Supporting Teachers to Encourage the Pursuit of Undergraduate Physics for Women

www.stepup4women.org

FIU STEM Transformation Institute

APS physics

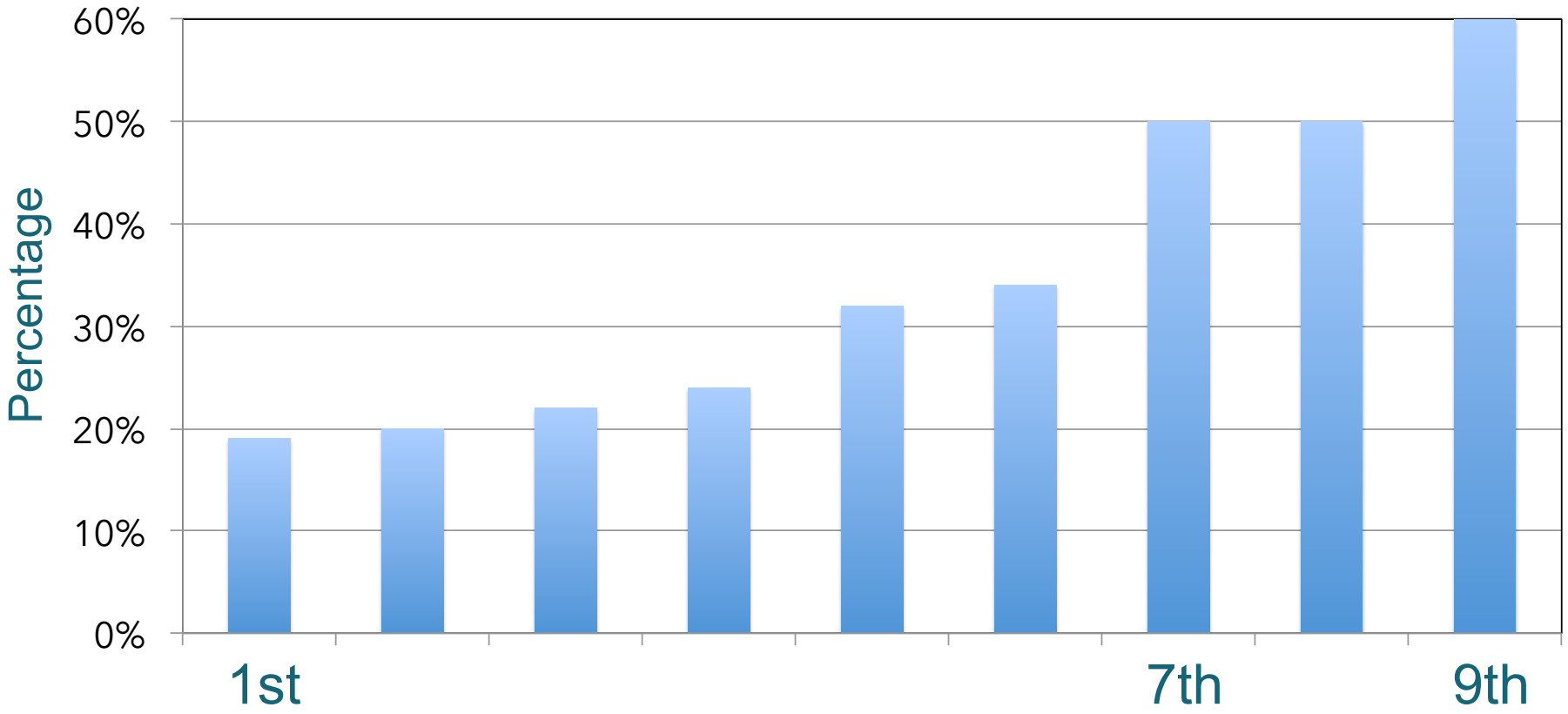
AAPT PHYSICS EDUCATION

TEXAS A&M UNIVERSITY COMMERCE

NSF

Comparing Across Countries

Percentage of Undergraduate Physics Degrees Awarded to Women



(IUPAP International Conference on Women in Physics Proceedings, 2005-2013)

