MASSACHUSETTS
MSEF
Science & Engineering Fair

Welcome
Judge Orientation

Explanation of Judging

- Each project/project proposal will be judged by 5 separate judges.
- Judges should plan to score/review between 4 and 5 Projects/Proposals.
  - Proposals are the same as a traditional project except the experiment/testing is not done.
- Judging will be done by viewing a 5 minute video presentation on zFairs (both individual & team projects).

Explanation of Judging Continued

- Judge score cards will be automatically accessible when you are viewing a project/presentation.
- You may judge online on Wednesday, March 3, Thursday, March 4 and Friday, March 5 from 8:00 am – 12:00pm
- Please do not open any links you may see or refer to any outside resources related to the project provided in the presentation or in any of the resources provided. These may be viewed after you are finished judging but should not factor into your scoring.
- You may hear a student use personal pronouns that suggest a team project even though it is an individual project.

Judge Help Desk

Available to answer your questions:

Email: judginginfo@scifair.com

Available to answer your questions throughout the fair:

Email:
kbateman@bostonpublicschools.org

Phone:

Zoom room:
https://k12-bostonpublicschools.zoom.us/j/88417252046

Strongly suggested!

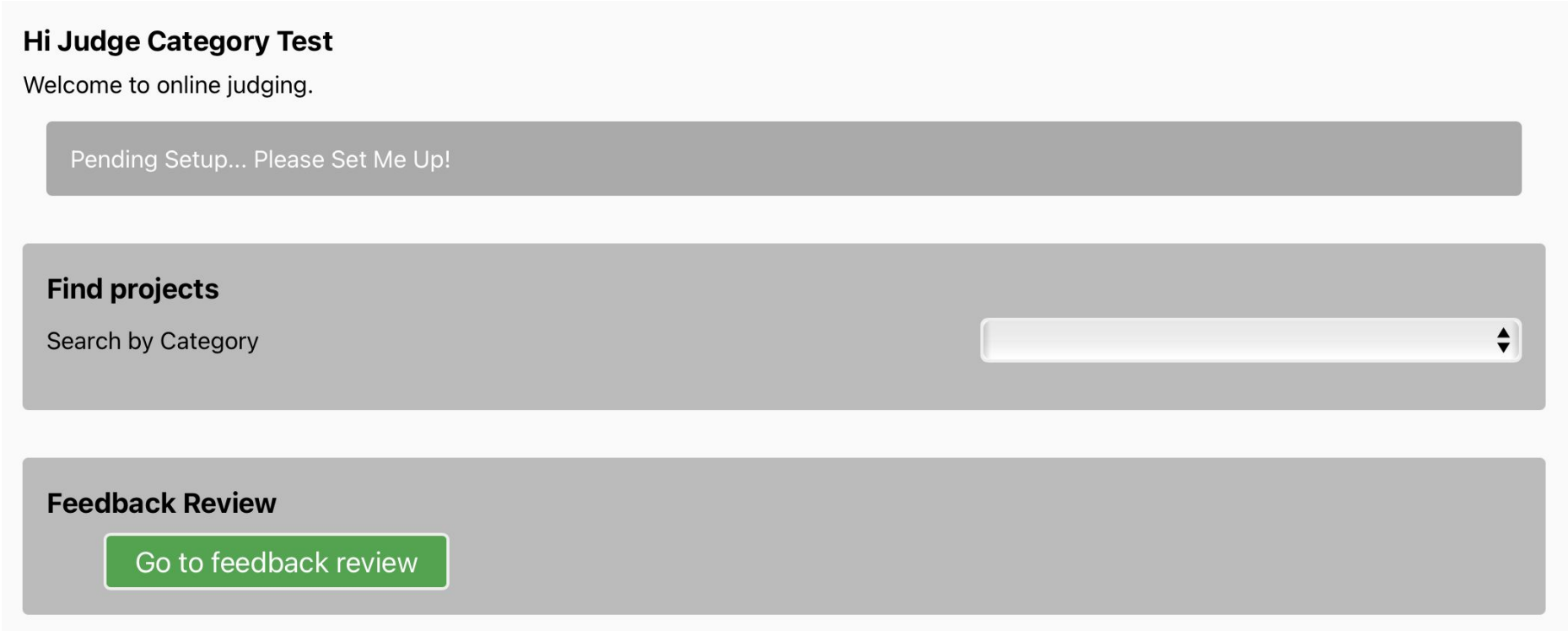
Download and print the Judge scorecards in advance. This will allow you to make adjustments after the presentation and before you finalize the scores online.

