RESEARCH ARTICLE PUBLICATION GUIDELINES

Process to be used: Whole System Design Thinking Process

Scientific research articles provide a method for scientists to communicate with other scientists and the larger community about their discovery, investigation, and analysis.

The research article submission should contain the following sections in the given order:

Sections	Details
Title	• Make your **title specific enough to describe the contents of the paper**, but not so technical that only specialists will understand. The title should be appropriate for the general audience.
Author(s)	• The person who did the work and wrote the paper is generally listed as the first author of a research paper. • For publication, other people who made substantial contributions to the work are also listed as authors. Ask your mentor's permission before including his/her name as co-author
Abstract	• An abstract, or summary, is published together with a research article, giving the reader a "**preview**" of what's to come - It should be a **little less technical** than the article itself - It should be one paragraph, of **100-250 words**, which **summarizes the purpose, methods, and conclusions of the paper** - Write the abstract last, so you have all the information needed to summarize. But it should be attached/inserted before the introduction section.
Introduction	• **Introduce the problem and the need.** - The introduction summarizes the background of the issue you are trying to solve. - Must include a brief analysis of current solutions and the gaps in those solutions. - About two paragraphs should be enough. • **QUESTION:** End the introduction with the **specific question** you asked for which you would like to investigate further and find a solution
Discovery of Topic	• Explain how you narrowed down the problem scope? How did you derive the question? Explain in one or two paragraphs. - **Include the process/steps** taken to research and understand the problem. Example: interview people, conduct surveys, types of questions you asked (list a few examples of questions asked during problem discovery), books, articles, websites used, etc. **Share your analysis** of the data collected to determine the question for this research.
Solution Scope (Hypothesis)	• **DEFINE** the solution context – write a concise passage with an overview/definition of your solution • **IDENTIFY** and list the functions and features of your solution • **INTEGRATE** nature's life principles – briefly share how your solution will adopt nature's life principles
Inspirations from Nature	• **DISCOVER** natural world – explore and share details of your inspirations from the natural world that you have identified to mimic for your solution • **ABSTRACT DESIGN STRATEGIES** – briefly explain how you would emulate nature's models and strategies to fulfill the functions and features for your solution

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Solution Design (Procedure)	• **This is the main portion of the article that describes your solution. Explain it in great detail as elaborate as possible with both scientific and design details** - Must include several well written paragraphs supported by **illustrations/ tables / graphs.** - Use **flow-charts** to explain the steps and functions of your solution
Next Steps – Preparing for Prototype	• **MATERIALS and METHODS** detail the materials and procedure for moving forward with the prototype - Include possible funding sources, additional research, human expertise needed, etc., that would be required to move this solution to the testing phase. • **TEST [optional]**– if you had the opportunity to test your solution, include the **testing procedure and results**. Include information such as -Did you test at the problem source, or did you emulate the problem for testing? Did you have to make any compromises to your solution due to lack of materials or other resources? Do you propose any changes to your solution based on the testing results?
Discussion	• This is your **CONCLUSION** - Does the solution proposed support your original question mentioned in the introduction? - Emphasize why your solution is relevant.
Acknowledgements	• In this section, you can thank those who either helped with the research, or made other important contributions, such as discussing the problem, commenting on the solution, mentor(s), peers, etc.
Industries and Sectors applicable for this solution	• Specify the industries and sectors who might be interested in this solution
References	• In the References section list literature citations in **alphabetical order**. ***Example:*** Indigo, A. C., and Mauve, B. E. 1994. Queer place for qwerty: gene isolation from the platypus. Science 275, 1213-1214. Magenta, S. T., Sepia, X., and Turquoise, U. 1995. Wombat genetics. In: Widiculous Wombats, Violet, Q., ed. New York: Columbia University Press. p 123-145. Scarlet, S.L. 1990. Isolation of qwerty gene from S. cerevisae. Journal of Unusual Results 36, 26-31.