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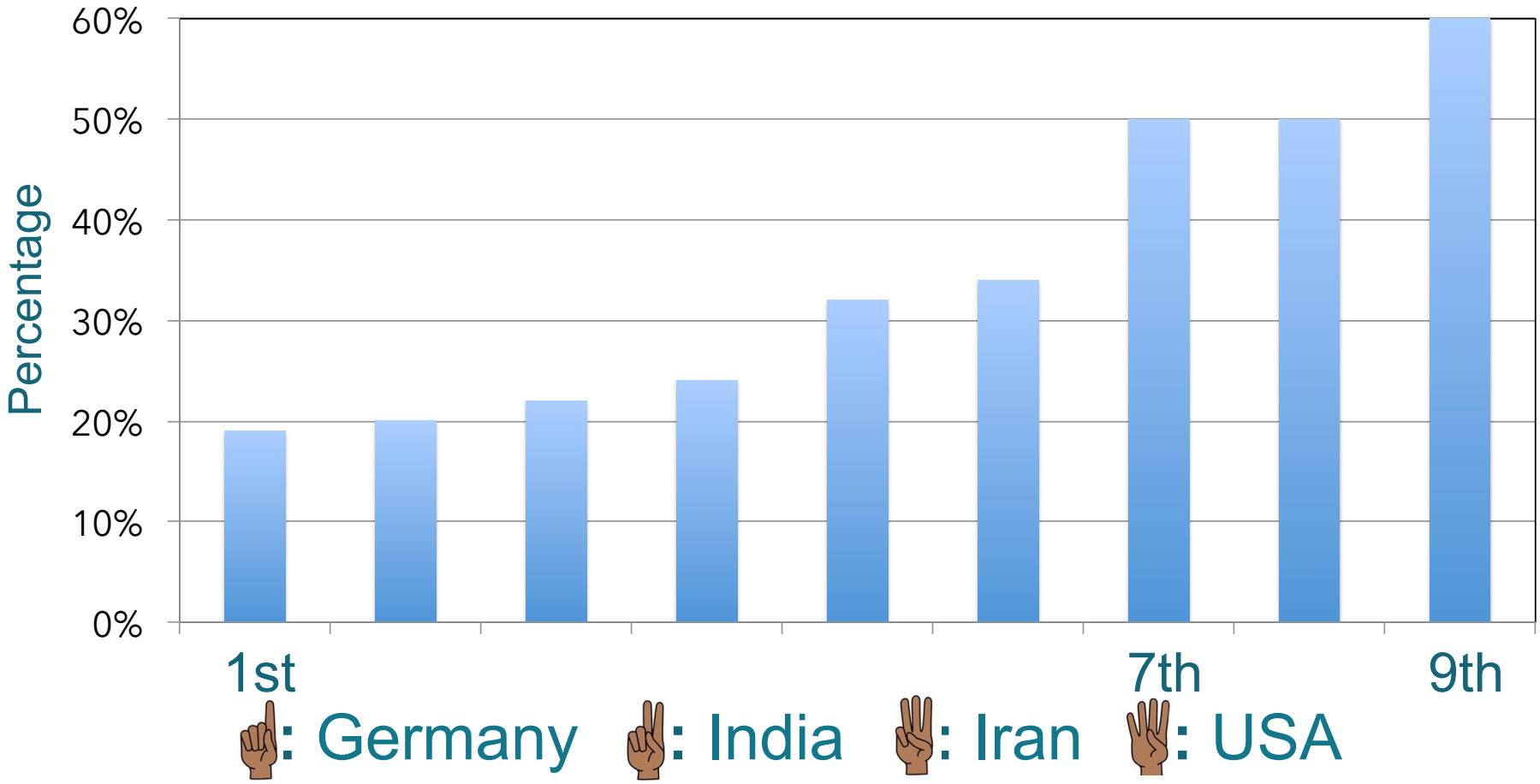