The scorecards can be found on the judge tab of your zFairs home page.

You can adjust your scores in zFairs after you have submitted them by clicking on the project in the list (it will be greyed out).

Once you are logged in to your account, click on “Go To Online Judging” at the top of the screen, you will then see:

1. **A message from MSEF**
2. **A box to go to feedback review (admin only)**

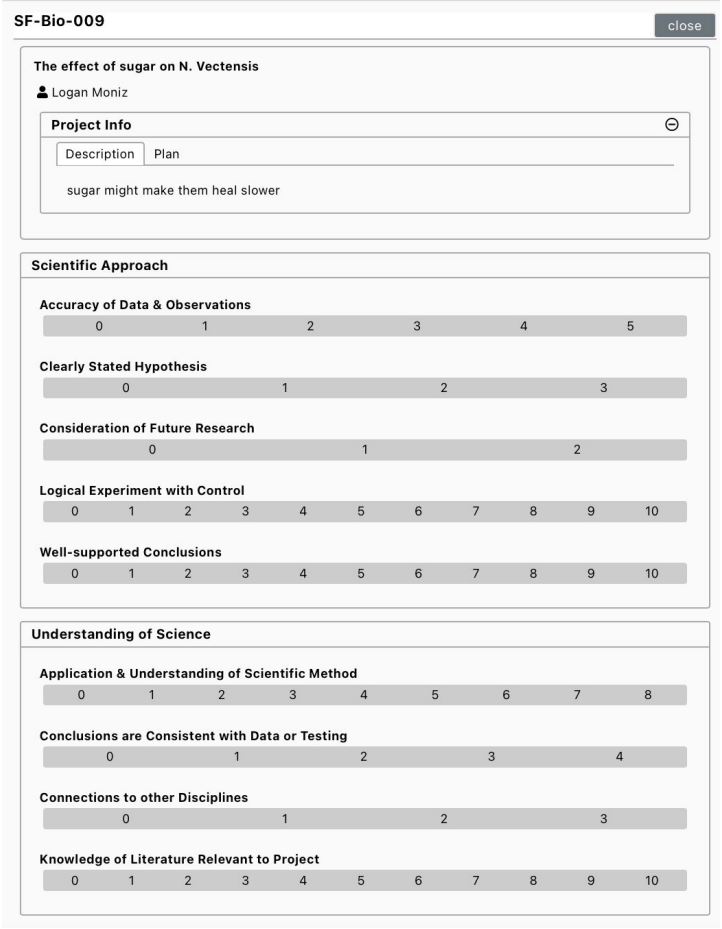


The BPS team will be assigning you your projects. You will know going into your first day of judging, what your portfolio looks like.

- **Judging can occur at any time between 8am March 3rd and 12pm on March 5th**
- **Judges must log on at least once between 9am-3pm for technical support**

When you click on the project you will see the following:

1. **Project Description, Research Paper, Notebook, Slides/Board, Plan and Abstract shown by clicking on the tabs. (not all tabs are shown in the example below)**
2. **The specific score card for that project/project proposal that will be used to score the project.**



Scoring

Scoring Considerations

- Quality, not quantity
- Same score card for teams and individual projects
- It is okay to disprove a hypothesis
- Look at statistics, design of control groups, and data interpretation
- Presentation shows comprehension
- A student's understanding is more important than a project's sophistication

Potential Judging Issue

If you know the student or are close to any mentors/supervisors who worked with the student, or have any other conflict of interest… Please recuse yourself!

Criteria for Scientific or Engineering Approach

Science Project

- Clearly Stated Hypothesis
- Logical Experiment with Control
- Accuracy of Data and Observations
- Well-supported Conclusions
- Consideration of Future Research

Engineering Project

- Identified Need or Problem
- Development of Clear Performance Criteria
- Well-constructed and Tested Prototype
- Retesting and Redesign
- Feasibility Study

HS Experimental Project Judging Card

Region VI/BPS Citywide Science and Engineering Fair
Judging Rubric for High School Division
Science (Experimental) Projects

