

# Mentoring: Considerations for Judges

## Levels of Mentoring

Mentorship may take many forms and often occurs on a continuum. Some projects require no mentorship, while others require extensive mentorship in a specialized facility. The appropriate level of mentorship is influenced by the nature of the project, the needs of the student, and the support mentors are able to provide. As the level of mentorship increases, both mentors and mentees must be increasingly diligent to ensure that the project is the work of the student. Higher level mentorships in which the project idea, research question(s) and/or procedure are prescribed or provided by the mentor violate the spirit of the Mentoring Code of Conduct

Youth Science Canada defines the following levels of mentorship:

1. Student does not receive any mentoring.
1. Student exchanges a few emails or phone calls, and/or meets with the mentor once or twice to discuss the student's ideas.
2. Student occasionally contacts the mentor by email or phone, and/or meets occasionally with the mentor who provided some advice or materials.
3. Student has regular contact with the mentor by email or phone, and/or meets regularly with the mentor who provides advice, materials, assistance with design/testing, or data analysis.
4. Student has regular face-to-face contact with the mentor and regular access to advice, materials, space, equipment, design/testing, or other personnel in a specialized facility.
5. Student works closely with the mentor over an extended period of time to develop the project idea, plan and conduct the research/development, and analyze the results or test the innovation.

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## Responsibilities of Judges

The training of scientists is based largely on a mentoring model. Graduate students at both the MSc and PhD levels all have mentors, usually called supervisors. Nonetheless, some in the science fair community feel that mentorship confers an unfair advantage on science fair projects. Judges must be sensitive to these concerns and ensure that judging focuses on students' scientific thought, understanding and creativity.

Some projects involving the use of sophisticated or expensive equipment and exotic materials are scientifically simple and less creative than projects using more common materials. Sophisticated equipment or materials can unduly impress some judges, while others may be unduly impressed by the project carried out by a lone student in his/her garage using only household or commonly available materials. In all cases it is essential to look beyond the setting in which a project was carried out and to evaluate what science the student has actually done.

Many, perhaps a majority, of science fair judges are involved in professional science and thus have an understanding of the nature of mentoring in the scientific enterprise and have some degree of experience in evaluating the scientific merit of work in this context. Judges with this background and experience have a responsibility to enlighten and assist judges who have no such context or experience.

It is most often the case that a team of judges will be evaluating a group of projects, each of which has a different level of mentoring and one or more of which may be non-mentored. In this context judges have the following responsibilities:

- to avoid with diligence any biases for or against mentored versus non-mentored projects;
- to identify carefully, via documents provided by the student(s) and face-to-face discussion, the level and nature of any mentorship;
- to assess the degree and accuracy to which the student(s) disclosed and described any mentoring;
- to assess thoroughly the degree of independence in: topic selection; design of the study, experiment, or innovation; project undertaking; analysis of data; and project write-up;
- to assess the level of scientific understanding of the project and its scientific context displayed by the student(s);
- to assess and rank a project on: the creativity of its concept; scientific merit of its design and results, the level of scientific understanding displayed by its author(s), the clarity of communications and dissemination; and, in the case of mentored projects, on the degree of independence from the mentor(s), all in relation to the age/grade-level of the student(s).