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Not an Inherent Difference

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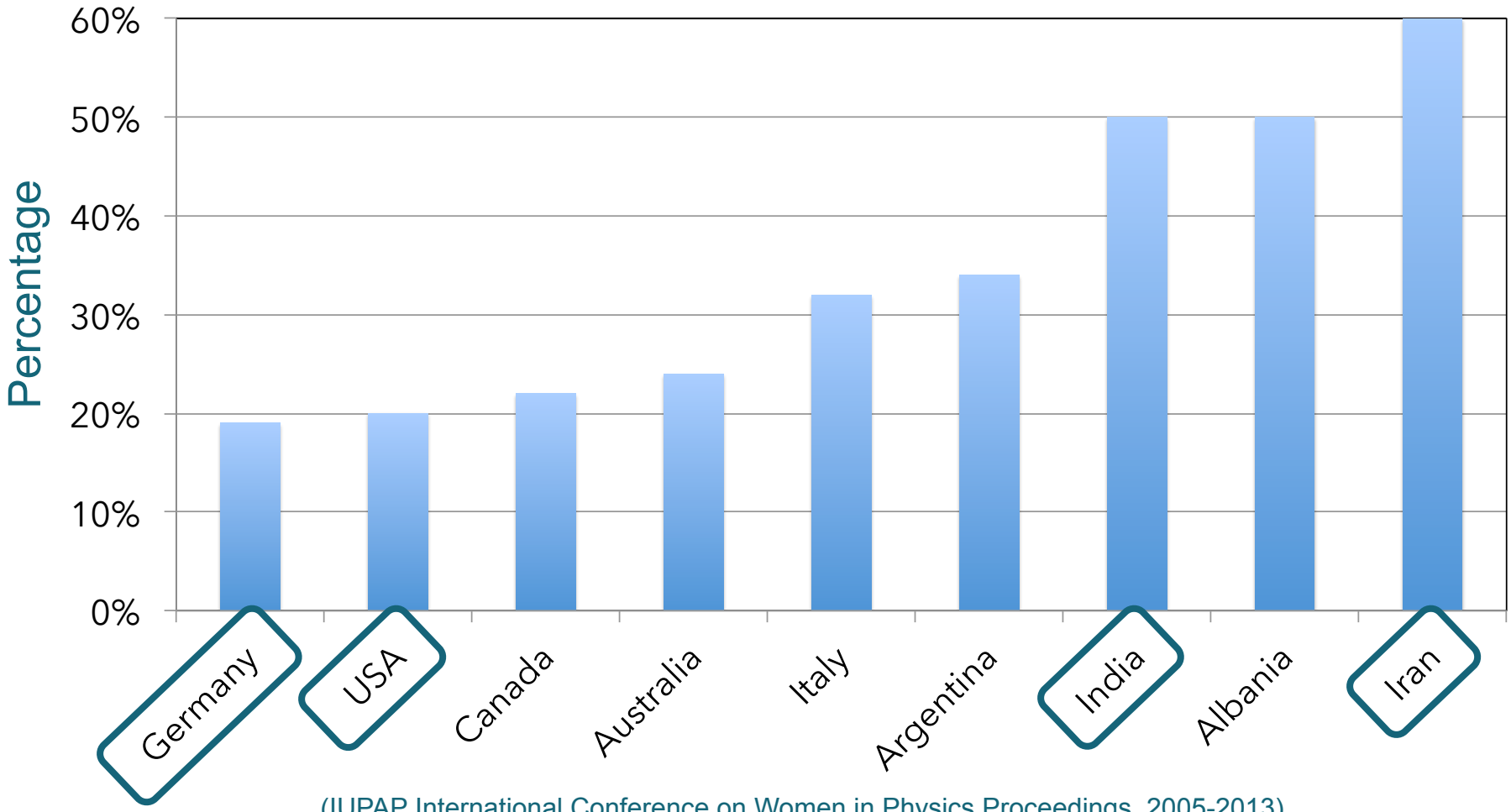

