

The Bromfield School Science Fair (Grades 8-12) Judging Evaluation Forms

This document contains all versions of the Bromfield Science Fair (BSF) Judging Evaluation Forms. Judges should use one of these forms to evaluate each project. There are 5 versions of the form, depending on the grade level and type of project. The chart below depicts the various versions. Note that some panels may have more than one type of project, necessitating the use of different forms for the different project types. Your clipboard should contain a list of projects you are judging, and the proper form for each project. Please see the Science Fair Judging Coordinator if you are not certain which form(s) to use for the panel you will be judging.

Judges should completely fill out the information at the top of the form for each project, including Project Title, Project Number (also known as the Table Number), Judge's Name, and Judging Panel Code.

Each version of the BSF Judging Evaluation Form lists all criteria that judges should consider in evaluating each project. Each of the criteria provides a short description of the most important aspects that should be present in a successful project.

The scoring range for all forms is the same, and is shown in the scoring key at the top right of each form. Scores for each category will range from 0 to 4, with 4 being the highest score possible. Judges should total the category scores for each subsection, and fill in the project total score at the bottom of the form.

Judging Evaluation Form Application Matrix

Grade Level	Project Type		
	Experimental	Non-Experimental	Other
Grades 10-12	Form #1 Experimental Projects (Original or Historical)	Form #2 Non-Experimental Projects (Research/Educational)	Form #3 Engineering Projects
Grade 9	Form #1 Experimental Projects (Original or Historical)	Form #2 Non-Experimental Projects (Research/Educational)	Form #3 Engineering Projects Form #4 How Things Work
Grade 8	Form #1 Experimental Projects (Original or Historical)	Form #2 Non-Experimental Projects (Research/Educational)	Form #4 How Things Work Form #5 Engineering Projects

Experimental projects may also be called Original Experiment or Historical Experiment (a re-creation of a famous historical experiment).

Non-Experimental projects may also be called Research, Educational Display, Science Through Art or Science in Art.

Scoring

Note that the maximum scores for all forms total to 40 points, allowing direct comparison between all project types that may be represented in a given project panel.

The Bromfield School Science Fair (Grades 8-12)

Judging Evaluation Form #1: Experimental Projects (original or historical)

Project Title: _____ Project # _____

Judge's Name: _____ Judging Panel Code _____

Scoring Key	
4 = Superior	1 = Below Average
3 = Above Average	0 = No Evidence
2 = Average	

Scientific Method	Score (0-4)	Comments
Purpose of Experiment/ Quality of Research - Hypothesis is clear and concise; purpose of project is readily apparent. Research to establish scientific principles and concepts is complete and in-depth.		
Procedure, Variables and Controls - Logical procedure to confirm hypothesis has been developed. Manipulated, controlled, and responding variables are clearly identified and defined. Thought has been given to controlling/eliminating extraneous factors.		
Data Collection and Integrity - Clear, organized, and thorough process for data observation and collection. Sufficient trials conducted, other potential sources of error were considered.		
Conclusions - Conclusions are clear and logical, relevant to hypothesis, and supported by data.		
		Section Subtotal:

Interaction with Student(s)	Score (0-4)	Comments
Theoretical and Project Knowledge - Student(s) exhibit in-depth knowledge of scientific principles related to project and can accurately explain concepts, terms, and research conducted. Student(s) can explain all aspects of project, including hypothesis, design, variables, procedure, measurements, analysis, and conclusions.		
Discussion and Presentation - Student(s) can authoritatively answer reasonable questions about project. Student(s) can describe operating fundamentals, purpose and use of equipment employed. Student(s) can discuss aspects of project that might be conducted differently if project were to be repeated. Student(s) display confidence and professionalism during interview.		
Creativity - Project displays originality and/or ingenuity in approach, construction, analysis, etc.		
Independence - Student(s) completed project without excessive adult help. Student(s) had primary responsibility for conducting experiment and generating documentation/display.		
		Section Subtotal:

