

Siemens We Can Change the World Challenge

Action Faction 2013-2014 Festival del Sol Project

Project Description

In groups of 3-4, students will research, design, and implement a course of action that will make a positive change in response to a local water issue around the border region. Students will engage in the scientific research process and investigate an environmental issue by which they are personally impacted to propose and test simple solutions to big problems that could have global implications.

Project Phases

STAGE I. Identify and research a water issue that has global impact and state hypothesis.

- Identify a water issue that your team will address and state the negative effects of this problem. Describe the environment and/or people impacted by the problem.
- Discuss your team's research. What publications, media review, prior studies, and/or collected data did you use to develop your problem statement?
- State your hypothesis.
- Stage I Project Manager _____
- ***Stage I ends Friday, January 17.***

STAGE II. Plan and design your project.

- Develop an action plan, which should include eco-friendly and sustainable processes and materials. You should include experimental design, project steps, timeline for completion, necessary resources, and proposed method.
- Select variables to measure your potential solution's impact.
- Describe your data collection plan and processes.
- Stage II Project Manager _____
- ***Stage II ends Monday, January 27.***

STAGE III. Execute your action plan.

- Carry out experimental design, project steps, timeline, and method as determined in Stage II. Modify as needed (with group consensus and permissions from Project Manager).
- Stage III Project Manager _____
- ***Stage III ends Tuesday, February 11.***

STAGE IV. Analyze and provide results, share it, and discuss global impact

- Describe all qualitative and quantitative data collected, the effectiveness of the solution, and explain any key findings derived from the data collected and if your hypothesis impacted the problem it identified.
- Describe how your team informed others about your project and got them involved, what resources your team used to extend your project's impact, and how one could replicate the project in other communities.
- Describe how your solution could have global implications and how you would implement your solution on a global scale.
- Stage IV Project Manager _____
- ***Stage IV ends Monday, February 24.***

Final applications are due on Monday, March 3, 2014.

Appendix A: Format of Challenge Application

You must write your application using the format and guidelines as indicated.

Project Title

Summary: (1-2 sentences describing your project)

Topic Area: Water conservation & clean-up

Are you continuing work on a project that was begun before the Challenge opened in September 2013?

No

Step 1: Identify and Research an Environmental Problem or Issue That Has Global Impact

- ❖ Identify an environmental issue that your team will address and state the negative effects of this problem. Explain why you chose this topic. Describe the environment and/or people impacted by the problem. Include the population, size and other relevant data.
- ❖ Discuss your team's research. What publications and media review, prior observations, and/or collected data did you use to develop your problem statement? You must provide the list of references and citations below.

Response should be no more than 1,000 words and no less than 200 words and address each of the items above. Do NOT imbed any images, charts, etc. in this section. Those items may be included as attachments in Step 8 and may be referred to in your text.

Step 2: State Your Hypothesis

Response should be no more than 50 words.

Step 3: Plan and Design Your Project

Now that your team has identified the problem and formed a hypothesis, describe the plan and design of your project:

- ❖ What is your team's action plan? Your action plan should include processes and materials that are eco-friendly or sustainable. Include experimental design, project steps (including communication and tracking plans), timeline for completion, necessary resources, and proposed method.
- ❖ What variables did you select to measure the potential solution's impact on the issue or problem?
- ❖ Describe your team's data collection processes, including what data you plan to collect.
- ❖ Specify how each member of the team will contribute to the project.
- ❖ Define the role of your Team Advisor/Mentor in your project.
- ❖ Identify any other individuals who will help with your project and define their roles (this includes teachers, parents, classmates, and community, business and organizational leaders). If there were none, you must indicate the following in this section, "We confirm that no one other than the team members and Team Advisor/Mentor helped or participated in this project."

Responses should be no more than 1000 words and no less than 200 words and address each of the items above. Do NOT imbed any images, charts, etc. in this section. Those items may be included as attachments in Step 8 and may be referred to in your text. All sources must be cited.

Step 4: Analyze and Provide Results

- ❖ Describe all qualitative and quantitative data collected by your team, including charts, tables, graphs, written notes, sketches, photographs, or video.
- ❖ Describe the effectiveness of the solution based on the qualitative and quantitative data collected.
- ❖ Explain any key findings derived from the data collected.
- ❖ Did your hypothesis impact the problem it identified? Explain how the hypothesis helped to solve the problem by changing the physical attributes of a locality, social behaviors of people in the community, local/global government policies, or any combination of the above. Did you modify the plan over time as the project evolved?