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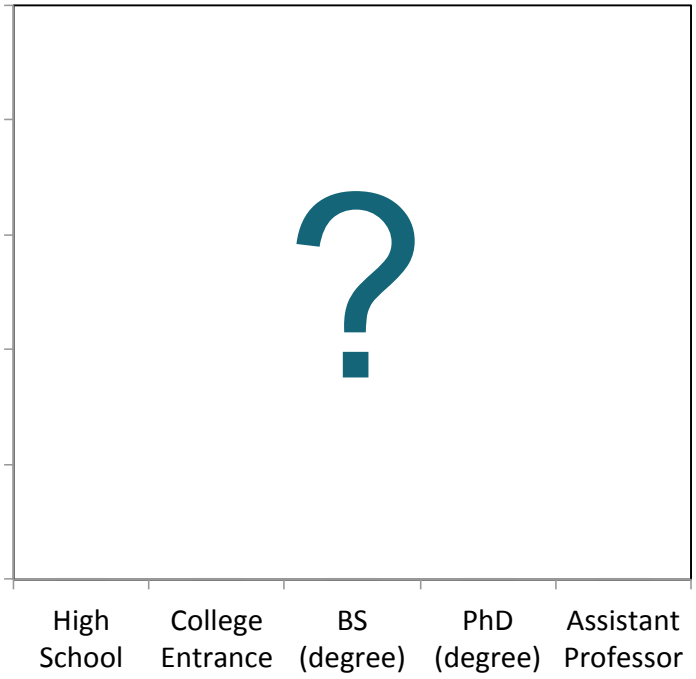
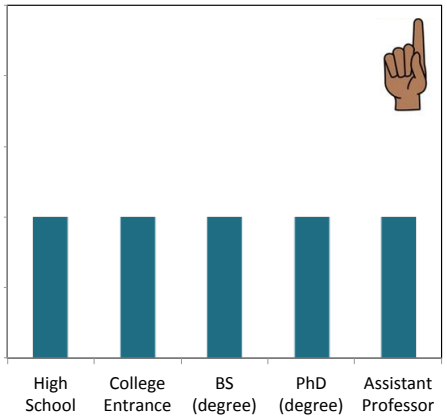
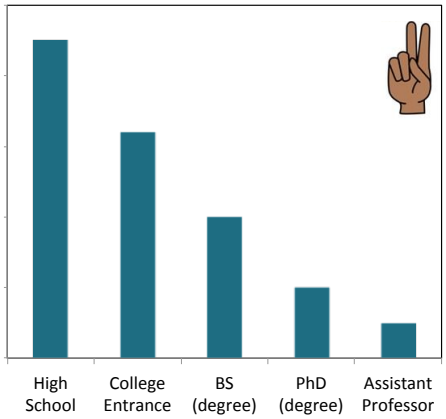
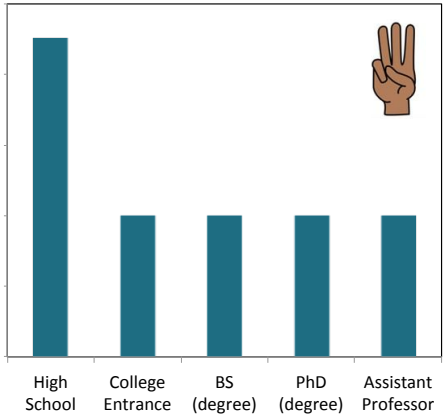
Gender Differences in Physics



