



Workshop #4 - Abstract & Screening Slides

Presented by the SLB Outreach Committee

Greater San Diego Science & Engineering Fair
Student Leadership Board
January 16, 2021

SLB Introductions!



Agenda

Please hold your questions until the end or add them in the chat!

- Components of a notebook
 - Writing your abstract
- Screening Slides
- Judging Slides
- Breakout Rooms:
 - 1 - Abstract help
 - 2 - Screening slides
 - 3 - Med & Behavioral sci
 - 4 - Microbio & Biochem
 - 5 - Engineering

Putting Together Your Project Notebook



Components of a notebook:

You can find a sample notebook at gsdsef.org > Students > How to Participate > Step 5

Title Page

Table of contents

Abstract

Acknowledgements

Introduction and Literature Review

Statement of Problem & Hypothesis

Materials and Methods

Results & Data

Data Analysis

Conclusion, Discussion & Recommendations

Sources Cited/ citations

Appendix (raw data)

Abstract

- Abstract - summary of the what, why, and how of your project (~250 words)
- **Science** - problem, hypothesis, procedure, results, and conclusion
- **Engineering** - problem, engineering design > testing > redesign, final design success?
- Read by judges, a critical part of the notebook and slides



Review of Literature (Background Research)

- Contains:
 - 2-5 typed pages
 - Your research!
 - What is the problem and its history?
 - Why is it important?
 - What have others done to test/address it?
 - Why is your method the best way to investigate it?



Give credit where credit is due! Cite your sources in the bibliography. (minimum of 5 for junior division, 10 for senior division)

Why literature review is important:

- It shows that you know how your research fits into the current community

- Scientists build on each other

- You **MUST** understand exactly why your work matters by reading what others have done

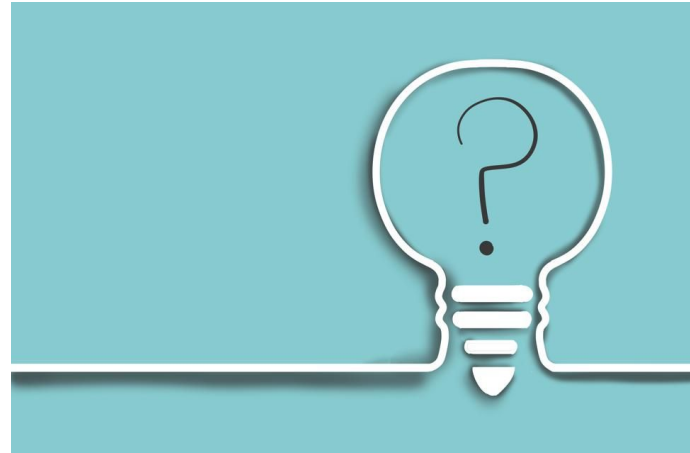


- It impresses judges when you show that you understand the situation

- essential for a strong project, and a strong data analysis

Statement of Problem & Hypothesis

- What problem are you trying to investigate?
- What do you predict will happen?



Materials & Methods

- Detailed list of materials with correct units!
- Explicit instructions on how exactly you did your experiment (someone should be able to replicate your results exactly!)

