



2018 WCE Science Fair 4th-5th grade Timeline

1. Friday, January 5th
Science Fair Kick-Off presentation
to 4th - 5th Graders
2. Tuesday, January 9th
Parent Information Meeting at 6:30 – 7:30pm in
the Library for 4th - 5th grade parents only.
3. Friday, January 19th
Science Fair Information Sheets due back to
homeroom teachers for review & approval.
4. Friday, January 26th
Deadline for teachers to turn in student science fair
information project sheets to science fair chairs.
5. Friday, February 16th
Deadline for students to complete project and poster
board, and submit the video clips (maximum 3
minutes per project) using Video Submission Form
6. Thursday, March 1st
Science Fair Projects (poster board and display) are
due between 7:30-7:55am in the gym.
11am-1pm – Judging & closed to visitors.
Students and families are welcome to see and enjoy
the Science Fair 8-11am and 1-3pm.
7. Friday, March 2nd
7:30-8:30am - Donut breakfast and awards ceremony

Winning projects will be displayed in library.



Requirements/Deliverables for Science Projects

Students can work individually or in pairs, and provide:

1. A short video clip (maximum 3 minutes long) about your project and **named with your project number**, due by February 16th Friday, upload your video to youtube with "unlisted" setting, and then include the URL when you complete the video submission form **with your parent** who must electronically sign the form. In order to avoid delays or disqualification, be sure the form information is the same as your original form approved by teachers – ie no partner, project title or email changes. You will include you
2. Your Science Project should be displayed on a standard **3-part folded project display board**, and this board must be also **completed by February 16th and clearly shown in your video**.
3. Bring your project board with **any other demonstration** you'd like to put in front of the display board, to school by 7:55am Thursday, March 1st. Every project must include the following sections, which should be clearly identified on your display board:
 1. **Title** – This is the name of your project. It should appear at the top of your display board.
 2. **Problem** – The problem **MUST** be stated in question form. What question are you trying to answer? A good format for the question is "What is the effect of **this** on **that**?"
Helpful Hint - Problem Question - for example: "Which type of material absorbs the largest volume of liquid: soil, gravel or sand?" Students should refrain from using the words "better or best". *Do not say: "Which material: soil, gravel or sand absorbs better (or best).*
 3. **Hypothesis** – Using complete sentences, explain what you think the answer to your problem question is. It is okay for you to be wrong here. It is fun to learn something new through your science project experience. You can use "brands" in your Hypothesis, but please label them by Brand "A", Brand "B", etc. Also, we encourage the student to make the experiment more than a comparison of brands. Hypothesis Example - The students **MUST** explain their thinking in detail - "I think that the _____ will absorb the largest volume of liquid **BECAUSE** compared to the other two it _____. Please make sure your hypothesis explains your thinking in detail (why or because). This is an expectation that our teachers are discussing with their students in the classroom.



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- 4. Materials** – List ALL the materials and equipment used in your Science Project. Be specific. What did you need to *gather*? For example, 6 slices of white bread, 4 clean glass baby food jars, measuring spoons, etc. There is no need to list obvious items such as your hands or your desk.
- 5. Procedure** – This is a step-by-step set of directions on how you did the experiment. Numbering each step will make it easier for everyone to understand what you did. An observer should be able to *recreate* your experiment from these directions.

Trials -- In doing your project, you should repeat the steps of your procedure at least 3 times for each manipulated variable. This way, you have at least 3 sets of information to measure and record. These repeated steps are called trials and they may be done simultaneously. For example: If a project is looking at the effects of something on three different types of plants - you would need 3 sets of three plants or a total of nine plants.

Variables -- All science projects have many variables which may be set up to test lots of different questions. In our Science Fair, you may test the effect of only **ONE** variable. You may measure as many outcomes (responding variables) as you wish. **ALL** other variables and aspects of the project must remain the same for every trial. **In the Procedure section of your project display, classify all the variables of your project as one of the following:**

Controlled Variables – These are the parts of the experiment that you controlled by keeping them the same throughout the experiment. Examples might be the same amount of sun, type of soil used, amount of water, etc.