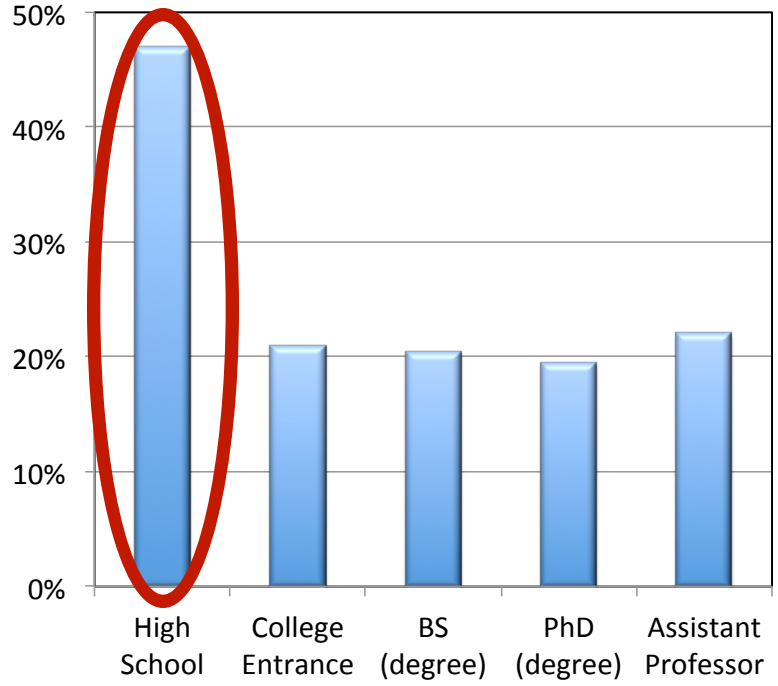


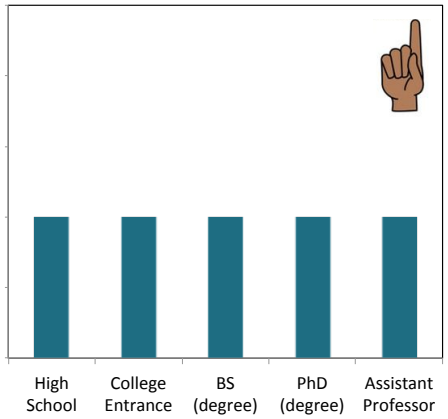


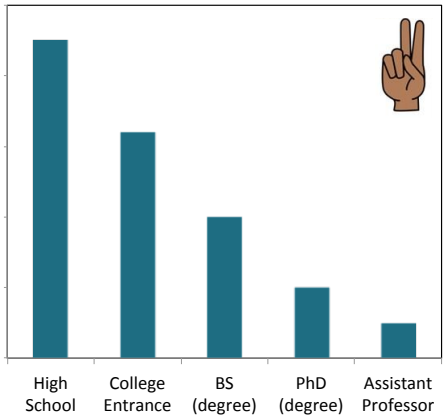


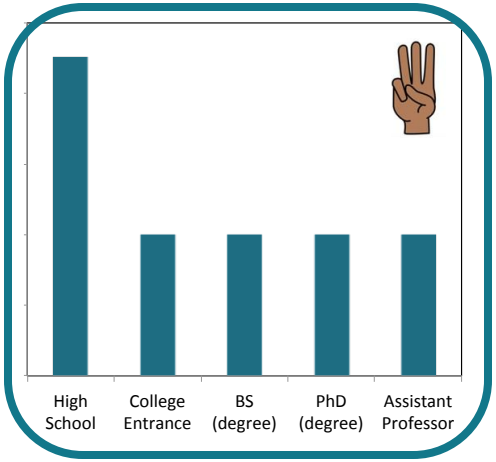
Percentage of participants who are women in physics at various academic stages.

Gender Differences in Physics









Percentage of participants who are women in physics at various academic stages.

