Westwood Science Fair

2019-2020

Science Fair Project Guide

With Mrs. Charbonnet and Mrs. Floyd's timeline

For official rules, forms, and information see:
www.societyforscience.org/isef
www.sseffflorida.com
http://www.sbac.edu/pages/ACPS/Departments_Programs/DepartmentsLZ/SciFair

Helping Your Child with a Science Project

Children are naturally curious. An excellent way to teach them to develop problem solving skills is to direct their curiosity toward scientific investigation. A scientific investigation that uses the scientific method helps develop your child's thinking skills.

As a parent, you play one of the most important roles in your child's education. The encouragement, guidance, and support that you give your child will not only help him or her develop valuable thinking skills, but the time you and your child spend working together will deepen the parent-child relationship that lasts forever. There are many things you can do to help your child with a science project without doing the project for them. Please check the official website: www.societyforscience.org/isef

Helpful Websites:
www.societyforscience.org/isef
www.sseffflorida.com
http://www.sbac.edu/pages/ACPS/Departments_Programs/DepartmentsLZ/SciFair
http://sciencebuddies.org

10 Tips for Helping:

1. This is your child's project and should reflect his or her interests. Listen to their questions. Those questions often make great project ideas.
2. Although this is your child's project, and is to be his or her own efforts, there is no substitute for your praise and support. Encourage your child and let him or her know you are interested in his or her idea.
3. Help your child with skills that he or she has not yet mastered, such as organization, measuring, calculating, and construction.
4. Help your child follow the schedule to complete the project on time. Post schedule dates on the refrigerator.
5. Provide a time and area in your home where your child can work without interference from television or other distracters.
6. Help your child acquire the materials needed for the project.
7. Help your child take necessary safety precautions to insure a safe project.
8. Provide transportation to places such as libraries, museums, nature centers, and resource persons, etc.
9. Realize that the real prize of a science project is the development of critical thinking skills, not the blue ribbon presented by a science fair judge.
10. Contact us if you have questions.

Rules

The rules of the Westwood Science Fair are consistent with the Regional, State, and International Science and Engineering Fair (ISEF) and have been developed with the belief that all students should conform to the same regulations as those governing the work of professional scientists. The guidelines for some types of research, such as vertebrate (including human) experimentation, are particularly stringent. Adhering to these guidelines is not only a learning experience about what it is like to do real scientific research, but it also ensures that the students do not unknowingly violate state and federal regulations.

Therefore, as teachers at Westwood we strongly discourage students from experimenting with vertebrates of all kinds, including humans. We wish to avoid risks to humans and other vertebrates, and feel that the additional ISEF paperwork required for such experiments is often overwhelming for both the researcher and the human subjects. Please check the official website**: www.societyforscience.org/isef** for more details.

All projects conducted at the University of Florida must have UF environmental health and safety approval. Please check the following websites:

Minor's registration document:
http://www.ehs.ufl.edu/programs/bio/minors/

Categories…
Listed below are the 13 categories designated by the Florida Science and Engineering Fair. Students select specific subject areas from these categories for their perspective project.

Animal Sciences
Behavioral & Social Sciences
Biomedical & Health Sciences
Cellular/ Molecular Biology & Biochemistry
Chemistry
Earth & Environmental Sciences
Engineering
Environmental Engineering
Intelligent Machines, Robotics Systems Software
Mathematics & Computational Sciences
Microbiology
Physics & Astronomy
Plant Sciences