Research Question (10%)	Clear and focused purpose				
	1	2	3	4	5
	Identifies contribution to field of study				
	1	2	3	4	5
	Testable using scientific methods				
	1	2	3	4	5
Design and Methodology (15%)	Well designed plan and data collection methods				
	1	2	3	4	5
	Variables and controls defined, appropriate, and complete				
	1	2	3	4	5
Execution: Data Collection, Analysis and Interpretation (20%)	Systematic data collection and analysis				
	1	2	3	4	5
	Reproducibility of results				
	1	2	3	4	5
	Appropriate application of mathematical and statistical methods				
	1	2	3	4	5
	Sufficient data collected to support interpretation and conclusions				
	1	2	3	4	5
Creativity (20%)	Project demonstrates significant creativity in one or more of the above criteria				
	1 2 3 4	5 6 7 8	9 10 11 12	13 14 15 16	17 18 19 20
Presentation-Poster (10%)	Logical organization of materials				
	1	2	3	4	5
	Clarity of graphics and legends				
	1	2	3	4	5
	Supporting documentation displayed				
	1	2	3	4	5

Note: The highest number is the best score. zFairs automatically accounts for N/A so the score is not negatively impacted.

Region VI/BPS Citywide Science and Engineering Fair
Judging Rubric for High School Division
Science (Experimental) Projects

Presentation-Video Presentation (25%)	Clear, concise, thoughtful statements that anticipate the judge's questions				
	1	2	3	4	5
	Understanding of basic science relevant to project				
	1	2	3	4	5
	Understanding interpretation and limitations of results and conclusions				
	1	2	3	4	5
	Degree of independence in conducting project				
	1	2	3	4	5
	Recognition of potential impact in science, society and/or economics				
	1	2	3	4	5
	Quality of ideas for further research				
	1	2	3	4	5
	For team projects, contributions to and understanding of project by all members				
	1	2	3	4	5

Note: The highest number is the best score. zFairs automatically accounts for N/A so the score is not negatively impacted.

HS Engineering Judging Card

Region VI/BPS Citywide Science and Engineering Fair
Judging Rubric for High School Division
Engineering Design Projects

Research Problem (10 %)	Description of a practical need or problem to be solved				
	1	2	3	4	5
	Definition of criteria for proposed solution				
	1	2	3	4	5
	Explanation of constraints				
	1	2	3	4	5
Design and Methodology (15 %)	Exploration of alternatives to answer need or problem				
	1	2	3	4	5
	Identification of a solution				
	1	2	3	4	5
	Development of a prototype/model				
	1	2	3	4	5
Execution: Construction and Testing (20 %)	Prototype demonstrates intended design				
	1	2	3	4	5
	Prototype has been tested in multiple conditions/trials				
	1	2	3	4	5
	Prototype demonstrates engineering skill and completeness				
	1	2	3	4	5
Creativity (20 %)	Project demonstrates significant creativity in one or more of the above criteria				
	1 2 3 4	5 6 7 8	9 10 11 12	13 14 15 16	17 18 19 20
Presentation - Poster (10 %)	Logical organization of material				
	1	2	3	4	5
	Clarity of graphics and legends				
	1	2	3	4	5
	Supporting documentation displayed				
	1	2	3	4	5

Note: The highest number is the best score. zFairs automatically accounts for N/A so the score is not negatively impacted.
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Region VI/BPS Citywide Science and Engineering Fair
Judging Rubric for High School Division
Engineering Design Projects

Presentation - Video Presentation (25 %)	Clear, concise, thoughtful statements that anticipate the judge's questions				
	1	2	3	4	5
	Understanding of basic science relevant to project				
	1	2	3	4	5
	Understanding interpretation and limitations of results and conclusions				
	1	2	3	4	5
	Degree of independence in conducting project				
	1	2	3	4	5
	Recognition of potential impact in science, society and/or economics				
	1	2	3	4	5
	Quality of ideas for further research				
	1	2	3	4	5
	For team projects, contributions to and understanding of project by all members				
	1	2	3	4	5 or N/A

Note: The highest number is the best score. zFairs automatically accounts for N/A so the score is not negatively impacted.
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MS Experimental and Engineering Design Judging Card

Region VI/BPS Citywide Science and Engineering Fair
Judging Rubric for Middle School Division
Experimental and Engineering Design Projects

