

Promoting Equity in Engineering Relationships (PEERs) was established in 2009 with the long-term goal of *increasing the participation of all underrepresented groups in engineering*. These groups include women, minorities, and people with disabilities. This poster features four innovative aspects of PEERs.

**PEERs Leadership**

**PI:** Dr. Ana Mari Cauce - Provost  
**Co-PI:** Dr. Sheryl Burgstahler - Director, Disabilities, Opportunities, Internetworking, and Technology (DO-IT)  
**Co-PI:** Dr. Sapna Cheryan - Assistant Professor, Psychology  
**Co-PI:** Dr. Eve Riskin - Associate Dean of Academic Affairs, College of Engineering  
**Co-PI:** Dr. Joyce Yen - Program/Research Manager, ADVANCE Center for Institutional Change



**PEERs: Innovating Cultural Change in Engineering at the University of Washington**



**PEERs Seminar**

The PEERs seminar exposes students to social science research on diversity - content that students do not otherwise receive in their engineering curriculum. Goals include piquing awareness about structural and societal barriers to equity in engineering and developing student change agents. PEERs has delivered five seminars since 2009.

**SEMINAR TOPICS**

- Why Diversity is Important
- Privilege
- Implicit Bias
- Structural Bias
- Stereotypes and Belonging
- Being an Ally
- Accessibility
- Socialization



**CURRICULAR APPROACHES**

**Research Relevant to Engineers**

- Social science research adapted to general audiences.
- Research provided through articles from the popular press, book chapters, personal narratives, and videos.
- Content specific to engineering contexts.

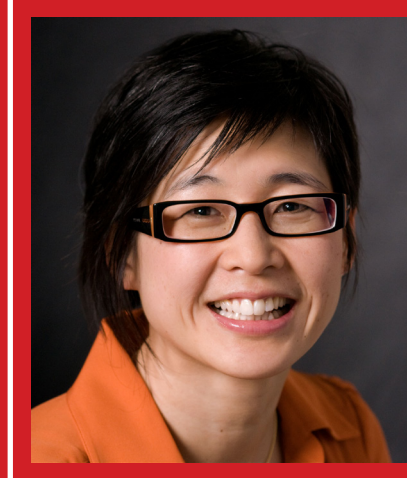
**Jigsaw Groups**

- Adapted from social psychologist Dr. Elliot Aronson's "jigsaw classroom" model.
- Two classes per term where students become content experts.
- Two classes per term where student experts teach fellow students in small groups.

**Community Presentations**

- Seminar culminates in public presentation by student groups.
- Presentation guests regularly include deans, faculty, students and academic staff.

**COURSE INSTRUCTORS**



**Joyce Yen, Ph.D.**  
 Program/Research Manager  
 UW ADVANCE  
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**Sapna Cheryan, Ph.D.**  
 Assistant Professor  
 Psychology Department  
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**PEERs Leaders**

The PEERs Leaders program seeks to improve the engineering climate for underrepresented groups by developing a cadre of student leaders. PEERs Leaders are a subset of PEERs seminar participants who give presentations on and host conversations about diversity in engineering. PEERs has employed 23 PEERs Leaders since 2009.

**A Three-Step Model**

**Step 1. INFORM AND EDUCATE**

*Annual one-credit PEERs Seminar*

- Create an environment conducive to discussions of research on diversity in engineering.
- Outcome: students gain first-hand exposure to in-depth diversity research.