6th Grade Science Fair Due Dates 2019-20

	Due Date
Topic Animal Sciences, Behavioral & Social, Biomedical & Health, Cellular/ Molecular Biology & Biochemistry, Chemistry, Earth & Environmental, Engineering, Environmental Engineering, Intelligent Machines Robotics & Systems Software, Mathematics & Computational Science, Microbiology, Physics & Astronomy, Plant Science.	**Aug. 29**
Title and Purpose Title: In the form of a question (How does X Affect Y?) Submit for approval. Purpose: What will you learn and why is this topic relevant to the scientific community?	**Sept. 5**
References/Bibliography Five sources of information about your project. List them using the correct bibliographic format. Include at least one book and one Internet source.	**Sept. 19**
Review of Literature/ Annotated Bibliography An original, three-page summary of all you have learned from the sources of information above. This paper must be written in your own words.	**Sept. 19**
Hypothesis A possible answer or solution to your question, based on your research above. Should be written in an "If…then…because…" form.	**Sept. 26**
Materials and Procedure Materials: A list of the items necessary for you to perform your experiment. Procedures: A step by step description of your experiment from beginning to end. Include a list of your independent variable, dependent variable, constants, and control.	**Oct. 3**
Experiment / Logbook Check/Forms/Risk and Safety Begin collecting preliminary results. Bring Logbook to class for the next 4 weeks.	**Oct. 10**
Table, Chart, or Graph – Set up Assemble all data into appropriate tables, charts, and/or graphs	**Oct. 17**
Analysis and Conclusion Submit a one-page summary of the entire experiment. Answer the following questions: Was the original hypothesis supported or rejected? Why or why not? Was your purpose achieved? Why or why not? Is additional research needed?	**Oct. 31**
Abstract A summary of your entire project. It should be no more than 250 words long and include the purpose, procedure, data, conclusion, and applications. Use the **State abstract form.**	**Nov. 7**
Final Bibliography A complete list of all informational resources used in this project.	**Nov. 7**
Rough Draft of Project Notebook Assemble all the above steps, with a title page, table of contents, etc. and submit for editing	**Nov. 7**
Final Draft of Project Notebook Assemble all steps in final form, ink or typed.	**Nov. 14**
Display Board Display boards should be neat and organized, with all steps placed in the proper location. Projects will be presented in class.	**Nov. 21**
Westwood Middle School Science Fair Parent judges and volunteers needed!!!	**Dec. 5**
Alachua Region Science Fair at Santa Fe College	**Feb. 13**
State Science and Engineering Fair of Florida in Lakeland	**Mar. 24-26**

PROCEDURE FOR WRITING A BIBLIOGRAPHY
(WORKS USED LIST)

A bibliography or words used list is a list of sources of information used while researching a topic. The bibliography should be in alphabetical order by author's last name. If the author's name is not given, list the title first and alphabetize it by the first important words of the title. Each bibliographical reference begins with "reverse indentation."

All papers should be presented on standard sized white paper using blue or black ink, typed, or word process. Please use the front side of the paper only.

Remember you may use an online source like easybib.com that will help you through the steps with the ISBN.

I. For Books

Author's last name, Author's first name. Title of the Book Underlined. Place of Publication: Publisher, copyright year pages.

Example: Snow, Theodore P. The Dynamic Universe. St. Paul. Minnesota: West Publishing Co. 2013

More than one author. Use the same procedure as above but include all authors.

If the book has an **editor**:
Editor's last name, first name, Ed. Underline the Title. City: Publisher, year. Pages used.

Example: Charbonnet, Sara, Ed. The World of Science Projects. Gainesville, FL: Hogtowne Publishing Co., 2017, pages 4-19.

II. For Encyclopedias

Author's last name, first name (if given). "The Title of the Article in Quotation Marks." Underline the Name of the Encyclopedia. Copyright Year. Vol, page

Example: McCarthy, Shawn. "Air." The World Book Encyclopedia. 2099. Vol 1, page 564

If no author's last name is given, start with the name of the article.

Electronic: Author's last name, Author's first name (if given). "Title of the Article in Quotation Marks." Underline the Name of the Encyclopedia. Copyright year.

III. Magazine Articles

Author's last name, Author's first name. "Name of the Article in Quotation Marks." Name of the Magazine Underlined. Month and year, Pages.

Example: Shrum, Susan H. "America's Ancient Skywatchers." National Geographic. March 2023, pages 76-107.

IV. Newspaper

"Title of the Article in Quotation Marks." Title of the Newspaper Underlined. Date, page.

Example: "Westwood Students Excel in Science Fair." The Gainesville Sun. January 25, 2014, 1.