Project Display and Documentation	Score (0-4)	Comments
Display - Display explains project clearly and completely. Concepts, hypothesis, procedures, materials used, findings, analysis, and conclusions are fully shown. Display is easy to understand, neat, and well constructed. Scientific formulas/data are accurate. Any experimental apparatus is effectively displayed. Display is attractive and eye-catching. Graphics, photos, A/V media, or models are effective and add to visual interest.		Section Subtotal:
Documentation - <u>Notebook/journal</u> is complete and neat, provides thorough record of what was accomplished each day, including procedures completed and data collected. <u>Project Report</u> is well organized, fully documents project. Includes research, statement of problem, hypothesis, variables, procedures, materials used, findings, analysis, and conclusions. Background research is substantiated with Works Cited section. <u>Project Abstract</u> ¹ is complete, organized logically, concise, and clearly conveys essentials of project		

¹ Not required for Grade 8

Project Total Score ____/40

The Bromfield School Science Fair (Grades 8-12)

Judging Evaluation Form # 2: Non-Experimental Projects (Research/Educational)

Project Title: _____ Project # _____

Judge's Name: _____ Judging Panel Code _____

Scoring Key	
4 = Superior	1 = Below Average
3 = Above Average	0 = No Evidence
2 = Average	

Scientific/Historical Context	Score (0-4)	Comments
Purpose of Project/ Quality of Research - Title/topic statement is clear; purpose of project is readily apparent. Significance of subject matter is convincingly presented. Research to establish scientific principles and concepts is complete and in-depth.		
Historical Figures and Timeline of Ideas - Includes significant and interesting facts about early scientists and key discoveries in field. Important historical experiments are well documented. Timeline of ideas and key contributors is clear, detailed and accurate.		
Scientific Terms and Equations - All scientific terms and jargon are well explained; equations and mathematical formulas are supported by explanations.		
Development of Scientific Consensus/Current State of the Art - Project explains and demonstrates how experiments, observations, and data led to acceptance of the subject idea/concept(s) in the scientific community. Material reflects current day technology and discoveries. Any current day controversies or unresolved issues in the field of study are thoroughly explored.		

Interaction with Student(s)	Score (0-4)	Comments
Theoretical and Project Knowledge - Student(s) exhibit in-depth knowledge of scientific principles related to project and can accurately explain concepts, terms, and research they conducted. Student(s) can explain all aspects of project in detail. Student(s) can discuss experiments conducted by key historical figures.		
Discussion and Presentation - Student(s) can authoritatively answer reasonable questions about project. Student(s) can describe purpose, operation, and use of any model or equipment displayed. Student(s) can discuss potential follow-on investigations, and/or relevant experiments that could be conducted in the subject area. Student(s) display confidence and professionalism during interview.		
Creativity - Project displays originality and/or ingenuity in approach, construction, analysis, etc.		
Independence - Student(s) completed project without excessive adult help. Student(s) had primary responsibility for generating documentation and creating display		

Project Display and Documentation	Score (0-4)	Comments
Display - Display explains project clearly and completely. All aspects of project are covered in detail. If present, model or display apparatus is realistic and accurate. Display is easy to understand, neat, and well constructed. Scientific formulas/data are accurate. Display is attractive and eye-catching. Graphics, photos, A/V media, models and/or display apparatus are effective and add to visual interest.		Section Subtotal:
Documentation - <u>Project Report</u> is organized and well written. Includes research conducted, analysis, and conclusions. Background research sources are fully documented, including Works Cited section. <u>Project Abstract</u> ¹ is complete, organized logically, concise, and clearly conveys essentials of project		

¹ Not required for Grade 8

Project Total Score ____/40

The Bromfield School Science Fair (Grades 9-12)

Judging Evaluation Form #3: Engineering Projects

Project Title: _____ Project # _____

Judge's Name: _____ Judging Panel Code _____

Scoring Key	
4 = Superior	1 = Below Average
3 = Above Average	0 = No Evidence
2 = Average	