**Step 2. CREATE EXPERTS**

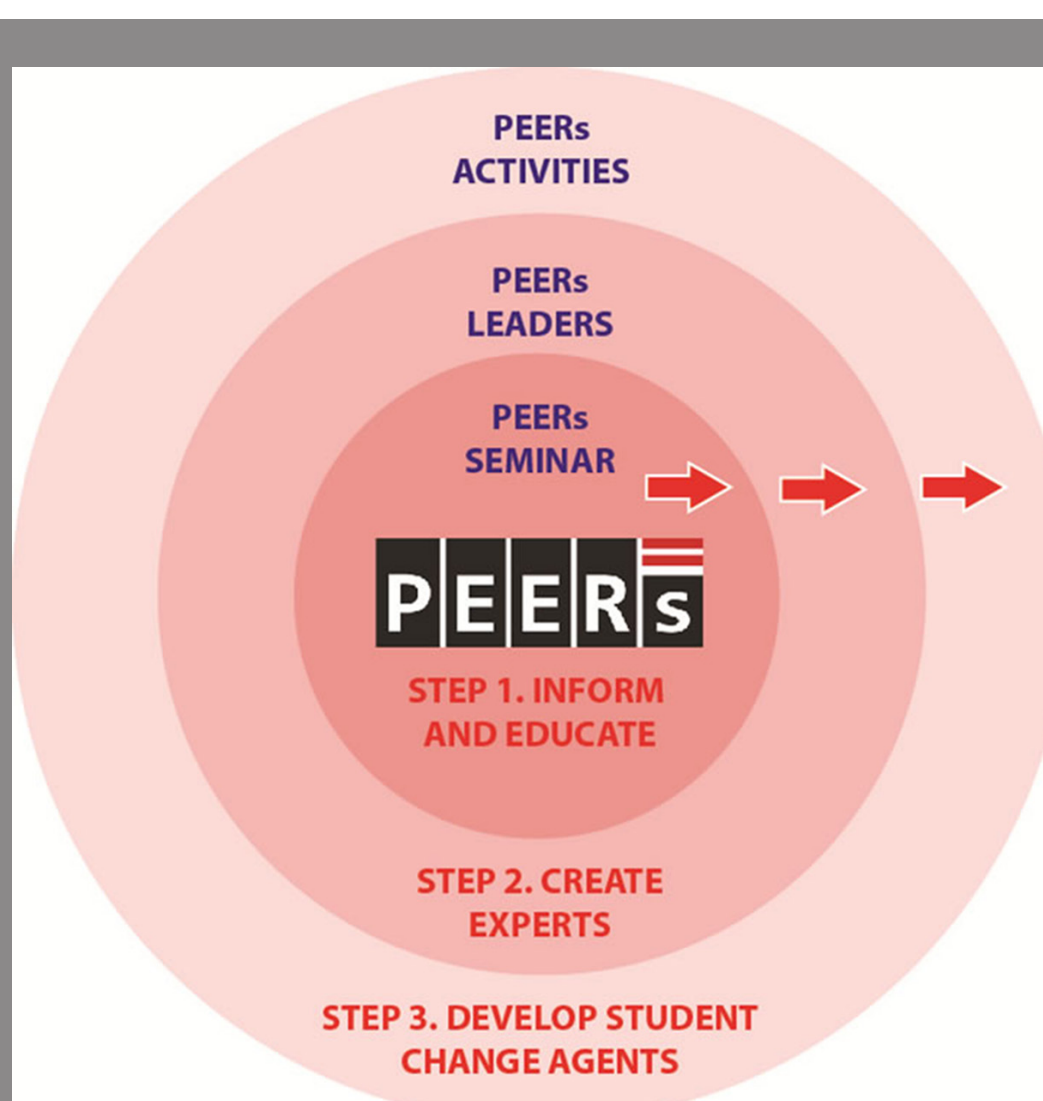
*Students appointed as PEERs Leaders*

- Designate participants from Step 1 to share research with others.
- Outcome: Student experts own the research and become mechanisms for dissemination.

**Step 3. DEVELOP CHANGE AGENTS**

*PEERs Leaders activities*

- Step 2 student experts engage students, faculty, and staff with diversity research through presentations and conversations.
- Outcome: Campus members not involved in Step 1 are exposed to diversity topics.



**SAMPLE ACTIVITIES**

**INTERACTIVE EDUCATIONAL PRESENTATIONS**

Sample audiences include College of Engineering classes, local community colleges, and on-campus STEM student groups

**HANDS-ON EDUCATIONAL ACTIVITIES**

Diversity-centered educational activities for adults and children

**PROMOTION AND RECRUITMENT**

Program flyers, Facebook page, PEERs website, and campus tabling



**Campus Climate Survey**

The PEERs Campus Climate Survey for undergraduate students is designed to capture the experiences of underrepresented minority students, female students, and students with disabilities and gauge specific departmental and College climates. PEERs administered campus climate surveys in November 2010 and May 2013.

**DEPARTMENTAL BENCHMARKS**

Department chairs receive reports summarizing their departmental climates compared to other surveyed departments, specifically whether their undergraduate students feel lower, average, or higher satisfaction relative to other surveyed departments. Areas explored included:

- Major: Satisfaction, degree completion
- Professors: Teaching, course materials, course syllabi, office hours, homework, expectations, classroom environments.
- Teaching Assistants: Teaching, subject knowledge, communication, cultural differences, office hours.
- Student Interactions: Study groups, group projects, competition, friendships.
- Resources: Class sizes, academic advisors, study centers, career/job placement services.
- Organizations: Student programs and activities such as internships, minority student programs, honors programs.
- Campus Life: Overall satisfaction, sense of belonging, stress, social environment, class sizes.
- Confidence: Ability to academically succeed.
- Personal Experiences: Feeling unfairly singled out by professors and/or students due to disability status, gender, race, or ethnicity.

**COLLEGE of ENGINEERING BENCHMARKS**

**Underrepresented Student Experiences**  
 The campus climate survey compares the experiences of underrepresented students in the College of Engineering with underrepresented students in other disciplines. Engineering majors (11) are benchmarked against two non-engineering departments (22) with matched demographics.

**Climate Change**

The survey was administered twice during the grant in order to monitor changing student perceptions of climate.



**Capacity Building Institute**

PEERs has hosted two Capacity Building Institutes (CBI). The first CBI introduced participants to PEERs and surveyed the "state of UW diversity." The second CBI explored the impact of PEERs on diversity in engineering and identified collaborations, action items, and best practices to further support diversity in engineering.

**2009 CBI**

**Presentations and Activities**

1. PEERs Program plan and engineering demographic data
2. Review of relevant research on bias and diversity
3. Small group discussion

**Group Discussion Questions**

1. What is currently being done to increase and support diversity in engineering at the University of Washington?
2. What can be done in the future to increase and support diversity in engineering?

**Attendees**

- Engineering Dean and Associate Deans
- Engineering faculty
- Science and engineering diversity program managers
- Instructional consultants
- Academic advisors



**2013 CBI**

**Presentations and Activities**

1. PEERs Program accomplishments
2. PEERs Leaders Q&A panel
3. Small group discussion

**Group Discussion Questions**

1. What has changed over the past four years related to diversity at the UW? What is the evidence of these changes? What contributions/legacy has PEERs made to the diversity conversation and climate at the UW and within the College of Engineering?
2. What are the next steps to keep moving forward in creating a welcoming and equitable campus?

**Attendees**

- Participants from across UW included deans, faculty, program managers, academic advisors, and students from the following units:
- College of Engineering
  - College of Arts & Sciences
  - College of Education
  - School of Law
  - Office of Minority Affairs and Diversity

**CBI Proceedings**

See the proceedings on the PEERs website at [enr.washington.edu/peers/dissemination/cbi.html](http://enr.washington.edu/peers/dissemination/cbi.html)

**Evaluation and Impact**

PEERs is evaluated based on the following four program goals:

1. Raising awareness of biases
2. Cultivating change agents
3. Promoting actions to counteract biases
4. Building foundations for future collaboration

To understand the intensity of PEERs' impact, PEERs internal and external evaluators collaboratively assess the outcomes of the program using a mixed methods approach.

- Quantitative approaches (course evaluations and surveys) capture changes in UW College of Engineering culture and climate.
- Qualitative approaches (focus groups, interviews, content analysis, observations) capture the nature and mechanisms of the changes and outcomes.

**GOAL 3: PROMOTING CHANGE AGENTS**

Both the PEERs Seminar and the PEERs Leaders' Program successfully cultivated change agents in the College.

**PEERs Seminar**

**Seminar offerings:** 5  
**Seminar students:** 67  
**Seminar TAs:** 6  
**Synergistic activities:** A new course, Disability 101, was inspired by the PEERs Seminar and first offered during fall quarter of 2012 at the University of Washington.