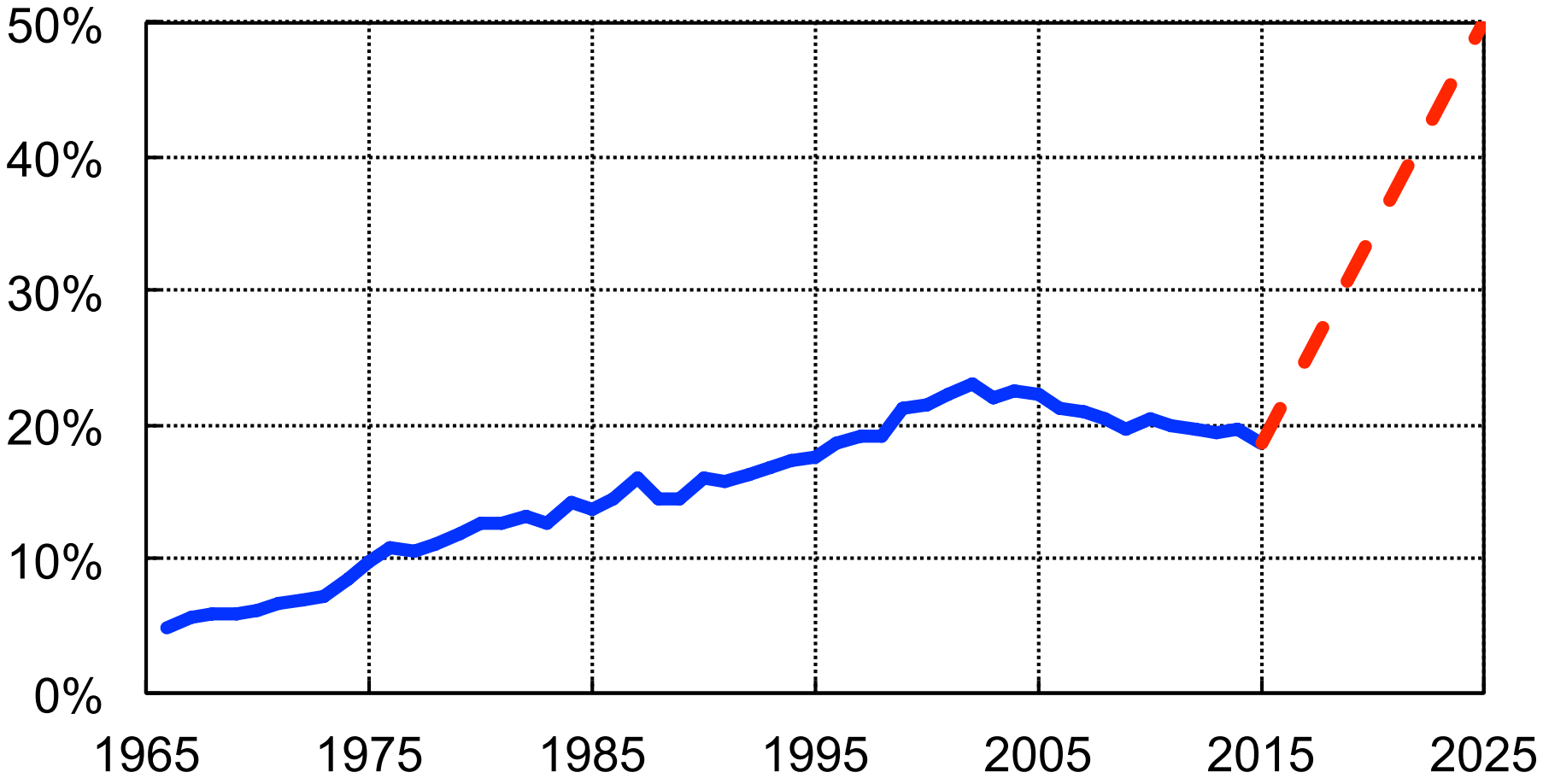
Source: (Hodapp & Hazari, 2015)

Why High School?