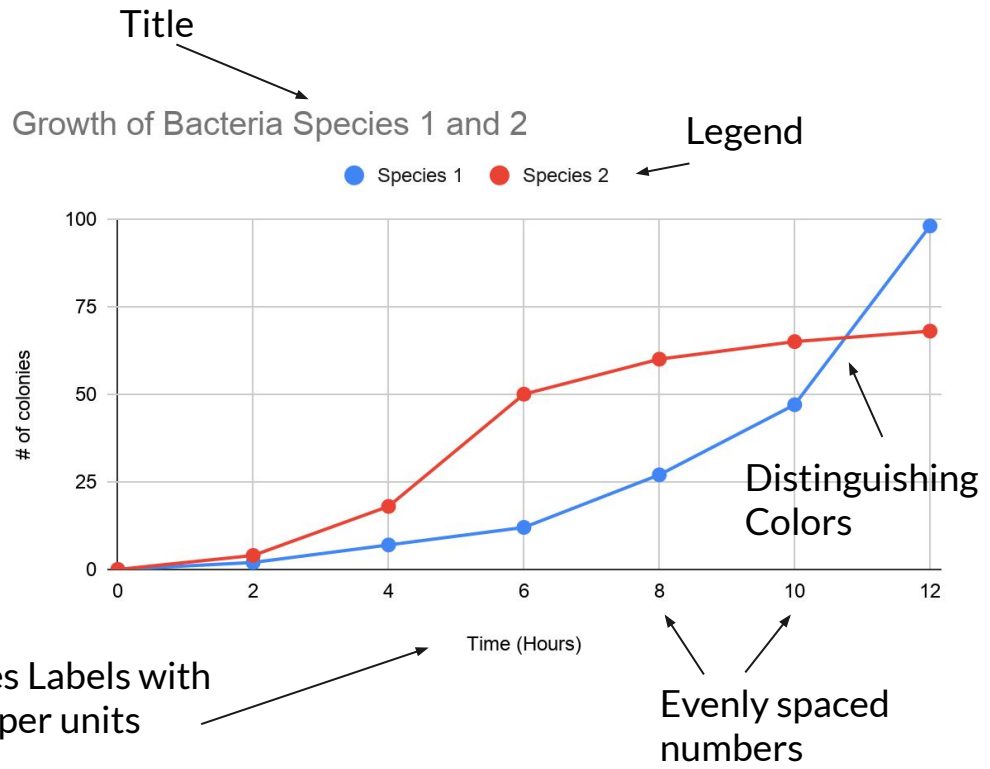


Results

- Show your data in tables and graphs
- Describe data exactly how it appears
- Make sure to label charts, graphs, tables correctly

Enrollment - University of Wisconsin-Stevens Point

	2000	2001	2002
Freshman	2200	2150	2000
Sophomore	2000	2050	2010
Junior	1992	1987	2000
Senior	1875	1990	1900
Graduate	500	475	510
Total	8566	8652	8420



Data Analysis

- An extension of the results
- Analysis of results by statistical tests

- e.g. calculating averages, errors, % differences, trendlines, p-values, regression analyses



Discussion & Conclusion

- Does the data support your hypothesis?
 - Why do you think it did or didn't?
- Talk about your results and connect it to your literature review
- Does your work agree with what others have found?



Sometimes the results of your project do not support your hypothesis. This is okay! (Great discoveries can come from mistakes and unexpected findings are interesting!)

Recommendations

- Possible experimental errors & fixing them?
- Improving your project?
 - How would you change your procedure?
 - What would you NOT do again?
- Continuing your project?
- Patenting/publishing your work?



Be prepared to answer these questions, as judges love asking questions like these!

Citations

NOTE: During screening and judging, sources are often checked!

Pro tip: use online citation sites, e.g. [citation machine](#) or [zoterobib](#)

- List of references (books, articles, internet sites, etc.) crediting sources used during research and experimentation process
- We recommend: Junior Division - min of **5 references**; Senior Division – min of **10 references**, (MLA or APA style)

MLA-- If you start with MLA, stay with MLA for all citations.

Gning, A., et al. "Analysis of the EPSRC Principles of Robotics in Regard to Key Research Topics." *Connection Science*, vol. 29, no. 3, July 2017, pp. 249–53. *DOI.org (Crossref)*, doi:10.1080/09540091.2017.1323456.

APA--If you start with APA, stay with APA for all citations.

Gning, A., Davis, D. N., Cheng, Y., & Robinson, P. (2017). Analysis of the EPSRC Principles of Robotics in regard to key research topics. *Connection Science*, 29(3), 249–253. <https://doi.org/10.1080/09540091.2017.1323456>

Appendix

Table showing the amount of time taken for the pink colour of the potassium permanganate solution to disappear

Day	Time for KMnO_4 colouration to disappear / s \pm 0.05s											
	Banana				Rice				Control			
	1	3	5	7	1	3	5	7	1	3	5	7
Trial 1	76.23	52.37	47.00	33.03	76.23	56.09	30.57	56.78	76.23	54.33	47.13	36.96
		52.98	48.87	34.31		54.59	31.00	57.23		54.67	46.98	36.78
		52.66	47.96	35.97		54.35	30.76	57.13		55.13	47.96	35.98
Trial 2		54.34	48.28	44.53		50.50	30.19	25.19		54.78	46.56	37.23
		55.65	47.88	45.66		49.86	28.20	26.63		54.65	46.78	37.65
		54.23	48.53	45.17		50.06	29.37	24.78		55.07	46.99	37.98
Trial 3		54.75	47.76	44.27		48.98	29.22	26.78		55.02	47.12	36.87
		54.17	48.22	43.18		49.43	30.45	25.87		55.34	47.56	36.45
		54.23	47.89	44.73		49.56	30.76	26.98		54.69	47.32	36.22
Trial 4		53.98	45.66	38.97		56.33	28.25	57.43		54.79	46.98	36.87
		54.37	46.76	39.24		57.19	27.91	56.91		54.99	47.51	36.98
		54.21	46.23	39.58		56.74	27.65	56.50		55.34	47.35	36.56
Mean	76.23	54.00	47.59	40.72	76.23	52.81	29.53	41.52	76.23	54.90	47.19	36.88
St Dev	0.00	0.91	0.97	4.50	0.00	3.32	1.25	16.18	0.00	0.30	0.38	0.56

- Includes raw data in its original form, such as:
 - Tables and charts
 - Notes/Logs/observations
 - Sample Participant Form
 - Diagrams and photos
 - Any other evidence collected during your experiment

Appendix: Notes for behavioral projects

- Only include a **blank survey/response form/questionnaire form** and **blank consent form**, as examples.
- NO human participant names and/or personal information or individual responses. Keep these materials in a separate folder in a safe location.



