

NMJAS Paper Competition Resources

Guidelines for Technical Research Papers for the New Mexico Junior Academy of Science Paper and Oral Competition

Technical papers differ from other literary papers in their composition. The following characteristics distinguish science research papers: the abstract; captioned text; author-date citations; and a list of references.

You must first do an experimental science investigation. Keep careful record of everything you do and all your results. Then write your paper. Your paper must include the following components, each of which should start on a new page.

Title Page: Title of paper, student's name, age, and grade; school name, address, and phone number; student's home address and phone number; and the name of the teacher or sponsor who endorses the paper. Both the author and the teacher/sponsor should sign the title page. Please type the title at the top right of each page of the manuscript.

Acknowledgments: On this page thank individuals who have helped you in any way with your project.

Abstract: A brief summary of the content of your paper. In one or two paragraphs, define the problem, describe the methods you used in your project, summarize the results, and state the conclusions. The abstract should be on a separate page and is not numbered.

Body of Paper: The body of the paper is composed of four main sections; Introduction; Methods; Results; and Discussion or Conclusions.

Introduction: Describe the background for your work; state the problem or questions, and the goals. In describing the work or conclusions of others credit is given by the use of author-date reference citations. The complete reference is listed in the References section.

Methods: Summarize in your own words what you did, what materials you used, and what instruments you used. Describe the work so someone else could duplicate it.

Results: Describe the results of your experiment, mathematical work or design project. Raw data include all observations or data that you obtain. These are not included in the body of the paper, but can be included in the Appendices. Analyze your data, then present them in the form of graphs, tables, or descriptions. Do not draw conclusions in the Results section, reserve that for the Discussion section.

Discussion: Describe your conclusions (even the obvious ones) and, if appropriate, discuss suggestions or implications for further work.

References: This is the place where you list the complete information about the references you cited in the body of the paper.

Glossary: In general, define new terms in the body of your paper. If you have many new terms or symbols, you may need a Glossary.

Limit papers to 1500 words, excluding references, glossary and appendices.

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New Mexico Junior Academy of Science Paper Competition Manuscript Judging Form

Paper Title: _____

Author: _____

1. **Paper details** (5 points) Has the author appropriately handled title page, acknowledgments, definitions of new or useful terms, references, and organization? _____

2. **Abstract** (10 points) Does the abstract briefly describe the work procedures and major results? _____

3. **Introduction** (15 points) Does the introduction set the background for the work and outline the paper's organization? Does the paper represent the student's own original work? Does the introduction clearly define questions or the problem? Does it make clear the goals? Does it cite previous work and discuss its importance? _____

4. **Body of the Paper** (25 points) Does this section clearly state the problem? Does it describe the procedures? If the work involves mathematics, does it give background for the mathematics? If the work involves a computer program or engineering design, does it state the steps in the process? Does this important section contain all the relevant information needed by others who may want to repeat the work? _____

5. **Results** (20 points) Has the author presented the results clearly and in sufficient detail? Do the results follow from the work itself? _____

6. **Conclusions and Recommendations** (20 points) Has the author presented correct and logical interpretations of the results? Does the author identify sources of recognized error? Do the recommendations logically follow from the work itself? _____

7. **Grammar** (5 points) Does the paper follow conventional rules of punctuation, spelling, and grammar? Does the vocabulary represent at least the grade level of the author? _____

Total (100 points max.) _____

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Magic Rules For Giving An Illustrated Talk

by David Pearson, Ph.D.
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It should not be very difficult to organize yourself to communicate effectively if you have the following...

1. A good idea of how your work fits into the "big picture" of a major scientific research program. In other words,
 - o Why is it important?
 - o A definition of what you were attempting to investigate.
 - o Define your project.
2. Knowledge of the methods you used and why you used them.
3. A clear description of your findings, even if (as is often the case) the work is incomplete.

PUTTING IT TOGETHER

1. **Gather your references, lab book, other data, scratch paper, and writing tool.** Sit in a quiet place with a large surface so you can spread your materials.
2. **Make a rough outline with a few words or statements under each heading.** At each point make a note of the visuals you might want to use. You might want to include quick sketches of the visuals. Introduction and background: Here you include the "big picture" information and define your project.
3. **Methods:** How did you proceed? **Conclusions:** What does the above mean? Why is it important? What will happen next?
4. **Acknowledgments:** It is always better to give too much credit to those who helped you than not enough.
5. **Take the outline to your mentor and let her/him critique it.** Come to an agreement on what should be included.
6. **When you've decided what will be presented, refine the outline.** Do not write the talk out word for word: the best talks usually come from the briefest outlines.
7. **Prepare your visuals.**
8. **Practice, practice, practice:**
 - o Go into a room alone with your outline and your visuals.
 - o Stand.
 - o Decide on an opening sentence or two and memorize them.
 - o Speak aloud even though no one can hear you.
 - o Stop and start over as often as necessary to make it sound right. Practice using your visuals as you talk.
 - o Use a pointer to direct attention precisely.

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- If necessary, decide what to eliminate to pare your talk down to the required length.
- Practice the talk until you are comfortable with it.
- Finally, work with audiences such as science classes, science club, teachers, mentors, and family who will listen and give you feedback on your presentation.

PRESENTING IT: Here are a few special things to remember.

1. **Voice:** Don't shout, but do speak up and project.
2. **Eye contact:** Try to establish individual eye contact with as many people as possible.
3. **Body language:** Stand straight; smile; move around a little; have a good time.
4. **Pointer:** Remember to use it effectively.
5. **Audience questions:** It's great if you know the answer; if you don't, don't fake it. Just say "I don't know."
6. **Visuals:** Make sure your Power Point presentation is on a portable thumb drive AND that you get to the competition room early enough to load your presentation and make sure it's working. Overhead transparencies and carousel slides are, for the most part, obsolete at this point, so get familiar with Power Point!

PEARSON'S MAGIC RULES FOR PRESENTING A GOOD ILLUSTRATED TALK

1. Start planning early.
2. Establish yourself as a person with your audience before you have the lights turned off and start showing slides.
3. Neither write out your talk word for word nor memorize it.
4. Use effective graphics.
5. Do not try to impress anyone with how much you know by using scientific jargon or many technical terms, especially if you haven't clearly defined them.
6. Don't PANIC! Look out at the audience, take one more slow, deep breath and SMILE before you say a word.

"EVERYTHING ELSE WILL TAKE CARE OF ITSELF." D. Pearson

Presented at a meeting of the Southern California Junior Academy of Sciences at California State University at Los Angeles in March, 1991; modified by Gloria J. Takahashi; adapted by STEM Education Outreach Programs, University of New Mexico, 2008

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New Mexico Junior Academy of Science Paper Competition Oral Presentation Judging Form

Paper Title: _____

Author: _____

1. **Delivery** (20 points) Do the speaker's voice, poise, and eye contact make a favorable impression? Does the speaker have a smooth and clear delivery? *Presenters may use notes, but should not read from them.* _____

2. **Organization** (20 points) Does the presentation have a logical organization? Does the speaker make clear what was done and how it was done? Consider the background, key experiments, methods used, results, and conclusions. _____

3. **Visual Aids** (10 points) Did the presenter use visual aids appropriately? _____

4. **Familiarity with Subject** (25 points) Does the presenter demonstrate adequate knowledge of the subject? Did the presenter answer questions fully and clearly? _____

5. **Results** (20 points) Has the author presented the results clearly and in sufficient detail? Do the results follow from the work itself? _____

6. **Time** (5 points) Speakers may use 10 minutes for the presentation and 5 minutes for questions. _____

Total (100 points max.) _____