- Most women physicists and physics undergraduates become interested in high school
- Teachers have more content knowledge and confidence, and are more vested in the discipline
- Students are closer to decision-making about college majors
- Teachers often have closer, stronger relationships with students

(Eagan et al., 2017;
Hazari, Brewe, Goertzen, Hodapp, 2017;
Ivie & Guo, 2006; Yilmaz-Tuzun, 2007)

Project Goal



Project Goal – By the Numbers

- More than 1.3 million students taking high school physics – about half are women
- 27,000 high school physics teachers
- Closing the gap requires 4,500 more women graduating with degrees in physics
- With attrition, we need ~3x that many (13,500) entering now

Source: HERI & IPEDS

High School Teacher Action

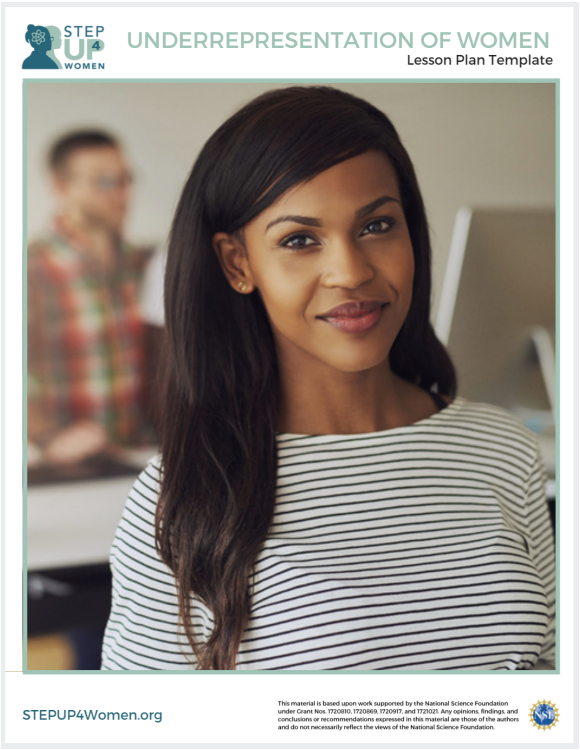
Inspire one woman each year to pursue a physics degree.

High school teachers are the key!

Recruiting them is critical!