Scientific or Engineering Approach (25 %)	The experimental hypothesis or engineering problem is clearly stated.				
	1	2	3	4	5
	The procedure (methods) or conceptual design is clear and can be consistently and easily followed.				
	1	2	3	4	5
	The conclusions are consistent with the data collected.				
	1	2	3	4	5
Knowledge of Project (20 %)	The preliminary research effectively contributes to the development of the project.				
	1	2	3	4	5
	Knowledge of science content related to the project is evident.				
	1	2	3	4	5
	Knowledge of scope and limitations of the project is evident.				
	1	2	3	4	5
Thoroughness (20 %)	Sufficient research and literature is cited (a minimum of three (3) sources are required).				
	1	2	3	4	5
	Observations, data collection, and data analysis are communicated. - All appropriate data tables, diagrams, graphs, and calculations shown neatly with all labels are included.				
	1	2	3	4	5
	The original plan was successfully followed through to completion, or evidence is provided to support changes to the original plan, when appropriate.				
	1	2	3	4	5
Written Records and Reports (5 %)	An accurate written report, complete with bibliography is presented.				
	YES	NO			
	An original handwritten or electronic, logbook/notebook with all plans, procedures, observations, and conclusions is present.				
	YES	NO			

Note: The highest number is the best score. zFairs automatically accounts for N/A so the score is not negatively impacted.
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Region VI/BPS Citywide Science and Engineering Fair
Judging Rubric for Middle School Division
Experimental and Engineering Design Projects

Ingenuity and Creativity (15 %)	The use of the available materials and resources is maximized.				
	1	2	3	4	5
	Student(s) presents new unique ideas (yes/no or n/a)				
	YES	NO	N/A		
Project Presentation (video submission) (15 %)	The video presentation highlights relevant information.				
	1	2	3	4	5
	The video presentation is clear.				
	1	2	3	4	5
	Student's (students') use of visual display is effective.				
	1	2	3	4	5

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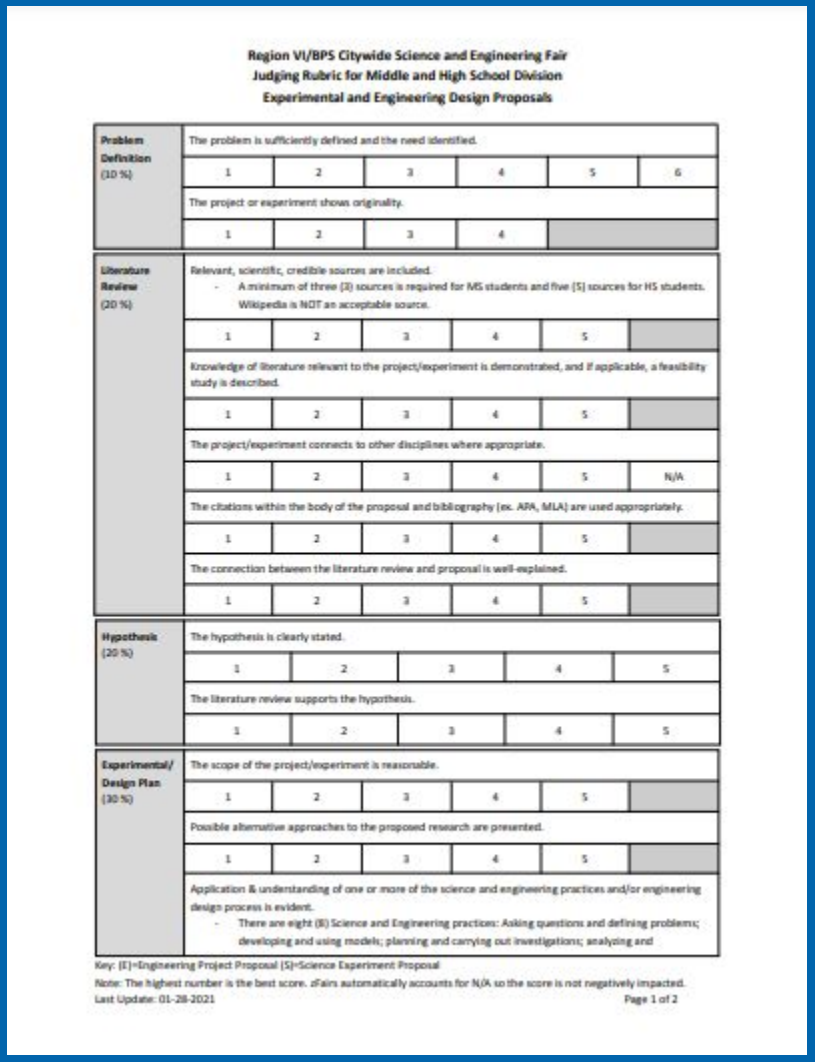
HS/MS Experimental and Engineering Design Proposal Project Judging Card