Manipulated Variable – This is the part of the experiment that you are testing. This is the variable that you adjust on purpose in order to observe what happens. You may have only **ONE** manipulated variable.

Responding Variable(s) - This is the outcome(s) that happened as a result of the experiment. This is the part which you measure and record for your results. This could also be called a dependent variable. It is dependent on the changes you made to the Manipulated Variable. You may measure as many different responding variables as your project allows. In fact, your project will be more interesting and more conclusive if you measure more than one outcome.



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One last note about variables: Another way of thinking about these variables is illustrated by the **Problem Question**:

What is the effect of [the manipulated variable] on [the responding variable]?

6. **Observations** – Collect data by observing and measuring your **responding variables**. Use charts and tables to show your data. Not all outcomes are quantifiable. Descriptions and drawings are data too. Properly label all graphs.

Organize your data by drawing graphs or diagrams. This will help you see patterns and decide what the information from your data means. You should be able to **compare** the results each time you adjust your manipulated variable.

Your project display must include at least one graph drawn by hand showing your results. Additional graphs may be generated by hand or on a computer. Typically, on an XY graph or bar chart, the Manipulated Variable is shown on the X axis and the Responding Variable is shown on the Y axis.

Your observations of each trial should be reasonably similar. If you observe inconsistent results from your trials, double check that the controlled variables were indeed held constant. Was the weather consistent? Did one of your siblings pour juice on your project? This is why at least three trials are required! If one trial is completely wacky, don't ignore it. Include the wacky data in your report and explain why you think it's erroneous.

Don't despair if your results still don't look "right". Think of other explanations for the results. Perhaps your hypothesis was wrong! This is okay! Most importantly, be ready to learn from your project experience.

7. **Conclusion** – Using complete sentences, re-answer the problem question using what you learned from your observations. Remember, you are **comparing** all your results. This is a very important part of the science fair display because it shows that you learned something from your experience. A thorough conclusion will be at least one paragraph.
8. **Video Clip** Students should record a short video to accompany their projects. Videos should be *less than three minutes*, be uploaded *with an adult*, and should be recorded in your own voice, but **do not show your face. The information in the video should not be identical to the trifold.** However, the completed display board must be shown clearly in some part of the video. There will be some overlap, however, the video should contain only a summary of the project, not retelling every step by step detail.



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The video should focus on the student's creativity in problem selection and the student's understanding of real world relevance. You should create a script that explains why your project is important and shows your thoughtfulness and creativity in selecting and designing your project. Your script should answer "big picture" questions, such as the following:

What sparked your interest in the subject? (What really made a connection for you with this project?); **How your project is relevant in the world** (Is this a real world problem? Why did this question need to be answered?); **How might the results impact my life?** (or the world, or a specific business, or the environment, or the future?); and **What other questions arose from this experiment?** (What might the next experiment look like?).

*****The video clips will NOT be scored on video aesthetics. While we encourage you to have fun while creating the video, music, clever scene changes, animation, etc will be enjoyed by the judges, but will NOT give you points. Clear communication and presentation skills will give you points. Technical difficulties that prevent the judges from seeing your display board or hearing your presentation will lose points, so please ensure that your board is visible and your voice is audible

General Hints and Tips

- Be **specific**. For example, "The plants which were fed plant food grew an average of 3 inches taller in the two-week period than the plants which did not receive plant food." Or, "The plants which were fed plant food grew an average of 4 more leaves in the two-week period than the plants which were not fed." These sentences are more informative than, "The plants which were fed plant food grew more."
- Include whether your **hypothesis** was correct. If you learned something new or unexpected, this will be different than your hypothesis.
- Try to explain **why** the results occurred. If you encountered problems during your work, you may discuss what impact these issues may have had on your results. Scientists are always learning from unexpected results. For example if you were testing plant food, you may discover that one of the controlled variables could have been set differently. You could write: "None of the plants grew as much as I expected. I think I should have watered all of them more."



