TXU Electric Delivery

FROM CONCEPT TO CONCLUSION:

Planning Your Science Fair Project And Science Fair Project Guidelines

TIPS FOR PARENTS/
GUARDIANS
AND STUDENTS

DEAR PARENT/GUARDIAN AND STUDENT,

When planning a successful and exciting science fair project, please remember the following helpful suggestions:

1. A successful science fair project can always be credited by the amount of work and effort put into it, by how much knowledge and experience the student gains, and by the use of good decision-making skills.

2. Parents/Guardians should encourage students to work independently, while offering safety and instructional guidance.

3. Creating a science fair project can be both fun and rewarding for all who participate, regardless of awards and ribbons.

4. Parents/Guardians are encouraged to help students with safety, construction, transportation, informative criticism, and suggestions.

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GUIDELINES FOR A PROJECT

TITLE: Develop a title that is specific and interesting. It should make the casual observer want to know more.

SCIENTIFIC METHOD: The guidelines scientists use for their projects.

Purpose – Problem stated in the form of a question.

Hypothesis

Procedure

A. Research
B. Experiments

Results - Data

Conclusion – Answer the question in the problem statement.

ABSTRACT: A 250-word, one-page summary of your science fair project.

EXHIBIT: An attractive display of your investigation, using clearly-written labels and headings.

INVESTIGATION: Develop a question and provide a solution.

Purpose – What are you trying to discover with your project? Make a statement.

Hypothesis – Try to answer your question using only what you already know. By making this statement or guess, you are developing your hypothesis. You will analyze your hypothesis as you do your project.

Procedure

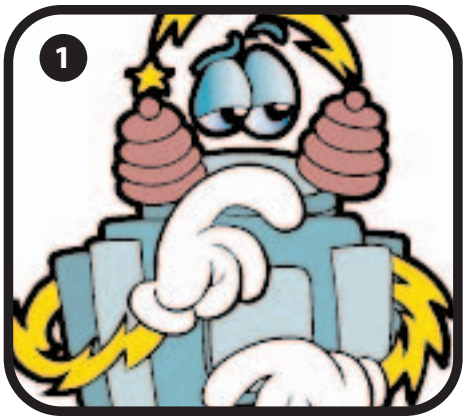
Research - Collect information that will support your hypothesis or answer your question.

Experiment - Test your hypothesis. Develop an experiment.

Results – Record your results with journals, notebooks, graphs, charts, pictures and photographs. Only record facts and observations, not your opinion.

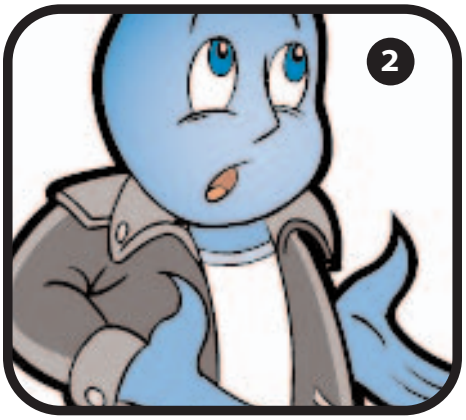
Conclusion – What you learned, whether your hypothesis was right or wrong.

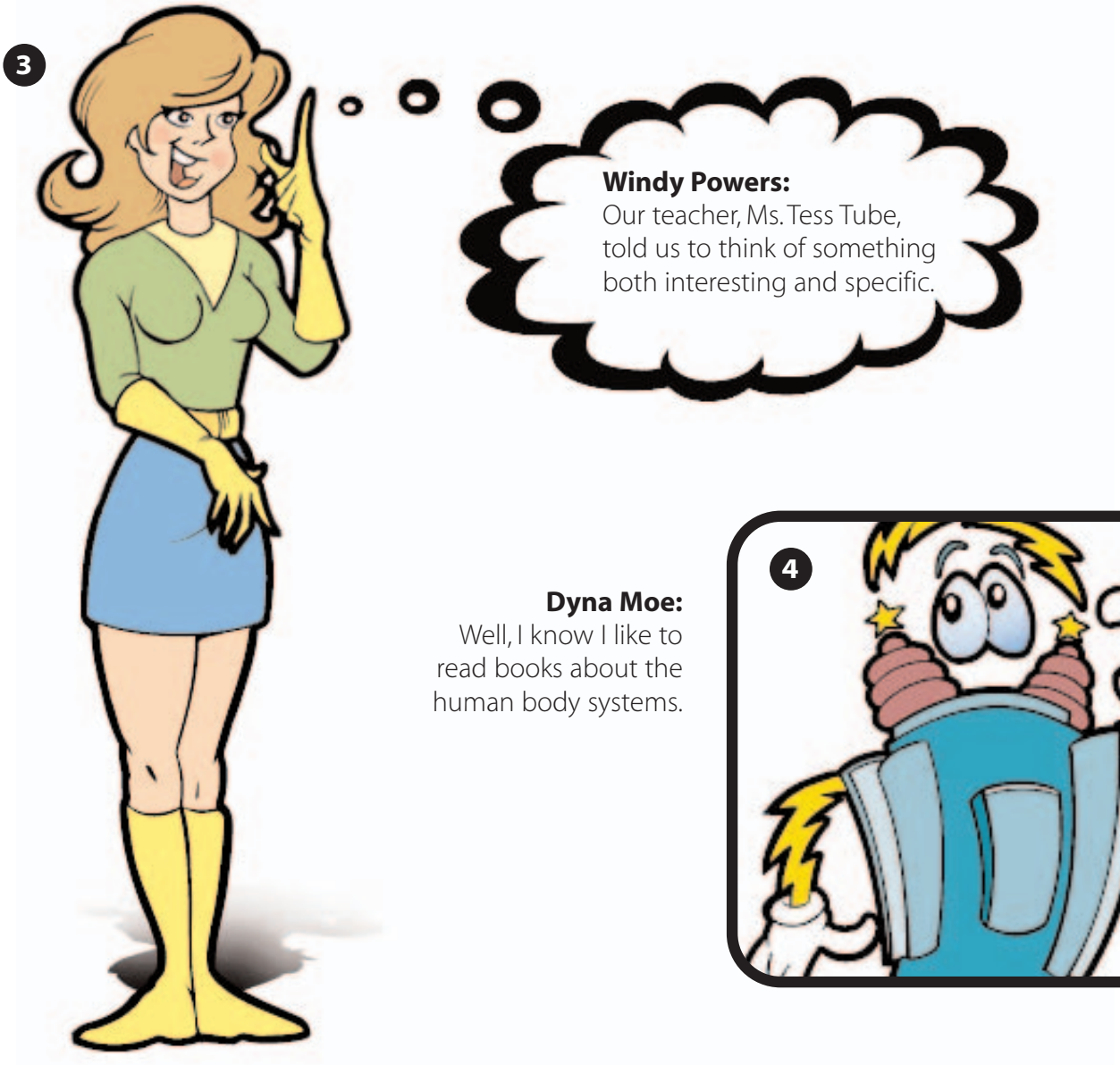
RESEARCH NOTEBOOK: A daily account of the procedures of the experiment. Information may include observations, experiments, materials, expenses, data, conclusions, etc. The Research Notebook will be an important resource used in developing your paper.



Dyna Moe:
What are you going to do for your science fair project this year?

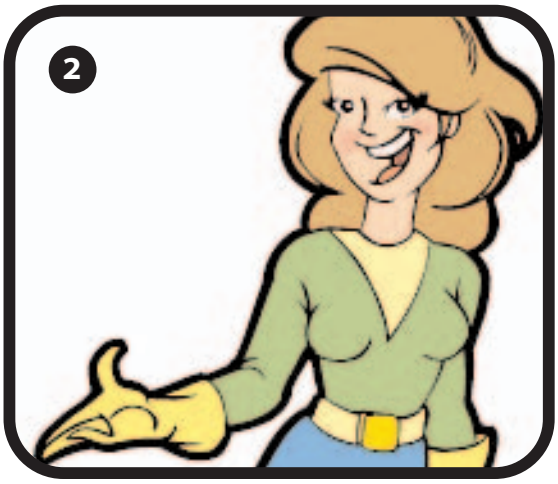
Freddy Flicker:
I can't make up my mind! I'm interested in a lot of things.





Dyna Moe:
Well, I know I like to read books about the human body systems.

Freddy Flicker: I'm researching our own planet earth, looking at things like pollution and recycling.

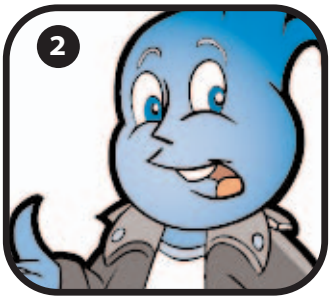


Windy Powers:
Those are great topics!
But whatever you two decide, remember to be very specific when you create your title. Ms. Tess Tube helped me with mine. I knew I was interested in electricity. My original title was going to be, "Is Wind-powered Electricity Cleaner Than Gas-powered Electricity?" Ms. Tess Tube suggested that I compare different forms of electrical energy to make it more interesting. So now, I am going to develop a project that measures and compares power from a windmill to a gas-powered generator and see which is more practical and efficient.

Dyna Moe: Me too!

SCIENCE FAIR PROJECT COMPONENTS

Windy Powers:
Well, now that I have my idea and title, I need to get started. How are you two doing?



Freddy Flicker:
I think I am going to research the Greenhouse Effect, "Does Pollution Affect the Earth's Ozone Layer?"

Dyna Moe:
I've titled my project, "Gene Mapping: Is it Cloning or Clowning Around?"

Windy Powers:
Let's go to the library and get started on our research for our abstracts and exhibits!

EXHIBIT

Materials: Students should be able to assemble projects by themselves. All materials should be sturdy, safe and secure.

Safety: All hazardous and poisonous items are prohibited. The use of electricity and /or live animals must be approved by the science teacher before the science fair.

Display: Neatness and organization are important. Make sure to check your spelling. Use a computer/word processor when available. All portions of your display board should be visible from 3-5 feet away. Make appropriate use of graphs, pictures, photographs, outlines and other related items.

ABSTRACT

Provide a one-page summary of your entire report, summarizing the objective of the project, what was done and what the conclusions were.

No more than 250 words, typed and double-spaced.

Purpose: Why you chose your topic, what problem you solved, what question you answered.

Hypothesis: A brief explanation of what your experiment will prove.

Procedure:

Research - How/where you got your information.

Experiment – How your experiment proved or disproved your hypothesis.

Results: The facts that were most important in your project.

Conclusion: Can you compare your own results with other experiments or research? Will your results prompt further research or experiments?

RESEARCH PAPER

The research paper allows you to organize your entire project and experiment and should be be displayed in a project notebook. It also provides background information to your teacher and the judges. It should be typed and double-spaced. Remember to check for spelling and grammar errors. Always proofread your work and have someone else proofread it, too.

The material for your research paper should come from data you collected from your own experiment results as well as information you used during the procedure of your experiment. Remember to keep accurate journals, notes and outlines. Always begin the writing process with a brief outline; you can use the scientific method as a guide. As you develop ideas, begin writing a rough draft.

Your final copy should include, in order:

1. Title Page. Do not include your name or school on the research paper.
2. Table of Contents.
3. Introduction.
4. The Experiment. Describe the methodology used, detailed photographs, etc., so that someone could repeat the experiment just by reading the paper.
5. Discussion. This is a thorough description of your results and conclusions. Compare your results with theoretical values, published data and commonly-held beliefs. Discuss possible errors. What further experimentation is called for?
6. Conclusion.
7. Acknowledgements. You should always credit those who assisted you including individuals, businesses and institutions.
8. References.

CULMINATING YOUR CONCEPT

Dyna Moe:
I had no idea there was so much information on the body systems. I need to sort through everything and get my outline organized.

Windy Powers:
I need to ask Ms. Tess Tube if I can use an electric fan to make my windmill work at the science fair.

Freddy Flicker:
I'm going to stay here in the library and take notes for my bibliography. I want to make sure I have the correct title, author, publisher and date for each book that I used.

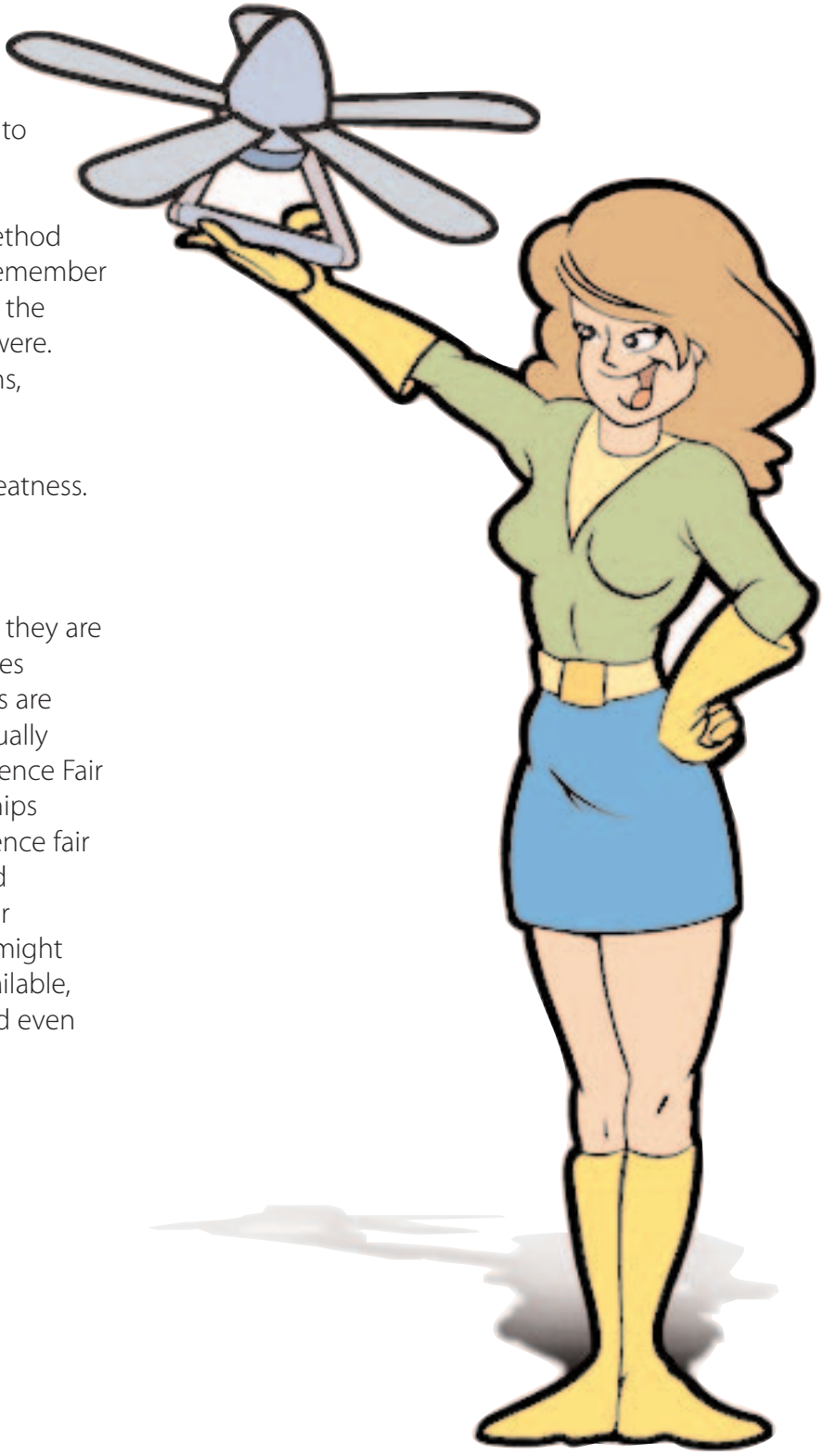
Windy Powers:
Don't forget to find out where the book was published, too! Let's meet here next week after school and practice our speeches with each other.

Remember that your science fair project will take several weeks to complete. If you do a little each week, your project will develop smoothly. A successful science fair project should be exciting, useful, inexpensive, appealing, and understandable. Evaluate every step of your project using the scientific method to guide you.

Your speech should follow the scientific method as well. Use it to guide you and help you remember the procedure of your experiment. Just tell the judges what you did and what the results were. Practice your speech with parents/guardians, teachers and friends.

Science fair judges look for accuracy and neatness. Organization and practice will make your project successful!

Awards vary from school to school. Usually they are given for 1st, 2nd, and 3rd places. Sometimes "Honorable Mention" or "Participant" ribbons are used as well. Projects winning 1st place usually continue on to Regional and then State Science Fair contests if successful. Sometimes scholarships and/or prizes are awarded. Individually, science fair projects help students acquire research and observation skills, preparing them for higher education. Students gain knowledge that might not have been otherwise considered or available, often promoting new interests, hobbies and even career choices.



CREATING EXPERIMENTS

Developing a science fair experiment can be both fun and educational. Some tips should be considered when planning:

1. Safety first - do not use poisonous or hazardous materials.
2. Always have parental guidance when using electricity, live organisms or flammable objects at home.
3. Always read warning labels and directions for materials used in your experiment.
4. When comparing two objects in an experiment, make sure the conditions are controlled and the same.
5. There should only be one different variable between comparisons, and that should be the basis of the experiment.

COOL CONCEPTS

Electricity
- Identify a Magnet's Poles
- Classifying Magnetic Matter and Nonmagnetic Matter
- Developing Series/Parallel Circuits
- Identifying Conductors/Nonconductors
- Creating an Electric Current Detector
- Building Simple/Complex Electric Motors
- Create an Electromagnet
- Making a Battery

Plant Study
- Identify Properties of Roots/Stems/Leaves
- Mapping a Plant Life Cycle: Flowers/Seeds
- Identifying Plants and Animals: Bacteria/Molds
- Growing Plants without Soil

Geology
- Identify the Properties of Rocks/Minerals
- Is Soil Important?
- What are Fossils?

Astronomy

Zoology

Environmental Science

Weather
- The Importance of Weather Instruments
- Wind: A Valuable Source of Energy

Water
- How to Purify Water
- Compare Hard Water/Soft Water
- Identify the Properties of Sinking/Floating

Sound

Chemistry

Air and Air Pressure

Human Body

Light

Heat

Forces and Inertia

Machines and Technology

Engineering

Mathematics

Medicine/Health

RESOURCES

1. internet
2. school science department
3. school library
4. public library
5. authority in science field (for an interview)
6. public utility services - electricity, gas, water, phone, cable
7. hospital, clinic, doctor's office
8. national laboratories
9. pharmaceutical companies
10. zoo, veterinarian, aquarium
11. florist, arboretum, nursery
12. marketing agency
13. museum, planetarium
14. government agencies
15. trash collection, recycling services
16. computer/technology industry
17. communications companies – broadcast, fiber optic, digital
18. automotive industry
19. mass transit industry
20. parent/guardian

1601 Bryan Street, EP9
Dallas, TX 75201–3411
www.txuelectricdelivery.com