Engineering Equity into Education: Micromessaging to Reach and Teach Every Student

Dr. Meagan C Pollock, National Alliance for Partnerships in Equity

Dr. Meagan Pollock is the Director of Professional Development for the National Alliance for Partnerships in Equity. Before turning her focus on the intersection of education and equity, Meagan worked as an engineer for Texas Instruments. Meagan was a National Science Foundation Graduate Research Fellow, and she holds a PhD in engineering education from Purdue University, a MS in electrical engineering from Texas Tech University, and a BS in computer science from Texas Woman’s University. Meagan currently develops programs and products that help educators improve equity in the classroom, ultimately to increase the participation of women and students of color in high-demand, high-wage careers. As an engineer turned educator, Meagan is focused on engineering equity into education.
WORKSHOP PROPOSAL FORM
2015 Annual ASEE K-12 Workshop on Engineering Education
"Authentic Engineering: Representing & Emphasizing the E in STEM"
Presented by Dassault Systems

Saturday, June 13, 2015
8:00 A.M. – 5:00 P.M.
Sheraton Seattle | Seattle | WA

Please complete this form, save it as a PDF file only and upload it through the ASEE Paper Management system as shown in the K12 Workshop Presenter’s Kit.

All notifications will be by email from the ASEE Paper Management system. NOTE: To ensure that emails are not obstructed by spam blockers, please make sure to WHITELIST the email addresses: monolith@asee.org and conferences@asee.org and s.harrington-hurd@asee.org.

Direct questions to Stephanie Harrington-Hurd, ASEE K-12 Activities Manager, at s.harrington-hurd@asee.org. Additional workshop details are available at: http://www.asee.org/K12Workshop. Thank you!

Deadline
Friday, January 23, 2015 by 5:00PM EST
Presenters will be notified of acceptance status by March 14.
Late submissions will not be accepted.
Advanced Workshop Registration will open December 6, 2013.

SUBMISSION INFORMATION

Provide the first and last name of each presenter, including affiliations. If there is more than one presenter, designate one person as the organizer and provide only that person’s contact information. The organizer is responsible for communicating to co-presenters.

Number of Presenters: 1

Presenter Name(s):
1) Last Pollock      First Meagan      Affiliation National Alliance for Partnerships in Equity
2) Last            First            Affiliation
3) Last            First            Affiliation

Contact Person’s Name: Meagan Pollock

Contact Person’s Email: mpollock@napequity.org

Contact Person’s Phone: 5127390774

Contact Person’s Alternate Phone:
Please provide a one-paragraph bio for each presenter (in the order listed above). The bio should not exceed 70 words and should be written as you would want it to appear on the ASEE website and program materials.

1) Dr. Meagan Pollock is the Director of Professional Development for the National Alliance for Partnerships in Equity. Before turning her focus on the intersection of education and equity, Meagan worked as an engineer for Texas Instruments. Meagan was a National Science Foundation Graduate Research Fellow, and she holds a PhD in engineering education from Purdue University, a MS in electrical engineering from Texas Tech University, and a BS in computer science from Texas Woman’s University.

2)

3)

WORKSHOP INFORMATION

Proposed Title:

Engineering Equity into Education: Micromessaging to Reach and Teach Every Student

Abstract: Please provide a concise description that includes the workshop’s learning objectives (maximum 750 characters). The abstract is used on the ASEE website, program materials, and other K-12 Workshop promotional activities.

Culture shapes our biases and beliefs about people based on their age, gender, race, language, (dis)ability, or income level, often without our realization. We communicate our biases in our world, often unknowingly, through micromessages. The accumulation of micromessages over time impacts a person’s belief in his or her own ability to be successful in a course, class, college, and career. This session will equip educators with strategies to support student participation, persistence, engagement and success in STEM, to ultimately increase the participation of women and students of color in engineering careers. Join us to use engineering thinking to infuse more equity into your classroom!

Workshop Description. Please provide a detailed description of the proposed workshop that, at minimum, explicitly addresses the following (maximum 4,000 characters):

a. Learning objectives
b. Hands-on activities and interactive exercises
In this interactive workshop, participants will explore ways micromessages can help achieve equity in the classroom, and improve student outcomes. Micromessages are small, subtle, often semi-conscious messages we send while communicating with others, whether by voice, action, or body language. These messages can be both positive or negative, stem from our implicit biases, and affect relationships. Through an interactive scenario based activity, participants will be able to identify micromessages and recommend positive micro-affirmations to improve equity in the classroom scenarios.

During the workshop, we will discuss the various types of micromessages and how those micromessages impact student decisions when considering and/or selecting to enroll in courses and programs where they are underrepresented, how to encourage persistence through the use of micro-affirmations, and how to inoculate students from internalizing micro-inequities that, over time, deter students from engaging in nontraditional educational pathways.

