Badges for the GLOBE International Virtual Science Symposium

2017

www.globe.gov

http://www.globe.gov/science-symposium
Why use badges?

• Badges combine motivation and assessment
• Badges promote student choice in skill development
• Badges acknowledge learning in any environment
• Badges allow for multiple pathways to mastery
• Badges are used in education and for certification in industry
Merit Based Student Research Badge

- Students earn 1–4 stars*
- No limit to projects that earn top ranking

Optional Badges

- Possible for students to earn up to 3 out of 6 additional badges*
- Students describe how each badge was earned in their report document

*Projects earning a 4-star Student Research Badge and at least 2 optional badges qualify for entry into drawing for travel support to GLOBE Annual Meeting
### The Globe Program

#### ADDITIONAL BADGES (UP TO 6—OPTIONAL)

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<td>All team members are listed, along with clearly defined roles, how these roles support one another, and descriptions of each student's contribution. The descriptions clearly indicate the advantages of the collaboration.</td>
<td>The report clearly describes how a local issue led to the research questions and makes connections between local and global impacts.</td>
<td>The report clearly describes collaboration with a scientist that enhanced the research methods, contributed to improved precision, and supported more sophisticated analyses and interpretations of results.</td>
<td>The report describes a carefully planned interscholastic or international collaboration that describes rationales for data collection in different regions and the advantages of comparing results.</td>
<td>The report describes an engineering solution to a real-world problem, based on student-generated sources of evidence, and describes the potential impact of the solution on the environment.</td>
<td>The report describes how the project is related to a STEM career or profession, including the ways the data gathered, skills gained, and results might be used.</td>
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**Collaboration:** Team members and their roles, student contributions, advantages of collaboration

**Community Impact:** Describes how a local issue led to the research question and what impact the students have on their community

**Connection to a STEM Professional:** Collaboration with a STEM professional and how it enhanced the student research

**Engineering Solution:** An engineering solution to a real-world problem based on student research

**Exploring STEM Careers:** Understanding how student research relates to STEM careers

**Interscholastic Connection:** Describes interscholastic or international collaboration and how it benefits the research
Collaboration

Purpose
• Support “21st Century Skill” development

Key Implementation Ideas
• Roles for students to take, rotate roles
• Develop students’ project management and interpersonal skills

Document

1) the team members
2) the roles each student played

Research Methods
• Used YSI Pro30 Probe and Hach test kits in our pre-pond and post-pond to obtain conductivity, alkalinity, nitrate, and chloride readings over a period of 3 years
• Inputted data into Globe visualization system
• Analyzed trends and graphs

Three students from Mahopac High School collaborated to measure “Winter’s Impact on NYC Drinking Water”
Community impact

Purpose: To promote...
- Use of data to solve problems
- Students’ agency in problem solving

Key Implementation Ideas
- Connect to a real community issue—either at the outset (go to the community first to see what is of interest) or after you have collected data
- Request to share data and results with community members

Document 1) impact or potential for impact 2) any presentations made to community groups 3) if possible, their response

Students in Trinidad and Tobago examined surface temperatures to understand effects of urbanization.
Connecting to a STEM professional

Purpose:
• Students engage a STEM professional for input
• Students observe skills needed
• Students receive encouragement in their role as young scientists

Key Implementation Ideas
• Find a STEM professional through the GISN or in your local community
• Explain what you are seeking to learn

Document 1) the professional with whom the students interacted and 2) what students learned from the interaction

Students in Dearborn Heights, MI connected with and received encouragement from NASA scientists and STEM professionals at Tenum (manufacturer of the Calitoo) to understand aerosols and photometers.
Interscholastic connection

Purpose
- Compare data across sites
- Connect with peers and share excitement for learning
- Inter-community and intercultural exchanges
- Connection to social science

Key Implementation Ideas
- Make contact with another school early in the project
- Explore what can be learned through the exchange

Document 1) what was learned about the data 2) what was learned in addition to insights about the data comparison

Students in Ohio and Vietnam compared air temperature data.
Engineering solution

Purpose
• Focus on solutions to problems
• Using engineering design processes

Key Implementation Ideas
• Creative problem solving: brainstorming, prototyping, and testing

Document 1) the problem and solution
2) the process and tools used

Students in Croatia assessed the level of heavy metals in air pollution using GLOBE protocols for aerosols, conductivity, and pH.
Exploring STEM careers

Purpose

• Focus on how STEM is used in the real world
• Include STEM career exploration in projects
• Expand understanding of role of STEM in careers

Key Implementation Ideas

• Discuss STEM education and career paths

Document
1) how skills used in project relate to different careers
2) other aspects of these careers
3) discussion with at least one STEM professional
Addressing combinations of badges

• Collaboration and interscholastic connection
• Community impact and connecting to a STEM professional
• Community impact and exploring STEM careers
• Connecting to a STEM professional and exploring STEM careers
• Engineering solution and exploring STEM careers
• These are just the obvious ones—encourage students to think of other creative approaches!
Describe how your project addresses each optional badge you selected.
Timeline

- Entries accepted starting in early 2017 (look for announcements)
- Projects Due: 03 April 2017
- Scoring & Comment Period: 23-29 April 2017
- Badges Announced: 15 May 2017
- Live Drawing: 15 May 2017*
- GLOBE Annual Meeting: July/August 2017

*Qualifying projects: 4-star student research badge and at least 2 optional badges
Find info Online

http://www.globe.gov/science-symposium

GLOBE.gov ➔ News & Events ➔ Meetings & Symposia ➔ Virtual Science Symposia

Stay tuned for future webinars on K-4 projects and a more in-depth look into the badges