Region VI/BPS Citywide Science and Engineering Fair
Judging Rubric for Middle and High School Division
Experimental and Engineering Design Proposals

Problem Definition (10 %)	The problem is sufficiently defined and the need identified.					
	1	2	3	4	5	6
	The project or experiment shows originality.					
	1	2	3	4		
Literature Review (20 %)	Relevant, scientific, credible sources are included. - A minimum of three (3) sources is required for MS students and five (5) sources for HS students. Wikipedia is NOT an acceptable source.					
	1	2	3	4	5	
	Knowledge of literature relevant to the project/experiment is demonstrated, and if applicable, a feasibility study is described.					
	1	2	3	4	5	
	The project/experiment connects to other disciplines where appropriate.					
	1	2	3	4	5	N/A
	The citations within the body of the proposal and bibliography (ex. APA, MLA) are used appropriately.					
	1	2	3	4	5	
	The connection between the literature review and proposal is well-explained.					
	1	2	3	4	5	
Hypothesis (20 %)	The hypothesis is clearly stated.					
	1	2	3	4	5	
	The literature review supports the hypothesis.					
	1	2	3	4	5	
Experimental/ Design Plan (30 %)	The scope of the project/experiment is reasonable.					
	1	2	3	4	5	
	Possible alternative approaches to the proposed research are presented.					
	1	2	3	4	5	
	Application & understanding of one or more of the science and engineering practices and/or engineering design process is evident. - There are eight (8) Science and Engineering practices: Asking questions and defining problems; developing and using models; planning and carrying out investigations; analyzing and					

Key: (E)=Engineering Project Proposal (S)=Science Experiment Proposal
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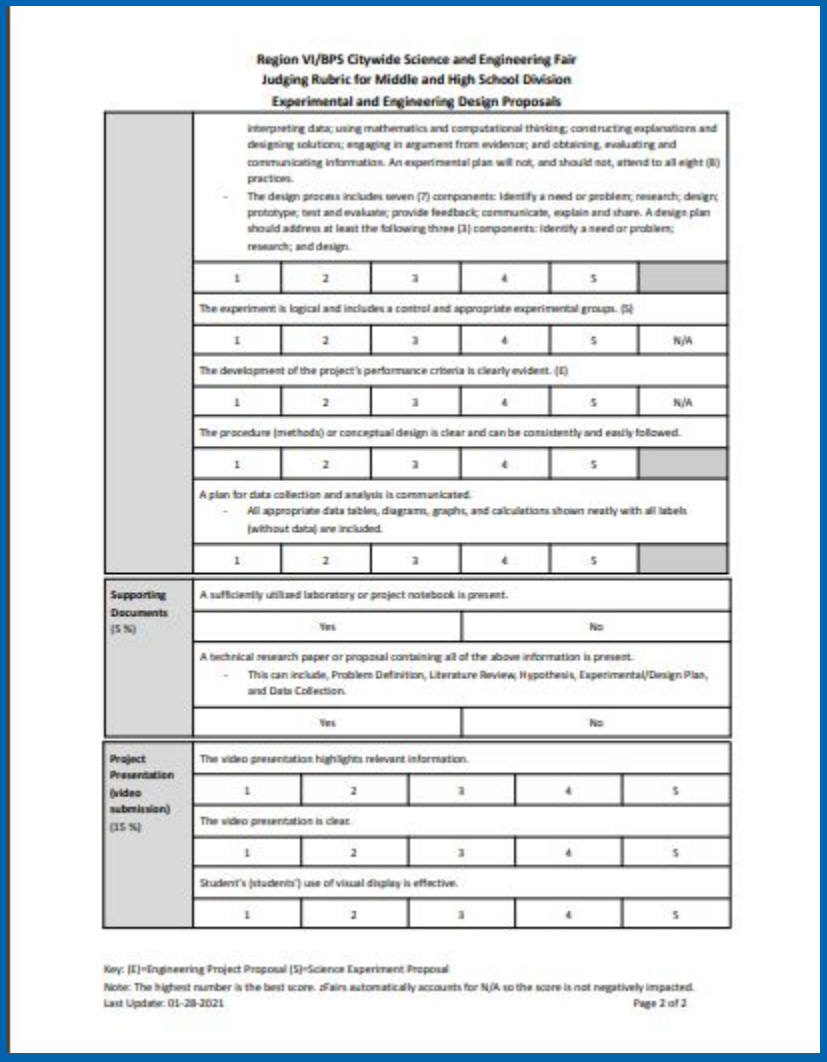

