



## The OHIO ACADEMY of SCIENCE

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# Style or Format Guidelines for STEM Student Reports

Adapted from <https://ohiojournalofscience.org/about/submissions#authorGuidelines>

**S**TUDENTS COMPLETING STEM RESEARCH PROJECTS for Local, District, and State science days shall write reports with section headings in the order below. Guidance publications of The Ohio Academy of Science should always include the section headings and definition text, unless space does not permit including both. Other Academy pre-college student programs, such as Believe in Ohio, may have specific format or style variations that must be followed, but should endeavor to match the following as closely as possible.

**Title.** A title should be as descriptive and succinct as possible, especially for field-based studies. Avoid “cute” or “trick” titles. Stick to the science.

**Author names.** Include author names and affiliations and designate corresponding author by providing complete mailing information, phone number and email address.

**Include date.** Use this format: day month year (e.g., 25 August 2020).

**\*Abstract.** Within 250 or fewer words, using simple, declarative sentences, state the contents of the paper including the study’s purpose, question or hypothesis, engineering design, methods, results, and conclusions or significant new understandings.

**Key Words for Indexing.** Provide 3 to 5 terms (metadata) for indexing the submission. Separate terms with semicolons (term1; term2; term3). Not required for pre-college students unless they submit a manuscript to The Ohio Journal of Science.

**Running head.** State 3 to 5 words, primarily from the first few words of the title, which will be used at the top of the printed page in the final layout. Not required for pre-college students unless they submit a manuscript to The Ohio Journal of Science.

**Introduction.** Describe the knowledge and cite the literature that gave rise to the project’s objective, goal, problem, question examined by, or the hypothesis or engineering design posed for the research.

**Methods and Materials.** Describe the research design, the methods and materials used in the research (subjects, their selection, equipment, laboratory, or field procedures), and how the findings were analyzed.

**Results.** The text of the results should be a descriptive narrative of the main findings. This section should not list tabulated data in text form. Parenthetically include references to figures and data tables. Indicate ( $n=x$ ) the number of trials, samples tested, or subjects surveyed. Here or in the Discussion section, use the term “significant” only if the results of a statistical test are reported.

**Discussion.** Compare and contrast the data collected with that previously reported in the literature. State the extent to which the results answer the research question or support the hypothesis. Include conclusions or significant new understandings. Briefly describe the limits of the study and suggest or describe additional research needed only if you can be exceedingly explicit.

**Acknowledgments.** Recognize colleagues, mentors or institutions that provided financial or other support for the research or preparation of the manuscript.

**Literature Cited or References.** Arrange references to scientific literature cited in the text alphabetically by last name of first author. There must be a 1:1 concordance between in-text (name-year) citations and the list of references. Do not include references that are not cited in the text.

## Terms to avoid

“Works Cited” and “Bibliography” are terms that derive from the Modern Language Association writing style but should not be used in STEM research reports. Use Literature Cited or References and include ONLY sources with in-text citations. A bibliography in science usually contains hundreds or thousands of references and is not an appropriate report heading or substitute for Literature Cited or References.

Footnotes—permitted in both fiction and non-fiction writing—are generally not used in scientific reports except to clarify possible questions within data tables, noted by asterisks, daggers, or other symbols to avoid confusion with numerical data tables.

### \*How to prepare an abstract

Adapted from <https://static1.squarespace.com/static/545d32b5e4b0719cb5aae580/t/5d8002dbf4ff-1d21e7f321d2/1568670427939/How+to+prepare+abstract.pdf>

**A**N **ABSTRACT MUST BE PREPARED** for STEM student project reports. An abstract is a concise summary of the educational, scientific, engineering, or technological research contents of the paper, and not merely a general description of what the paper is about. Tell what the specific facts are, not what they are going to be when you talk. Avoid personal pronouns. Quality abstracts are highly structured and contain all the following elements: (1) background or introduction including goals, objectives, purpose, problem and hypothesis, (2) methods and materials, (3) results, data or observations, and (4) discussion or conclusion(s). Phrases like “will discuss, will review, will talk about, or will present” are unacceptable in an abstract. All important facts should be stated with brevity, but not such sparing use of words as to leave ambiguity. Abstracts should be 250 words or fewer. Tables and graphs should not be included. New techniques or new apparatus and their functions should be mentioned. New constants, critical data or formulae should be included. Names of new species should not be listed in the abstract but use full scientific names for all organisms. Use the term “significant” only if you state the statistical test(s) used. Always define the sample(s), population, or trials ( $n=?$ ). NEVER use the phrase “Results show” without first stating the results. The value of abstracts is real and considerable, not only for those in attendance, but also for others unable to attend. The first author of multi-authored abstracts must obtain permission from all authors to submit the content of the abstract.

Abstracts shall be informative and not indicative. See Section 6 from: [https://groups.niso.org/apps/group\\_public/download.php/14601/Z39-14-1997\\_r2015.pdf](https://groups.niso.org/apps/group_public/download.php/14601/Z39-14-1997_r2015.pdf)

Guidelines approved by the Board of Trustees of The Ohio Academy of Science. September 2020.

## NOTES