V. Pamphlet

Author's last name, Author's first name. (if given, otherwise skip) Title of Pamphlet Underlined. City: Publisher, year of publication.

Example: Adams, Isabel. Identifying Rocks of Arkansas. Little Rock, University of Arkansas Update, 2019.

Pamphlet from a committee report of a company:
Title of Pamphlet Underlined. A report by the name of the committee. Place of publication: Publisher, year.

Example: Adolescent Stress Management. A report by the Committee of Adolescent Mental Health. Washington, D.C.: Georgetown University Press, 2043.

VI. Interview

Last name of person, First name. Personal (or telephone) interview. Person's title. City, State, Date.

Example: Einstein, Albert. Personal interview. Professor of Physics. Not Really, N.J. June 4, 2076.

VII. Letter

Author's last name, First name. Letter to (Person's title). City, State, Date.

Example: Bush, George W. Letter to Bobby Joe Smith. President of the United States. Washington, D.C., Nov. 20, 2013.

VIII. Television Program

Program name underlined. Production company. Network name. Station call letters, City, Date.

Example: Bill Nye the Science Guy. Science is Fun Productions. PBS. WUFT, Gainesville, FL., Jan 28, 2019.

IX. Internet Search

Author's last name, first name (if given). "Title" webpage sponsor. Date. <http address>

Example: Armstrong, Neil. "Science Fair Project Designs Moon Rocket" NASA. Sept. 25, 1956. <http://spaceline.imaginarysite.nasa.gov>

A CONTROLLED EXPERIMENT

To conduct a scientific investigation care must be taken to follow experimental procedures. You must design an experiment to test the hypothesis. When planning your experiment, remember to keep everything the same (**constants**) except the single variable being tested (the **independent variable**). A **variable** is something that is changed in the experiment. It is what you are testing. Everything else must be the same and only one variable or condition is altered or changed. A control group should be used when conducting an experiment. A **control group** is a standard for comparison. This group receives the same attention as the test groups; however, it will not be influenced by the variable the other groups are testing. The variable measured as a result of the experiment is called the **dependent variable**.

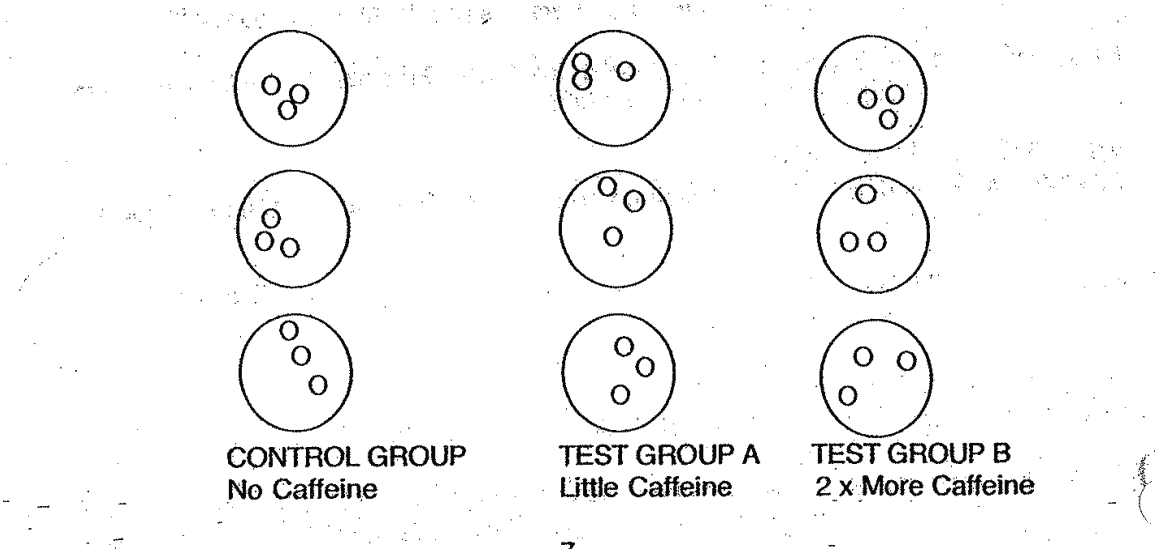
Here is an example:

PURPOSE: The purpose of this experiment is to see if caffeine affects the heartbeat of water fleas.