Region VI/BPS Citywide Science and Engineering Fair
Judging Rubric for Middle and High School Division
Experimental and Engineering Design Proposals

	interpreting data; using mathematics and computational thinking; constructing explanations and designing solutions; engaging in argument from evidence; and obtaining, evaluating and communicating information. An experimental plan will not, and should not, attend to all eight (8) practices. - The design process includes seven (7) components: Identify a need or problem; research; design; prototype; test and evaluate; provide feedback; communicate, explain and share. A design plan should address at least the following three (3) components: Identify a need or problem; research; and design.					
	1	2	3	4	5	
	The experiment is logical and includes a control and appropriate experimental groups. (S)					
	1	2	3	4	5	N/A
	The development of the project's performance criteria is clearly evident. (E)					
	1	2	3	4	5	N/A
	The procedure (method/s) or conceptual design is clear and can be consistently and easily followed.					
	1	2	3	4	5	
	A plan for data collection and analysis is communicated. - All appropriate data tables, diagrams, graphs, and calculations shown neatly with all labels (without data) are included.					
	1	2	3	4	5	
Supporting Documents (5 %)	A sufficiently utilized laboratory or project notebook is present.					
	Yes			No		
	A technical research paper or proposal containing all of the above information is present. - This can include, Problem Definition, Literature Review, Hypothesis, Experimental/Design Plan, and Data Collection.					
	Yes			No		
Project Presentation (video submission) (15 %)	The video presentation highlights relevant information.					
	1	2	3	4	5	
	The video presentation is clear.					
	1	2	3	4	5	
	Student's (students') use of visual display is effective.					
	1	2	3	4	5	

Key: (E)=Engineering Project Proposal (S)=Science Experiment Proposal
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- **Each project will automatically show the correct category/sub-category score card.**
- **You can adjust your scores in zFairs after you have submitted them by clicking on the project in the list (it will be greyed out).**

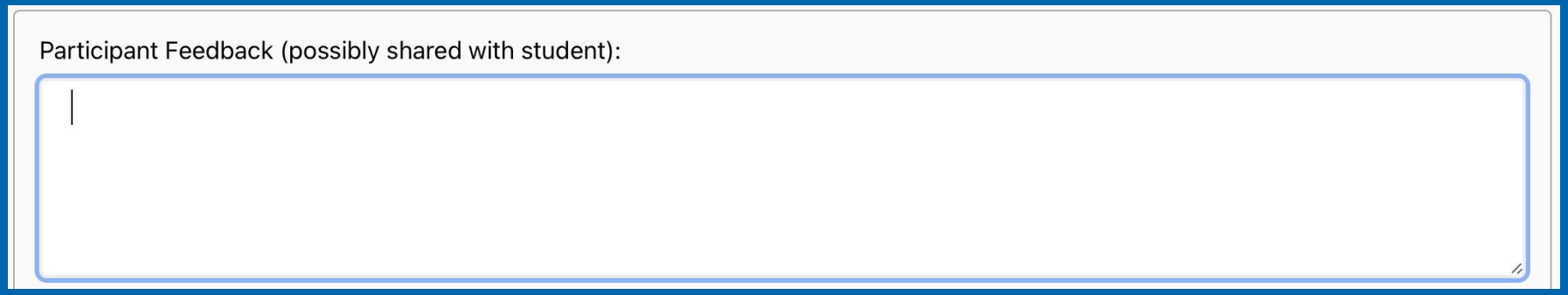
Score Card Section 4

Clarity of Presentation – Consider for the students that may have altered the speed of their voice.

Please do not click on any provided links during judging!

Project comments can be entered at the bottom of the score card:

Students are given these comments. They are welcomed and useful!



MASSACHUSETTS MSEF Science & Engineering Fair

Thank You 2021 Judges!

Stay Safe!!

William Rigney, Director
High School Committee

Helen Rosenfeld
MSEF Executive Director