St. John's
EPISCOPAL SCHOOL

Science and Knowledge Fair

April 19, 2010

Science and Knowledge Fair Project Handbook

Fun, Friends and Cool Science! Everything you need to know to produce a Science and Knowledge Fair project.

St. John's Celebrates Science and Knowledge!

Fire up your Bunsen Burners and dust off those lab coats! Join Ms. Frizzle and the gang from the Magic School Bus on a wild science and knowledge adventure! Students in grades K through 5 are invited to participate in the 7th **Annual St. John's Science and Knowledge Fair!** Students will work at home on their projects and display their results in a poster to share with their classmates, teachers, and parents. **Our celebration will be held during the morning activity period on Monday, April 19, 2010**. You can study plants, electricity, people, pets, computers, machines, or anything else in the universe! You can research different cultures, places, and people. You can explore your idea alone, with a friend, or a family member.

Stuck for an idea? The most important rule of a science and knowledge exhibit is to **pick a project that is interesting and fun for you!** The library has dozens of science fair books (by authors such as Janice Van Cleave, Robert L. Bonnet, and Jill Frankel Hauser), in addition to books about other cultures, places, and people. Check out some of these Web sites:

http://pbskids.org/Arthur/grownups/activities/science.html
http://www.billnye.com(from Bill Nye the Science Guy)
http://www.sciencehunt.com (Bunsen Bob's Science)
http://stas.edu.pe.ca/english/sub.cfm?source=projectideas
(Science and Technology Awareness Site)
http://school.discovery.com (click on Science Fair Central)
http://www.scholastic.com/magicschoolbus/simplescience

Add some excitement to your winter! **Please complete the attached registration form and return it to your teacher by Monday, April 12, 2010**. Questions? Contact Eileen Haase, 301.570.1276.

Science and Knowledge Fair 2010 Registration

Want to join the adventure? All students in grades K-5 are welcome to participate in this free, extracurricular event**. STUDENTS: Please check with your parents before signing up!**

Student's Name: _____ Grade_____

Will you be working on a team?

Yes ☐ ☐ No

Who are the members of your team? (list name and grade)

_____

Selected Topic (this year we have expanded our fair to include more than just science!)- you may put "Undecided":

_____

Phone Number: _____

Teacher: _____

Application deadline: April 12, 2010. Please return this form to your teacher to register.

Parents, join the fun! We need help with set up on the morning of the fair, photographers, people to make participation certificates for each student (can be computer generated). Would you like to help?

_____

Questions? Contact Eileen Haase at 301.570.1276 (thehaasefamily@aol.com)

Dear Scientists, Knowledge seekers, and Parents,

This handbook guides students through their Science and Knowledge Fair project in about six weeks. However, many projects can be completed in a few hours. If you follow the suggestions, you will complete your project on time, without having to rush. If you have questions, call Eileen Haase, 301.570.1276, thehaasefamily@aol.com. Good luck!

Let's start right now with Week 1: Question and Background Information

1. **Think about what kind of project you'd like to do.** What puzzles you? What have you been wondering about? Want to know how something works? Are you interested in looking at the traditions of another culture? Do you have a hobby or collection you would like to explore? Do you have a favorite sport that you would like to research?

2. **Buy a spiral notebook** to keep notes and observations.

3. Write your ***Research Question*** in your notebook. Go to the library or media center and ask the media specialist for background information about your topic. Check out the books and other information you need.

4. Read the information and write notes in your spiral notebook. This ***Background Information*** will help you understand your project. It should be included on your display unit when you organize it in a few weeks.

5. If you plan to talk to someone about your topic, call the person and decide on a time to meet. It would be best to meet sometime next week.

Scientifically yours,
Ms. Frizzle

Science Fair Week 2:
Answering your questions /Planning your Experiment

Dear St. John's Student,

Wow! You've found background information on your science and knowledge fair question! I hope you found the reading interesting. Did you take notes? Now you have an interesting question that needs to be answered. This week you need to figure out how to answer it!

If you are doing a science project, you need to **plan** your experiment. What information do you need to answer your research question? How can you obtain this information? Think it through carefully. Write down your procedure or plan in your notebook. This is your ***Experimental Procedure.***

If you are studying a culture, hobby, sport or other field for your project, you need to talk to people in that field, either in person, online, or through the mail. ***Write down the questions*** you need to answer for your exhibit. You may need to contact many different sources to get your answers.

If you are doing a science project, **what do you think** the results of your experiment will be? Take a guess! This is called your ***Hypothesis***. Write it down in your notebook.

Make a list of the things you will need to do the experiment in your notebook. This list is called your ***Materials***. Start collecting the things you will need to do your experiment.

Discuss your plans with an adult. Show them your list of materials. If they have suggestions for you, write them in your notebook and add them to your plans.

It's time to **try your experiment** and see what happens! Don't be upset if your experiment doesn't work the first time. Scientists usually repeat an experiment many times. If your experiment does not work, change your procedure and try again!

If you have any questions, call Mrs. Haase (301) 570-1276 (thehaasefamily@aol.com).

Scientifically yours,
Ms. Frizzle

Science and Knowledge Fair Week 3:
Getting the facts / Data Collection

Dear St. John's Student,

Last week, I saw so many of your science exhibit experiments getting done! If your experiment did not go well, DON'T GIVE UP! **You have time to repeat your experiment** this week. Think about what you can do to make your experiment work. Talk to an adult about it. Repeat your experiment using your new ideas. If you are doing a project, you might still need to get some answers. Talk to lots of adults. They might be able to give you helpful hints.