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- Try to think of other uses for your experiment. “Farmers should use plant food to help their crops grow better.” Think about why your project is important to the world or any special interest group
- Make note of where/how you got your project idea. If you chose an idea you’ve seen before, simply state that you saw it before and were interested in it. Include the title and author of any book used. If the project was an original idea of your own, explain why you became interested in it
- .



Reminders/Rules

General Reminders/Rules:

1. The objective of your Science Fair project is to answer a question by comparing the results of an experiment. This is not to be confused with a scientific demonstration.
2. **Websites** can be good sources for ideas, but make sure the project fits our format. Don't forget to **credit** the source of your project idea. The public library is another good resource.
3. **No Guns** used in your experiment - no BB guns, water guns, Nerf guns, marshmallow guns
4. **No animals or insects** can be involved in your project – alive or dead. You can use animal products available at the grocery store like chicken eggs or bones, cooking ingredients, etc.
5. No experiments on siblings, please.
6. No deliberate growing of bacteria in petri dishes, as harmful bacteria could potentially be grown.
7. No experiments that could cause danger to someone.
8. Fourth and fifth graders may work in pairs or alone. **Once you turn in your project sheet with a partner listed, you cannot change your partner.**
9. Cost of your project is paid by student himself/herself. No reimbursement from PTA or school is available.

Display Rules/Reminders:

10. Your project should be displayed on a **standard 3-part folded display board** which can be purchased at a number of stores including office supply stores, Michaels, Hobby Lobby, Walgreens or Walmart.
11. Any other demonstration can be displayed in the area right in front of the display board.



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12. Except for the title, the main parts of your project should be identified with a **heading**. (Problem, Hypothesis, Materials, etc.)
13. Make sure the information on the display board is neat and check your spelling. You may type or handwrite your work. You may use computer graphs, but **at least one graph must be drawn by hand**. Remember that you are demonstrating YOUR skills, not the computer's features or your parents' expertise.
14. *Write your name(s) and your teacher's name on the BACK CENTER & BOTTOM of the display board in standard sized print. Do not write your name on the front of the display board or in the two (2) side flaps or in huge lettering.*

Video Rules:

15. **Videos should be no longer than 3 minutes**
16. The video should not contain identical information to the trifold. Create a script for your video that answers the *video specific* questions, and do not simply read from your trifold.
17. Narrate your video using your own voice, but do not show your face.
18. **The trifold MUST be completed prior to filming your video, and must appear clearly in the video** to enable judges to do preliminary scoring **prior** to the science fair judging day.
19. **An adult should help you** upload your video to YouTube using an unlisted channel and then include the link in the video submission form.
20. **Judging will be based on ALL of the requirements of the project (refer to tally sheet to make sure you have all components), and on overall presentation including creativity, originality, as well as, the presentation in the video clip. Judges will not add points for video aesthetics.**
21. All 4th and 5th grade students are invited to attend the donut party and award ceremony on Friday, March 2nd, 7:30– 8:30 am.

Good luck and work hard on your project. You may e-mail us at 2018WCEScienceFair@Gmail.com with any questions.

2018 Science Fair Chairs: Linda Hui, Elizabeth Lovering and Irina Gibson



Science Fair Project Ideas

Ideas online: <http://www.education.com/science-fair/>, <http://www.1000sciencefairprojects.com>
www.all-science-fair-projects.com, <http://sciencefair.math.iit.edu/projects/>