Project Engineering/Scientific Content	Score (0-4)	Comments
Problem Statement/Business Case- Problem to be solved is clearly identified and stated. Project describes need(s) being addressed in detail. Benefit to society of the invention/device is explained compellingly.		
Research, Design Criteria, Constraints- Research to understand invention/device and underlying scientific principles is complete and in-depth. Design Criteria (requirements) are explicit, detailed, and measurable. Constraints have been identified and listed.		
Prototype Design, and Construction- Design and construction of device prototypes is clearly explained. CAD drawings provide at least 2 external perspectives and an internal view (not applicable for software engineering projects).		
Prototype Testing- Test plan is well thought out and detailed, covering all design criteria. Test results are documented clearly. Issues encountered during construction/testing are analyzed and explained. Students are able to competently demonstrate operation of device.		
Prototype Revisions/Conclusions- Potential (or actual) revisions to prototype based on test outcomes are described. Conclusions are insightful and thoughtful, outlining which aspects of the project went as planned as well as any elements that did not turn out as expected and analyzing why.		
		Section Subtotal:

Interaction with Student(s)	Score (0-4)	Comments
Theoretical and Project Knowledge - Student(s) exhibit knowledge of engineering and scientific principles related to project and can accurately explain concepts, terms, and research conducted. Student(s) can explain all aspects of project, including operation of device, procedure to construct and test, revisions made to prototypes, and insights gained.		
Discussion and Presentation- Student(s) can answer reasonable questions about project. Student(s) can describe purpose and use of equipment employed. Student(s) can discuss potential follow-on investigations and/or aspects of project that might be conducted differently if project were to be repeated. Student(s) display confidence and professionalism during interview.		
Creativity and Independence- Project displays originality and/or ingenuity in approach, construction, testing, analysis, etc. Student(s) completed project without excessive adult help. Student(s) had primary responsibility for conducting experiment and generating documentation/display.		
		Section Subtotal:

Project Display and Documentation	Score (0-4)	Comments
Display- Display explains project clearly, completely. Concepts, procedures, materials used, testing performed and conclusions are fully shown. Diagrams are detailed, proportioned, and dimensioned. Display is easy to understand, neat, and well constructed. Prototype(s) effectively displayed. Display is attractive and eye-catching. Graphics, photos, A/V media, or models are effective and add to visual interest.		
Documentation- <u>Notebook/journal</u> is complete and neat, provides thorough record of what was accomplished each day, including test results and data collected. <u>Project Report</u> is well organized, fully documents project. Includes research, design criteria, construction, testing, materials used, findings, analysis, and conclusions. <u>Project Abstract</u> is complete, organized, concise, clearly conveys essentials of project		
		Section Subtotal:

Project
Total Score ____/40

The Bromfield School Science Fair (Grades 8 and 9)

Judging Evaluation Form #4: How Things Work

Project Title: _____ Project # _____

Judge's Name: _____ Judging Panel Code _____

Scoring Key	
4 = Superior	1 = Below Average
3 = Above Average	0 = No Evidence
2 = Average	

Project Scientific Content	Score (0-4)	Comments
Research and "Expert" Interview and Contributions- Research to understand device and establish scientific principles is complete and in-depth. Project clearly explains how the "expert" contributed; highlights of interview with "expert" are available to judges.		
Procedure to Construct/Deconstruct Device- Procedure and any tools used to construct/deconstruct device are shown and are clear and understandable.		
Issues and Insights- Problems and issues encountered during construction/deconstruction are identified, work-arounds or solutions described. Any resulting insights are described.		
Conclusions- Conclusions are clear and logical, making clear the "take-aways" from the project.		Section Subtotal:

Interaction with Student(s)	Score (0-4)	Comments
Theoretical and Project Knowledge - Student(s) exhibit knowledge of scientific principles related to project and can accurately explain concepts, terms, and research conducted. Student(s) can explain all aspects of project, including operation of device, procedure to construct/deconstruct, and insights gained.		
Discussion and Presentation- Student(s) can answer reasonable questions about project. Student(s) can describe purpose and use of equipment employed. Student(s) can discuss potential follow-on investigations and/or aspects of project that might be conducted differently if project were to be repeated. Student(s) display confidence and professionalism during interview.		
Creativity- Project displays originality and/or ingenuity in approach, construction, analysis, etc.		
Independence- Student(s) completed project without excessive adult help. Student(s) had primary responsibility for conducting experiment and generating documentation/display.		Section Subtotal:

Project Display and Documentation	Score (0-4)	Comments
Display- Display explains project clearly and completely. Concepts, procedures, materials used, findings, analysis, and conclusions are fully shown. Display is easy to understand, neat, and well constructed. Scientific formulas/data are accurate. Any experimental apparatus is effectively displayed. Display is attractive and eye-catching. Graphics, photos, A/V media, or models are effective and add to visual interest.		
Documentation- <u>Notebook/journal</u> is complete and neat, provides thorough record of what was accomplished each day, including procedures completed and data collected. <u>Project Report</u> is well organized, fully documents project. Includes research, device overview and specifics, and deconstruction/construction procedure. Background research is substantiated with Works Cited section.		Section Subtotal:

Project
Total Score ____/40

The Bromfield School Science Fair (Grade 8)

Judging Evaluation Form #5: Engineering Projects

Project Title: _____ Project # _____

Judge's Name: _____ Judging Panel Code _____

Scoring Key	
4 = Superior	1 = Below Average
3 = Above Average	0 = No Evidence
2 = Average	

Project Scientific Content	Score (0-4)	Comments
Research and "Expert" Interview and Contributions- Research to understand device that is to be constructed and to establish scientific principles is complete and in-depth. Project clearly explains how the "expert" contributed; highlights of interview with "expert" are available to judges.		
Prototype Design, and Construction- Design and construction of first and second version of device prototypes is clearly explained. Pictures, diagrams, etc. are detailed and accurate.		
Prototype Testing and Revision- Testing of first version of prototype is clear and effective. Manipulated, controlled, and responding variables are clearly identified and defined. Revisions to design resulting in 2 nd prototypes are sensible and related to testing outcomes. Problems encountered during construction/testing are identified, solutions are described.		
Conclusions- Conclusions are well thought out and logical, making clear the "take-aways" from the project.		
		Section Subtotal:

Interaction with Student(s)	Score (0-4)	Comments
Theoretical and Project Knowledge - Student(s) exhibit knowledge of scientific principles related to project and can accurately explain concepts, terms, and research conducted. Student(s) can explain all aspects of project, including operation of device, procedure to construct and test, revisions made to prototypes, and insights gained.		
Discussion and Presentation- Student(s) can answer reasonable questions about project. Student(s) can describe purpose and use of equipment employed. Student(s) can discuss potential follow-on investigations and/or aspects of project that might be conducted differently if project were to be repeated. Student(s) display confidence and professionalism during interview.		
Creativity- Project displays originality and/or ingenuity in approach, construction, testing, analysis, etc.		
Independence- Student(s) completed project without excessive adult help. Student(s) had primary responsibility for conducting experiment and generating documentation/display.		
		Section Subtotal:

Project Display and Documentation	Score (0-4)	Comments
Display- Display explains project clearly, completely. Concepts, procedures, materials used, testing performed and conclusions are fully shown. Diagrams are detailed, accurate. Display is easy to understand, neat, and well constructed. Scientific formulas/data are accurate. Any experimental apparatus is effectively displayed. Display is attractive and eye-catching. Graphics, photos, A/V media, or models are effective and add to visual interest.		
Documentation- <u>Notebook/journal</u> is complete and neat, provides thorough record of what was accomplished each day, including procedures completed and data collected. <u>Project Report</u> is well organized, fully documents project. Includes research, device overview and specifics, construction and testing procedures, and revisions made. Background research is substantiated with Works Cited section.		
		Section Subtotal:

Project
Total Score _____/40