



CHECKLIST FOR THE PHYSICAL ARRANGEMENT OF THE STEM RESEARCH PAPER - DESIGN/MATHEMATICS

(Abstract, Safety Sheet, Endorsements, & Research Summary)

ALL ITEMS MUST BE TYPED

- ☐ **ABSTRACT** (Must be the [Official IJAS 2024-2026 Abstract](#))
 - ☐ Included in paper
 - ☐ Three (3) paragraphs with headings: Purpose, Procedure, and Conclusion
 - ☐ Typed single-spaced, 200 words or less
 - ☐ Check appropriate box - Design Investigation
- ☐ **SAFETY SHEET** (Must be the [Official IJAS 2024-2026 Safety Sheet](#))
 - ☐ Included in paper
 - ☐ Lists possible hazards, precautions described
 - ☐ If no hazards were possible a statement indicating this is included
 - ☐ Signed by student and sponsor
- ☐ **APPROPRIATE ENDORSEMENTS AND ATTACHMENTS** (If applicable)
 - ☐ Included in paper
 - ☐ Endorsement signed and stamped by the CPS Scientific Review Committee (SRC) member
 - ☐ Signed by student and sponsor
 - ☐ All pages of completed endorsement and proper documentation is attached, if necessary
- ☐ **TITLE PAGE OF RESEARCH SUMMARY (SIGNATURES NO LONGER REQUIRED)**
 - ☐ Formatted as on [example](#)
 - ☐ Title of project
 - ☐ Design/Mathematics
 - ☐ Name(s) of student(s)
 - ☐ School
 - ☐ Grade
- ☐ **TABLE OF CONTENTS**
 - ☐ All subsections are listed with page numbers
 - ☐ Pagination is accurate
- ☐ **ACKNOWLEDGMENTS**
 - ☐ Credit is given to those who have helped with the research

☐ REAL WORLD PROBLEM/NEED

- ☐ Defines a need or real-world problem and established design criteria
- ☐ Provides adequate background information about the topic
- ☐ Use of third person is evident
- ☐ Logical and/or related grouping of information
- ☐ Accurate spelling, grammar, quotations and citations and page set-up
- ☐ Parenthetically cited

☐ DESIGN PLAN

- ☐ The apparatus and materials used are listed
- ☐ The explanation of what was done must be clear and detailed enough so that the reader could duplicate the work.
- ☐ Explain the workings of any apparatus that was constructed or used.
- ☐ A decision matrix is used with the criteria by which the prototype and redesign will be evaluated
- ☐ Includes a flowchart
- ☐ Drawings and diagrams that are clearly labeled, and photographs are appropriate if they enhance and clarify your explanation. Step-by-step, chronological procedures are present and replicable

☐ RESULTS AND DISCUSSION

- ☐ Constructing and Testing the Design Prototype
 - ☐ A description of the prototype/computer program/mathematical algorithm is included.
 - ☐ The prototype has been tested and the results have been discussed.
 - ☐ After the initial testing, design modifications are made and the redesigned product is tested and evaluated again .
 - ☐ May involve targeted users and/or analysis of data sets. (This may or may not include traditional data such as tables and graphs).
- ☐ Results of Testing and Redesign
 - ☐ Testing results have considered the parts and subsystems that required redesign in order to meet the performance criteria.
 - ☐ The redesign shows the changes in parts and subsystems.
- ☐ Redesign and Retest
 - ☐ This portion of the design process gives evidence that changes in design were made to better meet the performance criteria established at the beginning of the project.
 - ☐ Test results may be included in tables, if applicable.

☐ Data analysis/validation may be present.

☐ CONCLUSION

☐ Evaluation and interpretation of data/results is present

☐ Refers back to need/real world problem

☐ Is valid and limited to the results of the investigation

☐ REFERENCE LIST ([Purdue University OWL APA Formatting and Style Guide - 7th Edition](#))

☐ References in this list are actually cited in the paper

☐ References from a variety of at least 12 sources and are current (copyright within the last seven years)

☐ Reference list is alphabetical

☐ Proper APA format is used for all references

☐ Titled "Reference List" or "References Cited" not "Bibliography"

☐ OTHER REQUIREMENTS

☐ STEM Project Paper clearly and concisely explains the project

☐ Exhibitor's last name and page numbers in the top right corner of header of all pages after Table of Contents

☐ All pages are numbered in the top right hand corner of header after Table of Contents and referenced in the Table of Contents

☐ Typed double-spaced, one-inch margins on all sides, double-sided is permitted

☐ Standard type font and size (ex. Times New Roman 10 - 12 point font)

☐ STEM Research Summary (Abstract, Safety Sheet, and Research Summary) is no more than 30 pages (33 if an endorsement is included)

☐ Paper is well typed, with correct spelling, grammar and punctuation

☐ Voice should be consistent throughout the paper. Scientific writing avoids the use of I or We. Most formal writing, including APA papers, uses the **third person** point of view. Third person point of view makes ideas sound less subjective since it removes direct reference to the writer.

☐ Artificial Intelligence may be used as a project resource but must be cited and given proper acknowledgements. All materials presented must be in the researcher's own words.

☐ Indicate Design/Mathematics Investigation on all forms and pages where required