

Topics for Consideration When Judging Senior Projects (High School Students)

The criteria and questions below are suggested as a guide for your judging of projects for Naval Science Awards. You may decide to utilize a scoring sheet for projects you evaluate or to keep a running notebook of impressions and comparisons as you judge your group of projects.

You may work alone or as part of a team of judges. When working as a team, the key attributes and criteria to be used should be discussed, agreed upon beforehand, and utilized by all team members. It is suggested that all members of a judging team evaluate those projects determined in preliminary screenings by individual members to be deserving of Naval Science Awards.

Naval Science Awards Program Judges should focus on the student and what he or she has learned about the chosen subject and the scientific process in general. The quality of a student's project will be judged not only on what is exhibited but also upon his or her ability to discuss the work intelligently. Ideally, judges are expected to spend 5-10 minutes with each student discussing the project, after which they should conduct their evaluation.

1. Scientific Approach

- Is the problem stated clearly and unambiguously?
- Was the problem sufficiently limited to allow a plausible approach? Is the posed problem capable of a solution?
- Did the student have a procedural plan for obtaining a solution?
- Are variables clearly recognized and defined?
- If controls were necessary, did the student recognize their need and were they correctly used?
- Are there adequate data to support the conclusions?
- Does the student recognize the limitations of the data obtained?
- How orderly has the analysis been?
- Has originality been shown in setting up a systematic work schedule and in securing data?
- Are the project's conclusions consistent with project's data?
- Does the student understand the project's ties to related research?
- Does the student have an idea of what further research steps might be done to advance their project?

- Does the student recognize the scope and limitations of the solution or conclusion he or she has reached?

2. Original Notebook

- Did the student keep an original, dated, day-by-day spiral or bound notebook?
- Does the student notebook record plans, procedures, observations, conclusions, failures and successes?
- Do the notebook entries document the student's work over the full time devoted to the project from inception to completion and presentation?
- How complete are the project notes?
- Is the notebook reviewed by teachers, mentors, or supervisors when they were involved in the project?

3. Thoroughness

- Do the student's references and bibliography exhibit the quality and quantity of sources that reflect his or her effort to perform an in-depth search into the topic chosen?
- Did the exhibitor cite scientific literature, or only popular literature (i.e., local newspapers, Reader's Digest) in their project?
- Did the student use sources from an Internet search?
- Did the student research the project using public, technical and/or research libraries?
- Is the student familiar with scientific literature in the studied field?
- Did the student carry out the purpose to completion within the scope of his or her original intent?
- How completely was the problem covered?
- Are the student's conclusions based on a single experiment or replication?
- Is the student aware of other approaches or theories?
- Has he or she made thorough use of data?
- How much time did the student spend on the project? Is the time adequately documented?
- How successfully has the original plan been carried through to completion?

4. Ingenuity and Creativity

- Does the project show creative ability and originality in the questions asked?; the approach to solving the problem?; the analysis of the data?; the interpretation of the data?; the use of equipment?; the construction or design of new equipment?
 - An original idea for a project would show greater creativity than a suggested project from a textbook. Obviously no project is creative and original in every aspect. Remember that a creative and original project for high school students is different from that of professionals. Conversely, some projects may contain elements that seem original; however, the material may have come from new curricula in textbooks or laboratory manuals unfamiliar to judges.
 - You should also consider how much help a student received. A student's approach to solving a problem may seem original, but may have come from a scientist's or engineer's suggestions. If a student received help on a project, the credit you may assign for creative ability and originality should only reflect the student's own contributions.
 - Creative research should support an investigation and help answer a question in an original way. The assembly of a kit would not be creative unless an unusual approach was taken. Collections should not be considered creative unless they are used to support an investigation, and to help answer a question in an original way.
- Has the student made the best use of available equipment?
- How much originality is shown in the method chosen by the student?
- Has he or she constructed charts and graphs when applicable? Are charts and graphs adequately explained? Do the student's charts and graphs add to the clarity of the project?
- How effectively has the student used his or her material in solution of problems?
- Have safety precautions been observed in conducting all experiments?

5. Clarity

- How clearly does the student discuss his or her project and explain its purpose, procedure, and conclusions? Is the student's prepared presentation only a memorized speech that reflects little understanding of key principles?
- Is the student's oral explanation of the project clear and concise?
- Does the written project material reflect or match the student's understanding of the research?
- Are the important phases of the project presented in an orderly manner?
- How clearly is the data presented?

- How clearly are the results presented?
- How well does the display explain the project?

6. Skill

- Does the student have the required laboratory, computation, observational and design skills to obtain the supporting data he or she needed?
- Where was the project performed? (i.e., home, school laboratory, university laboratory) To what extent did the student receive assistance from parents, teachers, scientists or engineers?
- Was the project completed under adult supervision, or did the student work largely alone?
- Where did equipment come from? Was it built independently by the student? Was it obtained on loan? Was it part of a laboratory where the student worked?

7. Student's Advancement in Science

- Is the student aware of basic scientific principles which lend support to his or her methods and conclusions?
- Is the student aware of the value of the empirical method, the necessity of repeated trials, and the importance of controlling the variables in experiments to reach valid conclusions?
- Is the student research-minded?

Note: Topics for Consideration in Judging Senior Projects were modified from those published as Evaluation Criteria for Category Judging by Science Service, 1719 N Street, NW, Washington DC 20036, 202-785-2255, those published as Judging Criteria by Massachusetts State Science Fair, Inc., and those published as Judging Criteria by the New Mexico Science and Engineering Fair.

Sample Scoring Sheet for Senior Projects (High School Students)

	Possible Points	Project Number
1. Scientific Approach	25	
2. Original Notebook	10	
3. Thoroughness	20	
4. Ingenuity and Creativity	20	
5. Clarity	15	
6. Skill	5	
7. Student's Advancement in Science	5	
Overall Score	100	