**PEERs Leaders**

**PEERs Leaders:** 23  
**PEERs Leaders' presentations:** 35  
**Attendees per presentation:** 10-200



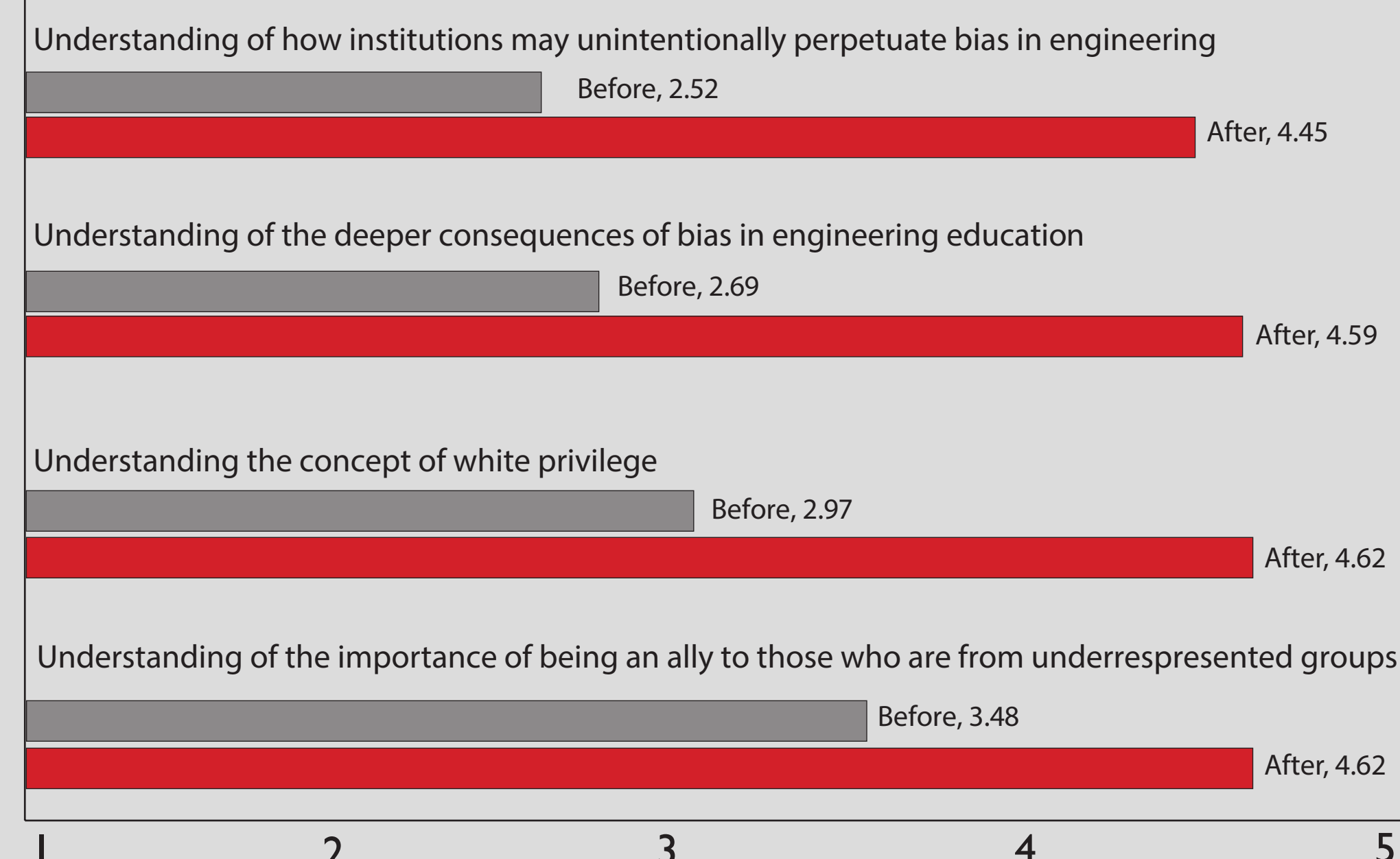
**Student Quotations**

*"When I came to UW, I was struggling with new-found disabling medical conditions, and being in the PEERs Seminar, and then later presenting on the students with disabilities panel in the class, made me much more comfortable with my place in engineering as a person with disabilities."*

*"Engineering students like facts and PEERs is centered on research and data. People can't just say, 'Oh, someone's just saying that.' I like that PEERs is based off of studies."*

*"PEERs was an eye-opening course for me, and what I learned has truly allowed me to change the way I perceive myself and others...I strongly feel a better person after taking the course."*

**Figure 1. Differences in Understanding\***



**Figure 1 and 2. Positive Impact of PEERs Seminar on Students.** Results obtained from 2014 PEERs legacy survey administered to all students who completed one of five PEERs seminar courses between fall 2009 and fall 2013. The response rate was 43% (n=29).

\* Scale ranges from very poor (1) to very good (5); Significant difference before and after taking the PEERs Seminar (p<.001)

\*\* Scale ranges from never (1) to often (5); Significant difference before and after taking the PEERs Seminar (p<.001)

**Figure 2. Differences in Actions\*\***