HYPOTHESIS: If water fleas are given soft drinks of different caffeine concentration, then the higher the caffeine concentration the faster the heartbeat because caffeine is a stimulant.

The **INDEPENDENT** variable will be the different amounts of caffeine used, so all other conditions will be kept constant. This means the following:

1. The water fleas must come from the same source and be chosen randomly.
2. All fleas must be kept in the same size containers, the same amount of water, etc.
3. All fleas must be kept at the same temperature.
4. More than one water flea should be used in each test group.
5. One group, the **CONTROL GROUP**, receives no caffeine.
6. Set up two other test groups (or different brands, whatever you decide), one receives a certain amount of caffeine, the other receives twice as much.



Setting up a Logbook for Science Research

1. You will need a composition notebook, with sewn pages NOT a spiral or glued notebook. This will be called the "LOGBOOK" since you will record not only your thoughts as you contemplate a problem for your science project, but also record all the pertinent information as you prepare for the experiment, record your data, and analyze your data. This LOGBOOK will be graded throughout the science project process. The LOGBOOK is critical to competitions, do NOT remove any pages or use whiteout, if you make an error cross it out with a single line. If you make errors while collecting DATA you should write your initials and date beside the line.

2. Set up the logbook writing ALL entries in INK. The right column shows examples of the logbook pages.

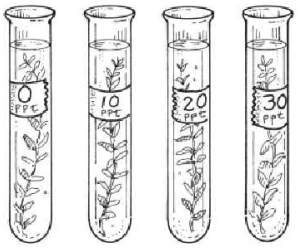
Number each page on the front side (pages on the right) in the top right corner. Make page 1 the title page with your name date. Please decorate.	Name And Decoration 1
Make page 2 the Table of Contents Include the page where the topic begins. You do not include every page on the Contents page. Do not skip lines.	Table of Contents Page 3 – Monthly Timelines Page 8 – Ideas 2
The next 5 pages will be labeled with each month you have through December and "Timeline". Each day you work on the logbook should be documented with a brief description on ONE line of what was done. You only write down information about the project. Judges like to see how you developed the project. Timeline pages don't need a date in the upper corner since the page has the dates it covers.	August timeline – (example) 14th – purchased logbook 29th – received assignment 31st – preliminary idea developed 3
Each aspect of the project will be written on a separate page(s) of the logbook.	Ideas development/proposal 8
Instructions and Instructional material given to you in class	Topic Include Page numbers
Research – with outline for introduction	Include Page numbers
Plans for data – plans for chart, graphs and statistics	Include Page numbers
Results	Include Page numbers
Draft Analysis	Include Page numbers
Draft abstract	Include Page numbers

LOGBOOK

RECORDING OBSERVATION AND DATA

Use a logbook for recording all measurements and observations. Record all information about your science project each day. Consider the following

- Make sure that you include accurate metric measurement in your data.
  Give masses in grams, volumes in milliliters, and linear measurements in centimeters or meters.
- Keep lots of notes! It is better to have too much data than not enough.
- Do not erase. If you make a mistake, draw a single line over the mistake and make a correction next to it.
- Write down the date and time when making observations.
- Keep track of the materials used, their quantities and cost.
- Take photographs and video during your project. These can be used as part of your display board. Get pictures of you doing your experiment.



FORMS:

All participants need forms 1, 1A, Reserch Plan and 1B, which must be completed and dated before the beginning date for the experiment.

Projects with safety concerns, humans, vertebrates and potentially hazardous biological or chemical agens will need to complete additional forms.

How to write an Abstract

Abstract must be on this year's official Florida State Science and Engineering Abstract Form. Check the SSEF of Florida website.
Abstract Heading must be in the following form:

TITLE (IN CAPITAL LETTERS)
Last name, First Name, Middle Initial.
School, Alachua Region, City, State

(No Address, teacher's name, school, references or bibliography should appear)

Abstract Text:

Write a one page summary (Maximum of 250 words.) It should include:

a. The purpose of the experiment
b. Procedures used
c. Data
d. Conclusion

It may also include possible research applications.

A copy of the abstract must appear on your display board (see page 13) and you should keep several copies on hand to give to judges.

Be sure to answer the questions at the bottom of the form. Please read each one carefully and answer appropriately. Sign and date the form.

PROJECT NOTEBOOK LAYOUT

Final draft should be typed, or written neatly in blue/black ink. Please use front side of the paper only.

TITLE PAGE
(Put your title in the middle of the page in ALL CAPITALS

Your Name
Period
School
Grade
Date
Science Teacher

TITLE
(HOW DOES __AFFECT ___?)
(Put your title in the middle of the page in ALL CAPITALS)

(Blank Page)

ABSTRACT

Table of Contents

PURPOSE

The purpose of this experiment is to find out….This is important because…

Review of the Literature
3 page report

What background information did you find?

.

HYPOTHESIS

If…(Tell what you will do)…Then…(tell what you think will happen)….because (how can you explain your guess?)

MATERIALS

List all the supplies needed for your experiment. Include amounts and sizes.

PROCEDURES

Give step-by-step directions of how to do your experiment. Include independent variable, dependent variable, control, and constants.

DATA AND OBSERVATIONS

Include everything that happened and what you observed as you did your project. Include charts, tables, graphs, and pictures. This section may be several pages long.

ANALYSIS AND CONCLUSIONS

2-5 paragraphs that tell the results of your experiment. Restate the purpose. Explain: Did you accomplish what you wanted to? Would you do it the same way if you had to do it over? What additional experiments would you recommend to add to your research?

BIBLIOGRAPHY

ACKNOWLEDGEMENTS

(Optional)

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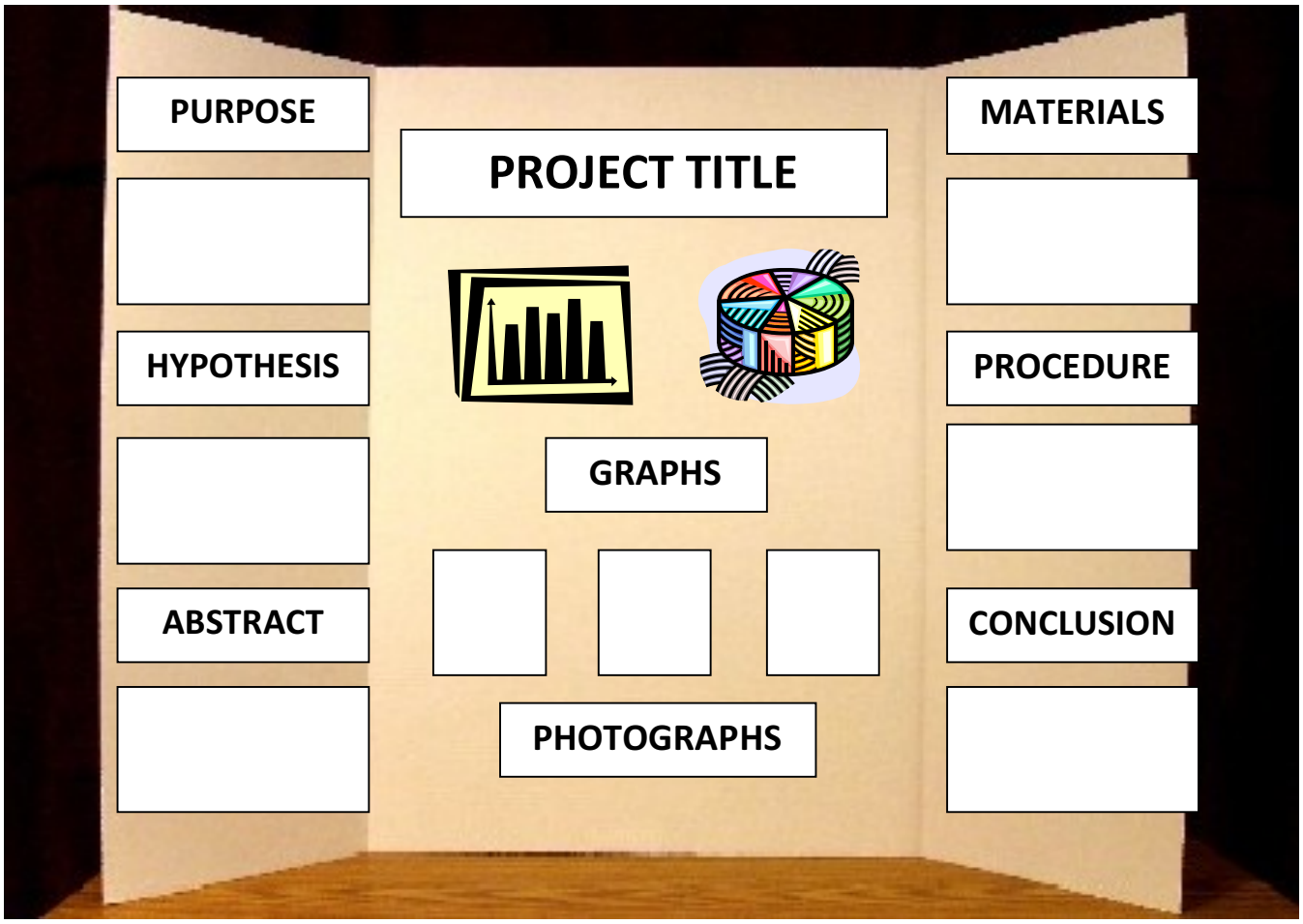
Science Fair Display Board

Exhibit size is limited to: 76 cm (30 in) deep, front to back
122 cm (48 in) wide, side to side
327 cm (108 in) high, floor to top

The dimensions shown represent the maximum allowable size. It is not intended that each project will meet this space allowance. Smaller exhibits will be welcomed. Boards are available at office and discount stores, or from your teacher. Include photographs if possible.



LOG BOOK

PROJECT NOTEBOOK

PRESENTATION TO JUDGES

This is an important part of your project so take the time to plan and practice the presentation you will make to the judges. Plan ahead what you want to say but don't memorize your presentation. Write key phrases or ideas on index cards and use them as a reference, but don't depend heavily on them.

Presentation

Here is an approach you may wish to use for making your oral presentation.

1. Greet the judges and introduce yourself.
2. Give them a copy of your abstract and research paper.
3. Give the title of your project, your grade, school, and sponsor (teacher).
4. Tell how you became interested in this topic.
5. Give some background information about the topic.
6. State the purpose of your investigation.
7. Discuss your review of literature.
8. Describe in a step-by-step fashion the procedures you followed for conducting your investigation. Point to sections of your display and refer to charts, graphs, and photographs. If you have equipment on display allow the judges to examine it.
9. Explain the results of your experiment and be sure to discuss controls and variables. Remember to keep all measurements in metric units.
10. Identify the conclusions that you could logically draw from the experiment.
11. Discuss any future plans you may have to continue research or experimentation related to your topic. Include a few statements about any changes you made in your scientific approach during your early investigation.
12. Ask the judges if they have any questions. Remember if you don't know an answer say so and indicate you will look into it. If judges insist on asking questions in unrelated areas, redirect the conversation back to your specific topic.
13. Thank the judges for their time and any suggestions they may have offered to improve your project.

Good manners, nice clothes, and enthusiasm for what you are doing will help you impress the judges. Here are some tips:

1. Wear nice clothes.
2. Be polite and practice good manners.
3. Make good eye contact with the judges.
4. Stand up straight and to the side of you exhibit.
5. Speak with enthusiasm, clarity, and assuredness.
6. Don't do anything distracting.
7. Relax, Smile, and have FUN!