Objectives:
- Participants will learn about and be able to define micromessages, including the types of communication cues in which they most often manifest, and identify how these messages can enhance student engagement.
- Through an interactive scenario based activity, participants will be able to identify micromessages, including micro-affirmations and micro-inequities, and recommend micro-affirmations to improve equity in the classroom scenarios.

Pedagogical Strategies:
Over the course of the workshop, the following pedagogical strategies will be used:
- Reflective practice
- Constructivist listening
- Collaborative learning
- Guided inquiry
- Action planning

Hands on activities & Interactive Exercises:
1. Participants will work in dyads using constructivist listening, as a reflection tool to develop meaning and understanding around the concept of micromessaging.
2. Participants will work in small groups to identify the types of cues in which micromessages manifest. (with manipulatives)
3. Participants will work in small groups to apply learning from the first activity in a scenario based activity. (with worksheet)
4. Participants will work in small groups to create an action plan for implementing strategies to improve equity in the classroom. This activity highlights engineering thinking via a modified design process. (with worksheet)

**Takeaway Materials**
Participants will take with them the action plan worksheet they complete as a result of learning, an infographic and strategy chart on micromessages, and an infographic and strategy chart on supporting strong student self-efficacy in STEM.

**Practical Application**
Impact is greater than intent, yet too often the impact of our unconscious actions discourage the participation of women and students of color from entering into and persisting in STEM. This workshop is designed to allow educators immediate practical application for increasing personal awareness of how implicit bias manifests itself in the classroom, and for creating equitable learning environments that support every student’s potential.

**Authentic Engineering Connection.** Identify and describe how you will explicitly address the ways in which your lesson or activity is representative of the processes, habits of mind and practices used by engineers, or is demonstrative of work in specific engineering fields. At least one of those must be within the first four listed, below; i.e., do not only check “other”. Check all that apply:

- [x] Use of an engineering design process that has at least one iteration/improvement
- [x] Attention to specific engineering habits of mind
- [x] Attention to engineering practices (as described in the NGSS/Framework and as practiced by engineers)
- [x] Attention to specific engineering careers or fields related to the lesson/activity
- [ ] Other (please describe below)

Provide a description of how you will explicitly address these aspects of authentic engineering in your workshop (maximum 2,000 characters):

**Engineering habits of mind:** This workshop integrates systems thinking, collaboration, and optimism.

**Engineering practice:** Educators will be invited to reverse-engineer issues of equity in the classroom, and utilizing a user-centered design approach, educators will devise personal solutions for transforming their practice and classroom.

**Engineering Careers:** In addition, this workshop will highlight various opportunities in engineering fields, particularly for women and people of color.
Diversity. This year is the American Society for Engineering Education’s “Year of Action on Diversity.” It is essential that we have a diverse engineering workforce to solve diverse problems. To do that and to have an engineering-literate public, it is essential that we reach every preK-12 student with high-quality engineering education, drawing on issues of access and equity in the classroom and in the curriculum. Reviewers would like to know how your proposed workshop will address diversity.

Provide a description of how you will explicitly address diversity – e.g., diversity with respect to gender/sex, ethnicity or race, special education inclusion, socio-economic status, or LGBT status – in your workshop (maximum 2,000 characters):

The premise and goal of this workshop is to ultimately improve diversity in engineering. The concept of micromessaging draws on the literature on implicit biases, a key topic in this workshop. It is the biases of the masses that have kept diversity at bay within engineering and other high tech fields. Understanding ones biases, and how they affect our interactions with others, can begin to transform, albeit incrementally, access to engineering for every type of person – regardless of race, gender, class, sexuality or ability.

Are there any online components to the proposal or presentation? (Note that these online components may only be available to presenters or those who have their wireless subscriptions, since wireless may not be available during the workshop sessions.)

☐ No
☐ Yes

Please describe:

Grade Level Target Audience (check all that apply):
☐ Primary (EC–2)
☐ Elementary (3–5)
☐ Middle School (6–8)
☐ High School (9–12)

Maximum Number of Participants:
25+

If this number is greater than 25, please describe how your workshop will equally engage all participants.
All Seating is Classroom (tables and chairs).

Audio Visual Equipment Requests:

*Note:* An LCD projector, screen and podium with attached microphone are provided. Requests for additional equipment or resources (e.g., internet connection or laptops) will incur extra charges. If you do not have additional requests, please indicate with “Not applicable.”

Reminder:

Presenters must register and pay the registration fee to support their workshop attendance and audio/video costs.

Thank you for completing this proposal form! Please review this document prior to submitting it to ensure that all items are complete.