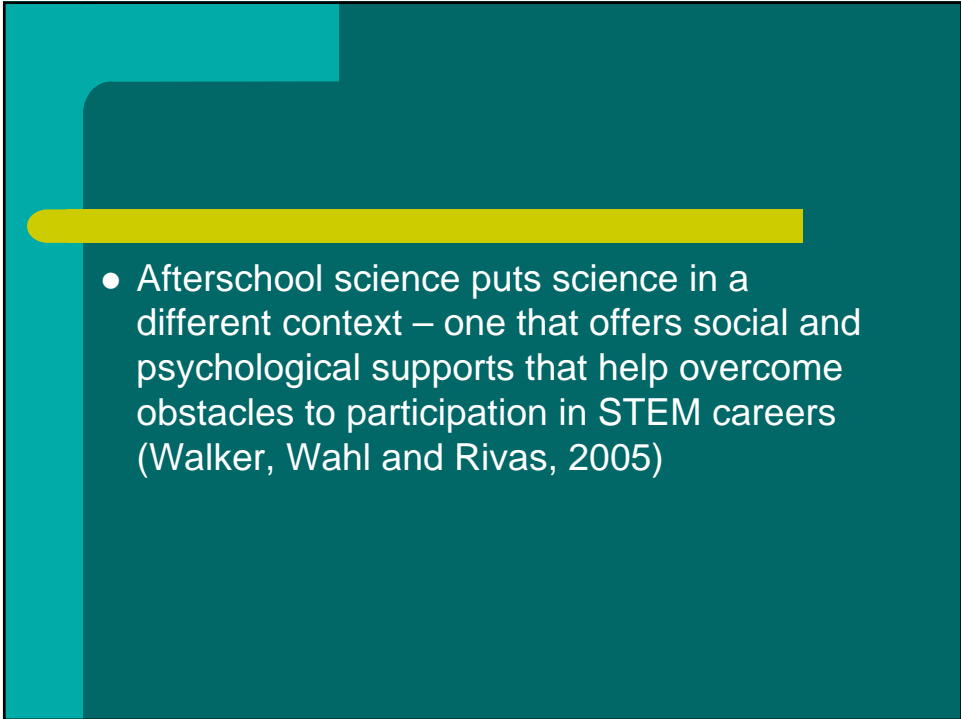
## Why Afterschool is key to science equity?

A total of 6.5 million children are enrolled in afterschool programs (Afterschool Alliance, 2004).

A large portion of students who attend afterschool programs are from low-income families, communities of color, and underserved groups (Halpern, 2002)



The focus of afterschool to foster decision-making and leadership skills make this environment particularly conducive to inquiry learning experiences (Walker, et al.,2005; Froschl, et al., 2003)

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- Afterschool science puts science in a different context – one that offers social and psychological supports that help overcome obstacles to participation in STEM careers (Walker, Wahl and Rivas, 2005)

## What can we do as afterschool educators?

- We can prepare all students for the future by providing equitable science opportunities/activities -- afterschool settings – *it's the perfect place!*

## Strategies for Equitable Science Activities

- Use familiar, readily available materials to facilitate a series of simple but instructive, fun, hands-on activities.

## Strategies for Equitable Science Activities

- Create opportunities for students to view science as a part of their daily lives.
- Create opportunities for children to see themselves as scientists - use their questions and ideas to explore, design experiments and make conclusions.

## Strategies for Equitable Science Activities

- Involve parents and other family members in science activities that they can do with their children.
- Use science activities to reinforce literacy and math skills.

## Strategies for Equitable Science Activities

Convey positive messages to students about who can do science.

Everyone!

## Strategies for Equitable Science Activities

Expect the best from every child—regardless of gender, race/ethnicity, disability, family income!

## **In summary,**

- **Hands-on, inquiry-based science experiences in afterschool will encourage students to pursue science careers.**
- **Mentors/role models are a key element for underrepresented students who pursue science careers.**

- **Afterschool is the perfect place to take a proactive approach to science equity.**

Kocher

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