Continue to take notes and collect information from your experiment. Write your observations and record measurements in your notebook. You might want to take pictures or draw what you see. This is called the ***Data*.** Remember to repeat your experiment at least **three times**, or to include at least three of each condition in your experiment (for example, if you are growing seeds, plant three seeds). Are your results all the same?

Remember, even if your experiment doesn't go as planned, or your results are different from your hypothesis, you have still learned valuable information which should be included in your data display!

If you are doing a knowledge exhibit you need to be ***gathering your facts.*** For example, if you are studying horses, you might want to get information about the many types of horses, the differences between walking, trotting, cantering, and galloping, the life cycle of the horse (how long do they live, what do they eat). You should visit a farm and get lots of pictures. Most importantly, you should talk to people who work with and ride horses. Become a horse expert!

Scientifically yours,
Ms. Frizzle

Science and Knowledge Fair Week 4: Designing Your Display

Dear St. John's Student,

Now you're ready to **begin designing and planning your display unit**. You can buy a display unit at a craft store or make your own out of cardboard. To make your own, you need one and a half pieces of poster board and some tape. Fold the whole sheet of poster board in half so it measures about 14 x 22 inches. Cut the other piece in half so it has the same measurements. Tape the half piece of the poster board to the folded piece, and you will have a three-paneled display unit.

Start preparing the first draft of your Science Fair report. To start, you will want to include summaries of your ***Background Information, Research Question, Hypothesis, Experimental Procedure, Data or Facts, Results and Conclusion.*** See the example of a good display unit on the Hot Tips page. You may change the headings as necessary.

Decide how you are going to show your ***Data and Facts***. If your data is written in numbers (such as weights or temperatures) you can make graphs or tables to explain your data. You can show pictures to explain your data also. If you took pictures, have them developed. If you are drawing pictures of your observations, finish them. When you put all your data and observations together, they are called the ***Results***. Add the ***Results*** of your experiment to your report. If you are studying a hobby or culture include lots of pictures!

Think about what your data and your results mean. Write down what you think the answer is to your research question. This is called the ***Conclusion***. Add the ***Conclusion*** to your report. Did your ***Conclusion*** and your ***Hypothesis*** agree? Sometimes they don't. Either way a scientist has learned something!

Scientifically yours,
Ms. Frizzle

Hot Tips for Good Science Questions and Displays

A good science or knowledge fair question:
*Must lead to an investigation (experiment), a report, a demonstration, or a model. The question may ask about the effect of one thing upon another.
*Should be one from which you can collect data (ideally measurements) or research facts, rather than opinions.
*Should be specific rather than really broad.
*Is one with which the materials needed to experiment are easy to find.

Examples of good science fair questions:
How does temperature affect the bounce of a basketball?
What type of conditions do mealworms prefer?
What shape of container will allow water to evaporate the quickest?

Examples of good knowledge questions:
Question: How do volcanoes erupt?
Reason: This project would be a model, not an experiment. The student could research the locations of current active volcanoes and get some online pictures.

Question: Where are the different planets located in the solar system?
Reason: This question would lead to a model or a report. The student could look online for pictures from the Hubble space telescope and the space station.

Question: How many different types of stamps are there?
Reason: This question would involve researching the postal systems from different countries and learning the values of the various kinds of stamps.

An example of a good display
http://school.discovery.com/sciencefaircentral/scifairstudio/handbook/display.html

Science and Knowledge Fair Week 5:
Completing Your Display Unit

Dear St. John's Student,

I am so excited to see all of these fantastic science and knowledge projects! This is such a busy week because you will be completing your display unit. The **final draft** of your report and all your **graphs, tables and photos** get pasted on the display unit.

Finish the final draft of your Science and Knowledge Fair Report. Give your report to an adult to read. You may type it, or have an adult type it. But, be sure to use a font size of at least 24 (the bigger, the better) so that everyone can read your report from a distance. However, neat handwriting is all that is required.

Paste each part of your report (***Background Information, Research Question, Hypothesis, Experimental Procedure, Facts or Data, Results and Conclusion***) on your display unit. Remember to paste on your drawings, photographs, graphs or tables too. You should include a ***Title*** for your project. Don't forget to put ***your name*** on the display unit!! Did someone take pictures of you doing your experiment? If so, you can include them on your display unit too.

Make sure everything on your display unit is **neat**. Check your **spelling!** Visitors to the Science Fair will be looking at your display. Our guests want to learn about your experiment. Be **creative** and make yours as interesting as possible.

Practice explaining your science exhibit project to members of your family or friends. If your experiment is easy to do, you might want to run it at the Science Fair.

Excellent work!!

Scientifically yours,
Ms. Frizzle

Week 6: The Science and Knowledge Fair!

Dear St. John's Student,

It's the BIG DAY, the day we've all been waiting for! Your hard work has really paid off. Congratulations!

On the morning of the Science and Knowledge Fair, first check in with your classroom teacher. Then, bring your project to the Parish Hall as early as 7:50 am on **Monday, April 19,** where you will check in with Mrs. Haase. She will help you find a place to set up your display. Your parents may also help. You will receive a "Compliments" sheet so that visitors to your display can tell you what they think!

From 8:25 to about 10:00, you will be stationed at your display to explain your project to visitors. At 10:00, your parents or other volunteers will help you take down your display. PARENTS: We can use your help at carpool drop-off to help students bring their projects to the Parish Hall. We also need help with set up and take down!!

Thanks for all your hard work! I'll see you next year!

Scientifically yours,
Ms. Frizzle