

# ECO-SCIENCE CHALLENGE GENERAL GUIDELINES

1. Each applicant may enter one (1) grade category.
2. All projects should include a visual aid of some sort.
3. It is recommended that groups not have more than four (4) participants.
4. All projects must relate to the environment or environmental awareness.
5. No open flames, dangerous/corrosive chemicals, explosives, weapons, blades or hazardous objects allowed.
6. Experiments that harm animals will be disqualified.
7. Participants are responsible for all set-up, maintenance and break down of project displays.
8. A “group” may be from a classroom, Boy or Girl Scouts group, homeschool, church club, 4H, nature center, etc.

## ECO-SCIENCE CHALLENGE CATEGORY DESCRIPTIONS

**Grades K-4:** Participants must be in grades K-4. An individual project is submitted by only one individual. A group project is submitted by a group of two to four participants. Projects may pertain to undertakings at school, home, or in the community, that relate to the environment (i.e. recycling programs, composting, gardening, etc.). Projects may pertain to environmental awareness campaigns, sustainability, alternative energy sources, etc.

**Grades 5-8:** Participants must be in grades 5-8. An individual project is submitted by only one individual. A group project is submitted by a group of two to four participants. Projects must detail the participants’ use of the scientific method. Projects may pertain to undertakings at school, home, or in the community, that relate to the environment (i.e. recycling programs, composting, gardening, etc.). Projects may pertain to environmental awareness campaigns, sustainability, alternative energy sources, etc.

**Grades 9-12:** Participants must be in grades 9-12. An individual project is submitted by only one individual. A group project is submitted by a group of two to four participants. Projects must detail the participants use of the scientific method, research, experimentation and results. Projects may pertain to undertakings at school, home, or in the community, that relate to the environment (i.e. recycling programs, composting, gardening, etc.). Projects may pertain to environmental awareness campaigns, sustainability, alternative energy sources, etc.



# JUDGING RUBRIC

Please note that items mentioned in this rubric are not requirements for your project.

*In addition to the first through third place winners for each category, there is a Community Impact Award. The criteria for this award is the impact the Eco-Science Challenge project has had inside or outside the school. Have the students made a positive change in the community? How many have been affected? Have students advocated or presented at a school board meeting, a town hall, or city council meeting, or met with an elected official? If so, what was the impact? Share the initial and/or lasting impact of your project.*

Grades K-4	5 - Exemplary	4 - Excellent	3 - Good	2 - Satisfactory	1 - Limited
<b>Problem and Hypothesis</b>	Problem is creative and meaningful. Research was done to understand the problem. Question/goal/hypothesis is clearly stated.	Problem is creative or meaningful. Some research was done to understand the problem. Question/goal is clearly stated.	Problem is addressed. Base-level research was done to understand the problem. Question/goal is stated.	Problem is somewhat addressed. Question/goal is unclear. Additional background research needed.	Problem is not stated. Question/goal is not stated. No background research done.
<b>Experimental Design/Materials/ Procedure</b>	Experimental design is clear, logical and well-thought out. Variables and controls have been addressed. Steps of procedure are listed and sequential, all materials are listed.	Experimental design is clear and logical. Some attempt has been made at addressing variables and controls. Steps of procedure are listed and mostly sequential. Most materials are listed.	Experimental design is mostly clear. Steps of procedure are mostly listed.	Experimental design is mostly clear. Steps of procedure are mostly listed.	Experimental design is not clear. A few steps of procedure are listed. No materials are listed.
<b>Data Collection</b>	Appropriate use of photos/charts/graphs to display data.	Some use of photos/charts/graphs to display data.	Fair use of photos/charts/graphs to display data.	Poor use of photos/charts/graphs to display data.	No use of photos/charts/graphs to display data.

<b>Grades K-4</b>	<b>5 - Exemplary</b>	<b>4 - Excellent</b>	<b>3 - Good</b>	<b>2 - Satisfactory</b>	<b>1 - Limited</b>
<b>Analysis</b>	Conclusions are supported by the data. Sources of error are considered. Explanation is made for how or why the hypothesis was supported or rejected. Reflection of what was learned and how it could be improved is made.	Conclusions are supported by the data. Explanation is made for how or why the hypothesis was supported or rejected. Some reflection of what was learned and how it could be improved is made.	Conclusions are not clearly supported by the data. Explanation is attempted for how or why the hypothesis was supported or rejected.	Conclusions are not supported by the data. Explanation is attempted for how or why the hypothesis was supported or rejected.	Conclusions are not supported by the data. Explanation is not attempted for how or why the hypothesis was supported or rejected.
<b>Visual Display</b>	Display is neat, attractive and creative. Spelling and grammar are correct. Graphs and charts are properly labeled.	Display is neat and attractive. Spelling and grammar are mostly correct. Graphs and charts are mostly labeled.	Display is neat. Spelling and grammar are somewhat correct. Graphs and charts are somewhat labeled.	Display is fair. Spelling and grammar have many mistakes. Graphs and charts are unclear.	Display is poor. Spelling and grammar have many mistakes. Graphs and charts are missing.
<b>Interview</b>	Students display subject knowledge from research and the process of completing the experiment. Students speak clearly.	Students display knowledge from the process of completing the experiment. Students speak clearly.	Students display knowledge of the experiment. Students speak clearly.	Students display a low level of knowledge from research and the process of completing the experiment. Students speak unclearly.	Students display a poor level of subject knowledge from research and the process of completing the experiment. Students speak unclearly.
<b>Level of Difficulty/ Creativity</b>	The project is very creative. It unlocks new ideas about a given topic shedding new light on old models.	The project is creative and has new ideas about the topic.	The project introduces some new ideas.	The project makes some effort to approach the topic in an original way, but falls short.	The topic was not presented in a creative way.