Research-Based Interventions

Career Lesson	Underrepresentation Lesson	General Strategies



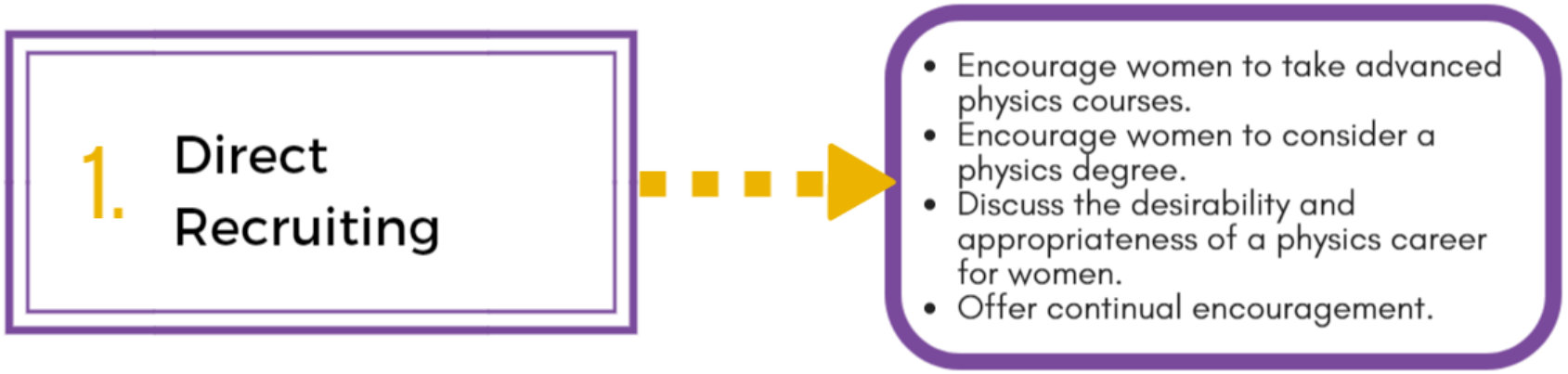
General Strategies

1. **Direct Recruiting**
   - Encourage women to take advanced physics courses.
   - Encourage women to consider a physics degree.
   - Discuss the desirability and appropriateness of a physics career for women.
   - Offer continual encouragement.

2. **Reducing Marginalization**
   - Avoid isolating women when students are in groups.
   - Emphasize collaboration over competition.
   - Distribute attention equitably.
   - Recognize conceptual contributions.
   - Incorporate interests/impact of physics on society.

3. **Recognizing Young Women**
   - Maintain high standards.
   - Proactively offer supports for learning.
   - Assign women content-based roles during group work.
   - Place women in expert roles, such as a learning aid to other students.
   - Provide specific, positive feedback on academic performance.

General Strategies

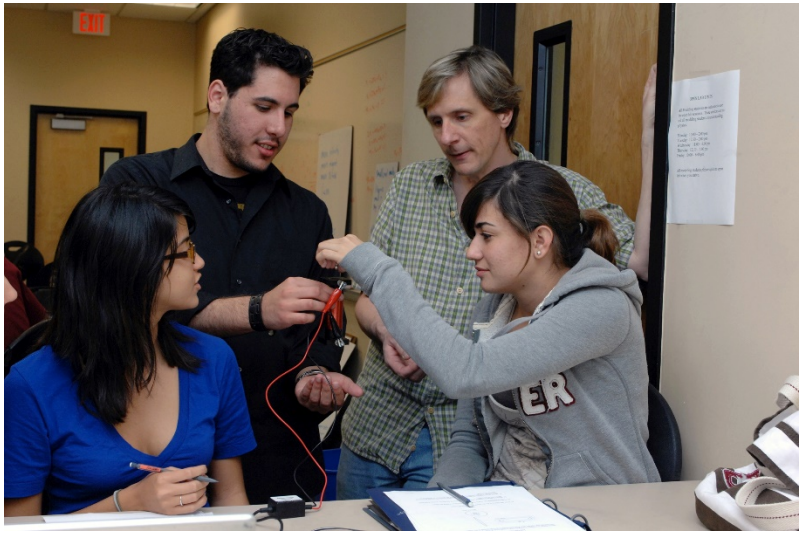


In small groups, discuss the following:

1. What RESOURCES are needed for high school physics teachers to directly recruit young women?
2. What MESSAGE should these resources include?
3. What additional TOOLS might a student need to pursue a career in physics?

National Campaign

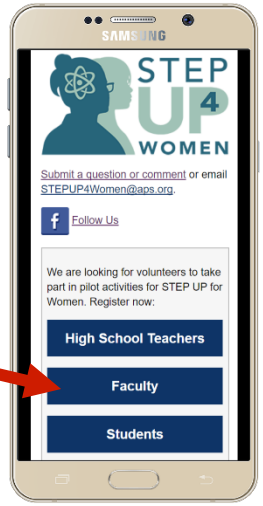
1. How might teacher preparation sites bring these materials to current students?
2. What is involved in integrating materials into ongoing education at your institution?
3. Do you know teacher leaders or interact with large numbers of teachers that would allow us to propagate these materials more broadly?



Register Now!

stepup4women.org

Register as faculty.



- Join the movement
- Get access to revised materials
- Help spread the word!

Thank you!

Questions?

Contact:

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This material is based upon work supported by the National Science Foundation under Grant Nos. 1720810, 1720869, 1720917, and 1721021. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.