Writing a Strong Abstract

How to Write a Strong Abstract: A Tutorial

- Written LAST but will be first section of your report
- Is limited to 250 words or fewer
- Summarizes your project in 4 brief paragraphs
 - your hypothesis & statement of purpose
 - an outline of your procedure
 - a summary of results
 - your conclusion
- Written in past tense.

Abstract template: Science

- **Paragraph 1: Purpose of the Investigation** - why are you doing this? Introduce the problem, and your hypothesis
- **Paragraph 2: Procedure** - how did you do it?
 - General methods, highly summarized
- **Paragraph 3: Results** - what did you find?
 - Mostly results that directed toward your hypothesis
 - Other interesting results that you can discuss in depth
- **Paragraph 4: Conclusions** Short summary in 1 – 2 sentences
 - Includes further recommendations, ways to expand

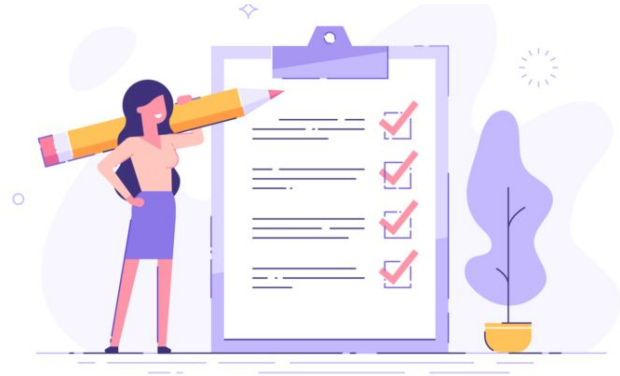
Abstract template: Engineering

- **Paragraph 1: Purpose of the Investigation** - why are you doing this? Introduce the problem you want to solve
- **Paragraph 2: Engineering Design**- first prototype
 - What was your first prototype? Reasoning behind design
- **Paragraph 3: Testing of Initial Design & Redesign**
 - How did you test the effectiveness of your device?
 - What did you change about the initial prototype?
- **Paragraph 4: Final Design Success** - Did it work?
 - Includes further recommendations, ways to expand

How to Write a Strong Abstract: A Tutorial

Best Practices – Revision is KEY

- Leave out unnecessary details and discussions
- Write in short, but complete sentences
- Avoid extra jargon and any slang
- Check for correct spelling, grammar, and punctuation!



Submitting for Digital Project Screening

Requirements

Screening is NOT the same as judging! I.e. Screening is **accepted/not accepted** whereas judging is a like a **grade**.

Purpose is to review each project to see that science and engineering principles are followed.

- **Screening Deadlines:**

6 th - 7 th Grades	Wednesday, January 20, 2021
8 th Grade	Friday, January 29, 2021
9 th – 12 th Grades	Monday, February 8, 2021
All Project Resubmissions	Thursday, February 24, 2021

- Create 10 slide Digital Project. This will be a much shorter version of your Project Notebook.

How to Submit Your Project for Screening: Instructions

- To create the digital project, use the templates and read all directions on: <https://www.gsdsef.org/teachers/screening-teacher>
- Slides: clean and easy to read, straight summary
 - no fancy fonts, rainbow colors, etc.
 - Check for spelling, grammar, and punctuation
- Make sure you click on SUBMIT in order for the screeners to see your project.

Projects that remain in DRAFT form cannot be accessed by screeners.

Digital Proj. Template Overview



Title Slide (name, grade, school, email, teacher, category)	Abstract	Background	Statement of Purpose/ Problem & Hypothesis (materials)	Procedure, description in your own words	
Procedure, photos of experiment if applicable	Results and c samp must be	Result statistica or engine prototy redesig	Results - more tables, pictures, graphs, short written summary	Conclusion & discussion	References- 5 & 10 min for MS & HS, respectively (MLA or APA)

Screening Results

- **Accepted** - you may apply to the fair
- **Not Accepted** - you cannot apply, due to:
 - Project is a demonstration, not an experiment
 - Too many inadequacies
 - Violated GSDSEF Rules
- **Resubmit with modifications** - make modifications requested by your Screener, will be re-evaluated for approval

Be sure to monitor your status often!
(My Account > My projects > Status)
You will not be notified by email
when your status changes

The Judging Slides

Judging Slides

- Due to COVID-19 - virtual fair
- Required to make a slide deck instead of a backboard
- ~10 min live presentation w/ judges
- Similar to screening slides, but emphasis on visuals
- Will only be sent after application & payment



Thanks for coming!

**Next: Workshop #5 - Practicing Presentations, on Saturday,
February 20th, 9-10 am**

Breakout rooms (if you have an updated zoom, please choose your room, otherwise rename yourself with the number, e.g. 3 Tony Stark) :

1 - Abstract Help

2 - Digital Project Screening Slides

3 - Life Sciences Advising

4 - Physical Sciences Advising

5 - Engineering Advising