Responses should be no more than 1000 words and no less than 200 words and address each of the items above. Do NOT imbed any images, charts, etc. in this section. Those items may be included as attachments in Step 8 and may be referred to in your text. All sources must be cited.

Step 5: State your Conclusion

- ❖ State your solution and what was learned.
- ❖ Describe how your solution is innovative.
- ❖ Explain your conclusion based on your data.
 - Is your solution effective?
 - What made the plan work?
 - What challenges occurred along the way?
 - How did your team overcome those challenges?
 - What would you do differently if given the opportunity?

Responses should be no more than 1000 words and no less than 200 words and address each of the items above. Do NOT imbed any images, charts, etc. in this section. Those items may be included as attachments in Step 8 and may be referred to in your text. All sources must be cited.

Step 6: Share It!

- ❖ How did your team inform others about your project and get them involved? Be sure to include quantitative information on the number of people that got involved.
- ❖ What resources did your team use to extend your project's impact? (e.g. creating a website and/or a marketing tool that includes a description of the project.) Include documentation of a communication strategy, and provide specific detail on who and how many people you reached.
- ❖ Explain in detail how you could replicate the project in other communities. How might they benefit? What unique challenges does someone replicating your project have to keep in mind?

Responses should be no more than 500 words and no less than 100 words and address each of the items above. Do NOT imbed any images, charts, etc. in this section. Those items may be included as attachments in Step 8 and may be referred to in your text. All sources must be cited.

Step 7: Global Impact

- ❖ Describe how your solution could have global implications.
- ❖ How would you implement your solution on a global scale?
- ❖ Provide examples you have undertaken, if available.

Responses should be no more than 1000 words and no less than 200 words and address each of the items above.

Do NOT imbed any images, charts, etc. in this section. Those items may be included as attachments in Step 8 and may be referred to in your text. All sources must be cited.

Step 8: Attachments

(Optional, but strongly encouraged)

In this step you may attach supplemental materials to support your project application. Please follow the attachment guidelines provided below. PDFs and Videos themselves will not be scored by the judges, but the content may be used to support the areas of the application.

❖ PDF

You may choose to upload one PDF containing materials to support your application. The PDF may be no longer than 12 pages in length, be no more than 50MB and may contain the following:

- PowerPoint slides
- Excel data tables
- Links to website(s) your team created to support this project (maximum of 2 websites) and/or screenshots of this website
- Images that support your application
- Graphs, charts, etc.

Appendix B: Judging Criteria

All applications will be initially screened to ensure application elements are complete. Make sure you:

- ❖ Have 1-3 Team Members + Team Lead + Team Advisor/Mentor (who must be a full-time or part-time school employee at a school attended by at least one student Team member). Students may only participate on one team. Team Advisors/Mentors can have as many teams as they choose. Please see Official Rules for more information.
- ❖ Cite your sources and your work done prior to the Challenge launch (8/13/2013)
- ❖ Add attachments (Optional, but strongly encouraged)

All applications that are considered complete will move on to be judged by the following criteria:

- ❖ **Identification of Environmental Issue or Problem and Research (10% of total score)** - How well does the entry describe the negative effects of the environmental issue or problem with global implications. Does the entry describe the environment and/or people impacted? Did the team research the issue/problem thoroughly through a variety of sources?
- ❖ **State Hypothesis (5% of total score)** - Has a hypothesis that is measurable and demonstrates creative thinking been developed?
- ❖ **Plan and Design (25% of total score)** - Does the entry thoughtfully develop and clearly articulate its plan, including project steps, timeline for completion, necessary resources, proposed methodology, anticipated results, and data collection? Did the team exhibit originality in planning and designing the projects including selection of variables and use of processes and materials that are eco-friendly or sustainable? Are the roles of team members, Team Advisor/Mentor and others clearly defined? Did all team members participate in all aspects of the project?
- ❖ **Analyze and Provide Results (20% of total score)** - How well does the entry describe and analyze quantitative and qualitative data and reference how the hypothesis impacted the problem?
- ❖ **Conclusion (15% of total score)** - How well does the entry describe project what was learned and the impact, if any, on the problem statement? Was the solution innovative? How well does the entry describe the project results and challenges?
- ❖ **Share It (15% of total score)** - How did the team inform others of the issue/problem? Did others become involved? Were findings communicated creatively? How well did the team recommend how other communities might benefit from the solution, including potential challenges?
- ❖ **Global Impact (10% of total score)** - How well does the entry describe the global implications and how to implement globally?