



Engaging Youth (and Partners) through Engineering: Strategies to Secure Partnerships to Enrich and Sustain STEM Curriculum

Ms. Melissa Divonne Dean, Mobile Area Education Foundation

Melissa Dean is a respected leader in STEM education in Mobile, Alabama. As the K-8 Program Director of Mobile Area Education Foundation (MAEF), she has led the Engaging Youth through Engineering Program. In that capacity, she has coordinated the development of a series of STEM modules for middle school grades that truly integrate science, technology, engineering and mathematics learning in the classroom.

Ms. Judith French Duke, Mobile Area Education Foundation

Judith Duke is a retired elementary and middle grades classroom teacher. She received an undergraduate degree in elementary education from Mobile College and a master's degree in middle school mathematics education from the University of South Alabama. For two years she served as a master teacher for the SECME (Southeastern Consortium for Minorities in Engineering) Summer Institute. She is currently working for the Mobile Area Education Foundation as K-8 Program Coordinator supporting projects such as the Engaging Youth through Engineering (EYE) Program, a STEM initiative centered around workforce development. As part of the EYE Program she helps develop STEM curriculum for the middle grades classrooms and supports teachers as they implement these lessons.

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: 3

Presenter Name(s):

- 1) Last Dean First Melissa Affiliation Mobile Area Education Foundation
- 2) Last Duke First Judy Affiliation Mobile Area Education Foundation
- 3) Last Johnson First Tami Affiliation Mobile Area Education Foundation

Contact Person’s Name: Melissa Dean

Contact Person’s Email: mdean@maef.net

Contact Person’s Phone: 251-470-5204

Contact Person’s Alternate Phone: 251-725-8224

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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) **Melissa Dean is a respected leader in STEM education in Mobile, Alabama. As the K-8 Program Director of Mobile Area Education Foundation (MAEF), she has led the Engaging Youth through Engineering Program. In that capacity, she has coordinated the development of a series of STEM modules for middle school grades that truly integrate science, technology, engineering and mathematics learning in the classroom.**

2) **Judy Duke, a retired elementary and middle grades classroom teacher, is an expert curriculum writer and teacher trainer currently working for MAEF as the K-8 STEM Coordinator. She received an undergraduate degree from Mobile College and a master’s degree in middle school mathematics education from the University of South Alabama. For two years she served as a master teacher for the Southeastern Consortium for Minorities in Engineering Summer Institute.**

3) **Tami Johnson served the Mobile County Public School System for 17 years as a K-12 educator, administrator, and STEM Resource Teacher. Currently, she is an Elementary and Middle Grades Initiatives Program Specialist at the Mobile Area Education Foundation where she focuses primarily on integrated STEM curriculum for K-8. She obtained her B.S. in Elementary Education and her M.Ed. in Educational Leadership from the University of South Alabama.**

WORKSHOP INFORMATION

Proposed Title:

Engaging Youth (and Partners) through Engineering: Strategies to Secure Partnerships to Enrich and Sustain STEM Curriculum

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.

In this interactive session, participants will learn about a 6-step community engagement process developed by the Mobile Area Education Foundation to engage business and

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community partners to develop integrated STEM units and sustain STEM education in the largest school district in Alabama. These units, the *EYE Modules*, were developed with funding from the National Science Foundation in partnership with the local school district, university, and support from business and industry leaders in the region. Participants will experience a portion of one environmental engineering module developed using this model, “Don’t Go With the Flow.” Participants will reflect on their experience with the module and identify ways that the model could be applied to enrich their current STEM education efforts. Planning documents and a summary of strategies will be provided.

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
- c. Materials that participants can take with them
- d. Practical application for teachers and outreach staff

Learning Objectives:

- Experience a subset of STEM activities from the EYE Module, “Don’t Go With the Flow”
- Identify strategies to engage community stakeholders and partnerships that support the development of STEM lessons (e.g. university faculty, business leaders, community volunteers) and sustainability of STEM education (e.g. civic leaders, district leaders)
- Apply the “MAEF Model” to plan for broader community engagement in participant’s local community

In this interactive session, participants will learn about a 6 step community engagement process developed by the Mobile Area Education Foundation that was used to engage business and community partners to develop a set of 8 integrated STEM units and sustain STEM education in the largest school district in Alabama. These units, the *Engaging Youth through Engineering EYE Modules*, were developed with funding from the National Science Foundation in partnership with the local school district, university, and with support from over a dozen business and industry leaders in the region.

Workshop participants will experience a sampling of activities from the environmental engineering module, “Don’t Go With the Flow,” and then dissect how these activities and others within the EYE Modules were developed through collaborative efforts from multiple stakeholders in the community.

Finally, participants will be introduced to the “MAEF Model” of community engagement to understand the step-by-step approach to building diverse relationships within the

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community, leveraging these relationships to yield rich real-world STEM connections, and creating new STEM lessons with the support of all stakeholders. Time will be dedicated to helping all participants identify local stakeholders and begin planning for broader engagement of community members to support the development of new STEM lessons or to sustain existing STEM efforts. All participants will receive a copy of the PowerPoint slides, and blank planning documents for use during the workshop.

At least one of those must be within the first four listed, below; i.e., do not only check “other”.
Check all that apply:

- Use of an engineering design process that has at least one iteration/improvement
- Attention to specific engineering habits of mind
- Attention to engineering practices (as described in the NGSS/Framework and as practiced by engineers)
- 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):

Both the EYE Module development process and the MAEF Model of community engagement are iterative processes which follow very closely to the engineering design process taught by the EYE STEM Curriculum. During the workshop, participants will be introduced to the Engineering Design Process initially during the exploration of the “Don’t Go With the Flow” EYE Module as they understand how students apply the engineering design process to develop solutions to a real-world environmental engineering problem. During the second phase of the workshop, participants will have the opportunity to connect the iterative community engagement model to the STEM curriculum development- as STEM curriculum is a tool to solve the very real problem of so many students graduating high school without the skills needed to be successful in college or careers. In a sense, the method used to design STEM curriculum is an application of the engineering design process that yields tools for educators to meet an educational need. By learning about these two models, participants will have new tools to apply to their local environment to meet local educational needs.

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

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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 Mobile Area Education Foundation’s mission is to provide equity and access to high quality public education in Mobile County, AL. All programs of the MAEF are designed to provide ALL students with access to engaging, rich, and rigorous educational experiences. In particular, the EYE Modules are a unique set of STEM middle grades curriculum in that they provide every middle school student with multiple STEM experiences in core mathematics and science classes. The relationships developed through the MAEF Model of community engagement were critical in breaking through the barrier of STEM-for-Some. Through this workshop, participants will learn how relationships with community leaders, district leaders, school principals, and teachers is critical to ensuring equitable access to STEM learning for all students.

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: **50**

If this number is greater than 25, please describe how your workshop will equally engage all participants.

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Because the workshop intends to encourage participants to reflect on their existing STEM lessons, initiatives, or goals, and allows time for writing of individual plans, we feel confident that a large number of participants will find this workshop engaging and valuable. As presenters, we will provide enough materials for up to 50 participants in the workshop so that every attendant may interact with the hands-on activities and receives the handouts and planning documents as well.

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.”

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.

ASEE USE ONLY

Date Received:

Received By:

Proposal ID Number: