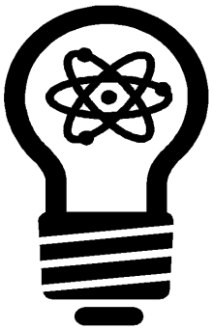
Langston Hughes Elementary Bobcat Science Fair



Information Packet

Bobcat Science Fair & Science Night
Tuesday, January 20, 2015

Langston Hughes Bobcat Science Fair
Entry Form

Please return to the School by Friday, January 9, 2015

Child's Name: _____ **Parent's Signature:** _____

Teacher / Grade Level: _____

Type of Project: ***Physical Science*** _____ ***Life Science*** _____

Project Title: _____

Brief Description of Project: _____

_____

_____

_____

_____

_____

Entry forms are requested for planning purposes only.

Late entries will be accepted!

**Only entries by January 9
will receive a Bobcat Science
Medal for participation

Bobcat Science Fair Information

Thank you for your interest in doing a science project this year! Students of all grades may do a project and can follow the guidelines presented in this informational packet. This science fair is about having fun and encouraging students to participate or share what they find fascinating about science. Our judges will review the exhibits and provide written positive feedback and suggestions for each one. Participation in the District Science Fair is encouraged – dates and guidelines are posted at www.usd497.org. All exhibits will receive a Bobcat Science medal – as long as their entry form is turned in by January 9th. Questions? Kim Rack (kimnmike@sunflower.com or the LHE website)

Thank you for helping make the Bobcat Science Fair a success!

Schedule of Events:

⇒ Friday, January 9 – Entry form requested

⇒ **Tuesday, January 20 – Bobcat Science Fair Day**

- Set up display in multipurpose room, anytime between 4:00-6:00 pm (after school snack provided)
- Judges view projects from 4:00 – 6:00 pm
- Public viewing of displays 6:00 – 7:00 pm (sandwich & chips provided for participants at 6:00pm)
- Take down your display and take it home by 7:30 pm.

Science Night Activities for families from 6:00-7:30 pm.

Wednesday, January 21 – Wear your Bobcat Science medal to School Day

Our hope is to provide students with the opportunity to participate in either the "traditional science fair project" that they then can enter into District Science Fair or they may share in less experimental demonstrations and related activities that sparks their interests in science.

Students may participate by completing one of the following projects:

1. **Traditional Science Experiment**
2. **Project**
3. **Demonstration**
4. **Career**
5. **Biography**

Traditional Science Experiment

This is the only kind of project can be entered into the District Science Fair. There are two types of traditional science experiments. Please visit http://www.usd497.org for more information.

1. **Descriptive Study** - the student collects data in situations in which he/she has not used a treatment intended to change the results of the study. FOR EXAMPLE: Pat kept records of the number of different colors of birds that came to the yard on Saturdays between 8:00 and 10:00 A.M. and between 3:00 and 5:00 P.M. Then Pat looked for patterns in these records. This was a descriptive study.
2. **Experimental Study** - the student uses a treatment intended to change the results of the study. That is, the student changes one variable (independent variable) in some way to see if it will influence the way something behaves, grows, performs, lasts, etc. (dependent variable). FOR EXAMPLE: If Pat (see above) placed bird seed in the yard during the first and third parts of her study, then removed it for the second and fourth parts of her study, then she would have run an experimental study. Her treatment would have been the presence or absence of bird seed in the yard. (www.dcsf.lawrence.ks.us)

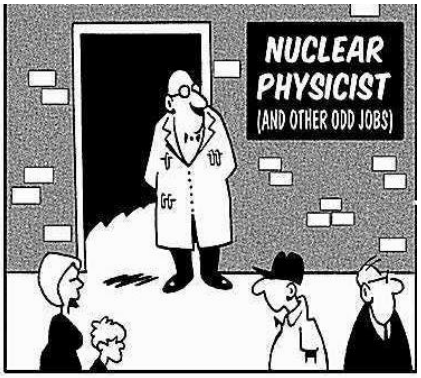
Project

A Science "project" can take many forms. One is to make a **model** of something. You might make a model of the solar system, a car's transmission, or even a stalk of corn. Be sure to include all the major parts. Label them and give important details. You could make your model from a store bought kit or use clay, construction paper or recycled items. Your model needs to be attractive and informational. Another type of project is a **collection**. Examples – a leaf collection, rock collection, bug collection. Just make sure your collection relates to science. Label your collection and give details. Your collection should be attractive and informational. A third type of project is a **poster**. It looks a lot like a model except it is not 3-D. An example of a poster would be to make a poster about horses where you show a diagram of a horse skeleton and internal organs. One last type of project would be a **mobile**. This is a model that hangs from the ceiling with balancing parts.

Demonstration

A demonstration shows and explains a "cool" science fact. No demonstrations with dangerous materials or fire are allowed. Maybe you want to show that air has weight or how to make an electromagnet. You need to research the science behind your demonstration and insert a few interesting details. It helps to have a poster to go along with your demonstration.

Career



There are so many exciting careers in the field of science. You can explore one of them to share with students at the fair. Tell why you chose this career, what level of education is required to pursue the career and describe a normal day at work for this career. You can show pictures or props of equipment used in this career.

Biography

You can present a "living" biography of a scientist. As you research your scientist find out how long ago and where he/she lived. What else was going on in the world at the time your scientist was working? Was there a war going on, were there other important discoveries being made….etc.. Was your scientist famous or remembered? Did your scientists win any awards?

Websites for project ideas:

www.education.com/science-fair/elementary-school/

www.sciencefair-projects.org

www.sciencebuddies.org

www.all-science-fair-projects.com

www.sciencebob.com

The Scientific Method

The steps you use to complete your science fair project are the same ones used by a scientist to explain problems and their solutions. This process is called the scientific method. The scientific method consists of six steps:

1. Selecting the topic and forming a research question.
2. Gathering information about your topic.
3. Forming the hypothesis.
4. Organizing the materials and procedure for the experiment.
5. Collecting the observations, data and results.
6. Make a conclusion and discuss the outcome.

Selecting the Topic

Before you can get started, you must first select a topic. Your project will enter around the research question you want to solve. Science covers many general areas from which you can choose a research questions. The scientific areas to consider for your project are:

Life Science - The study of living things: humans, plants, animals.
Physical Science -The study of physical principals, chemistry, physics, engineering, aeronautics, geology, math, etc.

Since your topic will require time and effort, it is important to select a topic you will enjoy. Scientists are not skilled in all areas of science. They usually specialize in one specific field. After you have selected an area of science that interests you, think about questions that you are curious about and would like to solve. More than likely you will come up with several questions. You need to narrow your questions down to just one that can be answered by an experiment that you can do. The question you try to solve will be the topic of your science fair project. Do not choose a question that does not interest you or one that is too hard to solve.

Gathering Information

If you don't know much about the subject that you're about to investigate, it is important to do some research. Find out as much as you can before you start. Just knowing a few facts about your experiment could save you time and make your results more important and factual. Encyclopedias, journals, library books, community resource people or the internet can all help provide you with some important background information. Sometimes this step may not seem to be very important and is often overlooked. Remember this is a very significant part of your investigation.

Forming the Hypothesis

Once you have gathered some information, it is time to return to your original question to form the hypothesis. The hypothesis is an assumption about what you think will happen. It is often called an educated guess because it is based on what is learned as the scientist gathers information. Make your hypothesis in a statement form. Try to be as clear as possible as to what you think will happen.

Organizing the Experiment

Before you begin your experiment you must first get organized. Make a list of all the materials you will need. Assemble all the items and then write down the steps you will go through before you begin. Decide what factors you will keep the same during the experiment. These are known as the constants. Then decide what factor you will be changing. This is known as the variable. It is advised to use just one variable. For example: If you are testing different brands of fertilizer on plant growth, the different fertilizers are the variable. The constants would be using the same kind of plants and pots and having the watering, lighting, temperature, etc. stay the same for each. Knowing the exact procedure of what you are going to do before you begin makes for a better chance that your results will be accurate. Follow the procedure step by step and allow plenty of time for each step. Adult supervision is greatly advised. An extra pairs of hands to record the data is beneficial too. Follow all safety measures. It is important to repeat the procedure several times and record all data. Do not leave out any information. Should anything unusual happen, record it too. If you are making several observations remember to record the time and what you observed, measured, etc. Photos of your experiment will prove to be valuable.

Collecting Results

After you have completed the experiment and recorded the data from your observations, the next step is to take that information and evaluate it. Remember that you are trying to answer your original question. You will need to look for patterns in your observations and between the things you did and the results. Keep accurate records of everything you do. All this information will be included in your written report. Sometimes you can summarize your observations. However, if your data is more complicated it is often helpful to put the results into the form of a graph or chart. This will pictorially represent the observations that you made and sometimes a picture is worth a thousand words.

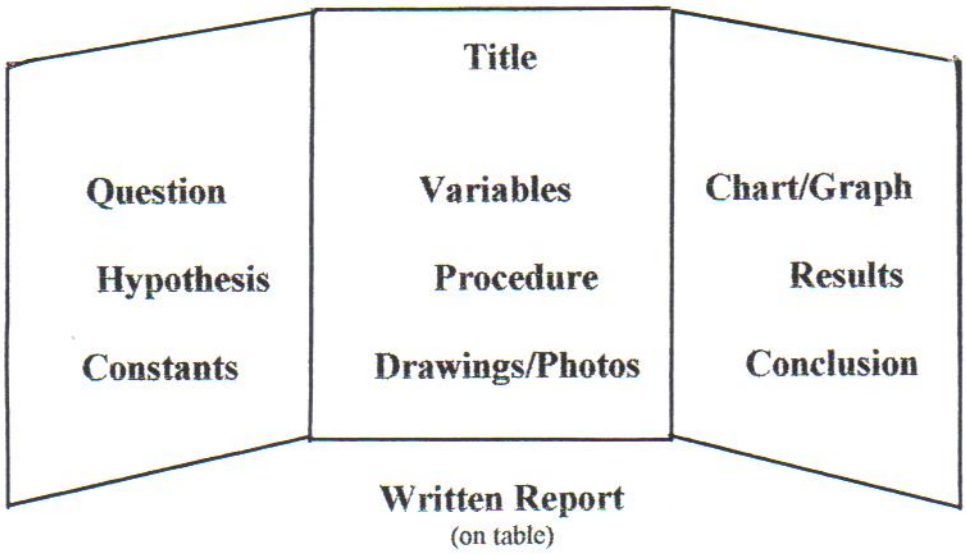
Making a Conclusion

After you have summarized your results and thought about your observations, you should be able to state a conclusion. Your conclusion should answer your original question. Your conclusion should be based upon and backed up by the observations and information that you gained. State whether your hypothesis was true or not. It does not make your experiment wrong just because your hypothesis, your assumption, was not correct. Explain how you might change your hypothesis, what you might do different next time you do the experiment. Discuss what you learned from your project.

Building Your Display

Now that you have performed the scientific testing and research, you will want to display your findings for others to see and understand. Displays should be neat and informative. When placed on tables they should have:

1. Self-support and be at eye level.
2. All information, charts, pictures and title neatly written and arranged.
3. All words checked for correct spelling.
4. Colors that are appealing and easy to read.



Commercial display boards work the best. You can purchase these at office supply stores or hobby centers. Your display should have the title **BOLDLY** written at the top. Always include your question, hypothesis, step by step procedure, results and conclusion. Arrange your drawings, photographs, charts and/or graphs in order to enhance your information and make your display organized and appealing.

Written Report

A written report needs to be included with your display. The title of your project should be on the cover along with your name and classroom. It should contain an introduction explaining where, why, and how you choose your topic and any additional background information that will help explain your project. It may be handwritten and should contain your question, hypothesis, materials needed, variables, constants, step by step procedure, data or observations, results, charts or graphs, conclusion, discussion of your conclusion, (many of the same items that should be on your display) and a bibliography. The bibliography should include all your references listing community resource people, books, articles, or internet sites. It is also advised to give credit to those who helped you gather materials, who helped administer the experiment, etc. Students are not expected to do the entire project without some assistance but being accountable and giving credit where credit is due is highly recommended.

Judging Sheet

The judges will examine each part of your experiment and make comments regarding them. These are some of the questions the judges will be using during their evaluation. Go through the list yourself to see if you have covered all the necessary parts. The judges will not only evaluate your display board but examine your written report as well!

A. **Introduction and Background Information**: What do you already know about the topic? Where did you get your idea?
B. **Question:** What are you investigating? Can the question be answered?
C. **Hypothesis:** What do you think is true or going to happen?
D. **Variables:** What factors are you changing?
E. **Constants:** What factors will stay the same?
F. **Procedure:** How are you doing your experiment? Exactly what did you do? Does your experiment need repeating? Did you repeat it?
G. **Results:** What information did you gather? How did you analyze your information? How did you display (graph/chart) the results? Does it all make sense?
H. **Conclusion:** What did you find from your results? Did you answer your question? Did you prove your hypothesis correct? Note: the experiment is still OK if it didn't answer the question or if the hypothesis was proved wrong. Explain what happened and what else you could have done.
I. **Written Report:** Every exhibit should have a written report! It should be a more detailed description of the experiment. Is your report complete and legible? Did you site your resources and people who helped you?
J. **Display Board:** Is it neat and appealing? Is the title written clearly? Does it have all the necessary information explaining your experiment?

SCIENCE PROJECT IDEAS

Are homemade weather instruments reliable?
How does an electric fan cool?
How do you measure air pressure?
How does sound reach your ears?
Which materials are magnetic?
How do electric charges react?
How does light bend?
How do plants make food?
How fast does a cactus root grow?
Can your taste buds be cooled?
How can levers make work easier?
What effect does loud music have on hearing?
What type of packaging will keep food cold?
What makes hot air balloons rise?
How is passive energy used to heat homes?
How does rainfall cause erosion?
Can evaporation of water be controlled?
What effect does sight have on balance?
How does birth weight compare to adult weight?
Does light go through air and liquids the same way?
How can a shadow be used to tell time?
How does temperature affect seed germination?
How do day and night temperatures affect plant growth?
What does color of soil have to do with quality?
Through what things does sound travel?
What exercises defy gravity?
Can cold water wash as effectively as warm or hot?
How does heat affect our body temperature?
Will a loud noise blow out a candle?
Do two or more elements always form a compound?
What effect does heat have on how materials dissolve?
Which substances decompose fastest in a compost pile?
Will African violets grow best in sandy or clay soils?
What conditions affect the growth of mold?
Will foods mold under the same conditions?
Do two or more elements always form a compound?
How much heat does it take to heat cooking oil and an equal amount of water?
Which plants emerge from soil samples collected at different winter locations?
Does air temperature affect the amount of bird seed consumed at a birdfeeder?
What is the correlation between weather changes and air pressure?
When will water evaporate faster?
When does a body float?
How can you tell time by the sun?
How is an echo produced?
How does magnetism make electricity?
How can you store electricity?
How can a pulley increase your strength?
How does the blind spot of your eye affect your vision?
Are there germs on things around us?
Is a homemade compass reliable?
Under what color lights do plants grow best?
What will make an electromagnet stronger?
What things are biodegradable?
What does yeast do to sugar or starch?
How do different activities affect body temperature?
Do foods contain the same amount of water?
Which materials conduct electricity best?
Which paper towel absorbs water best?
Which materials make good heat insulators?
How does photosynthesis affect plant growth?
How can you control light in an aquarium?
From what substances can you create soil?
How can soiled be saved?
What properties can light go through?
Does ice float the same way in different liquids?
Do liquids freeze at the same time?
Which household materials are acids or bases?
What dissolves in water?
Can solar energy be collected at night?
How can the sun's energy be used to heat homes?
What causes an eclipse?
Will burned seeds sprout?
Which wing design provides the best lift?
What household garbage helps plants grow?
Which design of a cardboard bridge can support the most weight?
What effect does adding salt and sugar have on the freezing point of water?
What is the correlation between seed size and the number of seeds produced for different plants?
What happens when iron and aluminum nails are placed in vinegar?