Grades 5-12	5 - Exemplary	4 - Excellent	3 - Good	2 - Satisfactory	1 - Limited
<b>Problem and Hypothesis</b>	Problem is new, meaningful and well-researched. Hypothesis is an educated, testable, clear statement.	Problem is meaningful and well-researched. Hypothesis is clearly stated.	Problem is addressed and researched. Hypothesis is stated.	Problem is somewhat addressed and somewhat researched. Hypothesis is unclear.	Problem is not stated and research is unclear. Hypothesis is not stated.
<b>Background Research</b>	Research is thorough, specific and has many examples. All ideas are clearly explained. History, biology and pros and cons are fully addressed.	Research has many specifics and some examples. Most ideas are explained. Student mostly addresses the history, biology and pros and cons.	Research has some specifics and a couple examples. Few ideas are explained. Student doesn't address all areas: history, biology and pros and cons.	Research has little specifics and one example. Two or fewer ideas are explained. Student doesn't address all areas: history, biology and pros and cons.	Research has no specifics and one example. No ideas are explained. Student doesn't address all areas: history, biology and pros and cons.
<b>Experimental Design/ Materials/ Procedure</b>	Procedure is detailed, appropriate and thorough. Steps of procedure are listed and sequential, all materials are listed. Safety issues have been addressed.	Procedure is appropriate and thorough. Steps of procedure are listed and mostly sequential. Most materials are listed. Safety issues may have been addressed.	Procedure is appropriate. Steps of procedure are mostly listed. Safety issues were not addressed.	Procedure is inadequate. Steps of procedure are mostly listed. Safety issues were not addressed.	Procedure is inadequate. A few steps of procedure are listed. No materials are listed. Safety issues were not addressed.
<b>Variables/ Controls/ Sample Size</b>	Variables have been identified, controls are appropriate, in place, and explained. Sample size is appropriate and explained.	Variables have been identified, controls are appropriate and in place. Sample size is appropriate.	Variables have somewhat been identified, controls are somewhat known. Sample size is limited.	Limited used of variables or controls. Sample size is not considered.	No variables or controls. Sample size is not considered.
<b>Data Collection</b>	Adequate number of trials/sample size. Appropriate use of photos/ charts/graphs to display data.	Adequate number of trials/sample size. Some use of photos/charts/ graphs to display data.	Adequate number of trials/sample size. Fair use of photos/charts/ graphs to display data.	Poor number of trials/sample size. Poor use of photos/ charts/graphs to display data.	Poor number of trials/sample size. No use of photos/ charts/graphs to display data.

Grades 5-12	5 - Exemplary	4 - Excellent	3 - Good	2 - Satisfactory	1 - Limited
<b>Analysis</b>	Conclusions are supported by the data. Sources of error have been considered. Explanation is made for how or why the hypothesis was supported or rejected. Experimental meaning is conveyed and reflection of what was learned and how it could be improved is made.	Conclusions are supported by the data. Some sources of error have been considered. Explanation is made for how or why the hypothesis was supported or rejected. Reflection of what was learned and how it could be improved is made.	Conclusions are not clearly supported by the data. Some sources of error have been considered. Explanation is attempted for how or why the hypothesis was supported or rejected. Reflection of what was learned and how it could be improved is made.	Conclusions are not supported by the data. A few sources of error have been considered. Explanation is attempted for how or why the hypothesis was supported or rejected. Reflection of what was learned and how it could be improved is poor.	Conclusions are not supported by the data. No sources of error have been considered. Explanation is not attempted for how or why the hypothesis was supported or rejected. Reflection of what was learned and how it could be improved is not made.
<b>Visual Display</b>	Display is neat, attractive and creative. Spelling and grammar are correct. Graphs and charts are properly labeled.	Display is neat and attractive. Spelling and grammar are mostly correct. Graphs and charts are mostly labeled.	Display is neat. Spelling and grammar are somewhat correct. Graphs and charts are somewhat labeled.	Display is fair. Spelling and grammar have many mistakes. Graphs and charts are unclear.	Display is poor. Spelling and grammar have many mistakes. Graphs and charts are missing.
<b>Interview</b>	Students display a high level of subject knowledge from research and the process of completing the experiment. Students can extrapolate from the experiment. Students speak clearly.	Students display a moderate level of subject knowledge from research and the process of completing the experiment. Students speak clearly.	Students display a fair level of subject knowledge from research and the process of completing the experiment. Students speak clearly.	Students display a low level of subject knowledge from research and the process of completing the experiment. Students speak unclearly.	Students display a poor level of subject knowledge from research and the process of completing the experiment. Students speak unclearly.
<b>Level of Difficulty/ Creativity</b>	Problem is conceptually intricate/requires extra effort and involves a creative approach. It unlocks new ideas about a given topic shedding new light on old models.	Problem requires extra effort and involves a creative approach.	Problem requires effort and involves a less-than-creative approach.	Problem requires little effort and involves a less-than-creative approach.	Problem requires little effort and does not involve a creative approach.