1. Which solid fuel produces the most heat? or What is the effect of the type of solid fuel on the amount of heat produced?
2. Do people remember more details from an expected or unexpected event?
3. Which truss system can hold up the most weight?
4. What boat design can hold the most weight? Or travel the farthest? Or go the fastest?
5. Which color of liquid absorbs the most heat? or What is the effect of the color of a liquid on how it absorbs heat?
6. Which color container absorbs the most heat? or What is the effect of the container's color on how well it absorbs heat?
7. Which color container cools off the quickest?
8. Do black bottom pools keep the water warmer?
9. What are the effects of swimming pool water (chlorine) on hair?
10. Does a magnetic field affect the growth of beans?
11. Does electricity affect the growth of beans?
12. How do detergents affect the growth of plants?
13. Do plants grow better with tap water or distilled water?
14. Do roots always grow down?
15. Do mirrors affect the way plants grow?
16. Does leaf surface area affect plant growth?
17. Under which color cellophane do plants grow best?
18. Can you give a plant too much fertilizer?
19. Do seeds sprout better in cold or hot climates?
20. Does acid rain affect the germination of seeds?
21. Under which thickness of plastic do radishes grow best?
22. Does aspirin prolong the life of cut carnations?
23. What are the effects of water on different types of wood?



Suggested Action Plan

- Choose a partner with similar work habits and similar schedule. Remember you cannot change partners once your project sheet is turned in. Select a project topic which interests you and fits the guidelines.
- Complete Science Fair Information Sheet **fully and carefully**, and turn this in to your teacher by **Tuesday, January 19th** **Each student's parent must provide an email address and a signature**
- Set up as many work sessions with your partner as needed to complete your project. Remember, don't underestimate the amount of time it takes to complete the experiment and create the display board!
- Make a list of all the materials you will need.
- Write down your procedure in numbered steps. If, during your project, you realize your original procedure isn't exactly right, CORRECT IT!
- Plan what measurements you expect to take by making a blank chart. It may look like this:

SAMPLE:

Manipulated Variable eg. Water	Trial #1	Trial #2	Trial #3	Trial #4	Trial #5
None					
1/4 cup					
1 /2 cup					
3/4 cup					
1 cup					

Make a separate blank chart for every Responding Variable (outcome).

Now you are ready to begin the experiment. Gather your materials.

- Following your written procedure, complete all the trials and fill in your data chart(s) with measurements. This step may take less than an hour or several days depending on your project.
- If you can, find totals, calculate averages etc. with your data. Draw graphs showing your data.
- Write a rough draft of your conclusion following the instructions.
- Make a short video clip (maximum 3 minutes).

RE-WRITE all of this information on your project display board. Make it neat and colorful



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Title of Project: _____ Project # _____

Nomination: _____

CATEGORY	PTS	BON
TITLE: The title should be clear and easy to identify No title = 0 points; Poor title = 1 point; Good title = 2 points		
PROBLEM: To what degree is the problem new and/or different and how well is it written? The problem should be clearly asked in the form of a question. No problem statement = 0 pts Incomplete problem statement = 1 pt Complete problem statement and well-written = 2 pts Complete, well-written problem statement and idea is new and/or different = 3 pts		
HYPOTHESIS: The hypothesis should be a testable prediction and written in a complete sentence No hypothesis = 0 pts; Incomplete hypothesis = 1 pt; Hypothesis present, but not completely testable = 2 pts Well-written, testable hypothesis = 3 pts		
MATERIALS: Materials list should include all materials that need to be gathered. No materials list = 0 pts; Incomplete materials list = 1 pt; Complete list = 2 pts		
PROCEDURES: To what degree are the experiment's steps clear? Steps are not listed and/or numbered = 0 pts; Steps are incomplete and not listed step-by-step = 1 pt Steps are complete and listed step-by-step = 2 pts		
Controlled variable identified clearly and correctly = 0-2 pts		
Manipulated variable identified clearly and correctly = 0-2 pts		
Responding variable identified clearly and correctly = 0-2 pts		
A minimum of three trials were performed = 2 pts		
OBSERVATIONS: Did the student collect enough data to support the results? No quantitative data collected = 0 pts; Insufficient data collected = 1 pt Sufficient data collected (data for minimum of three trials) = 2 pts; Data collected above expectations = 3 pts Data shown in table format = 2 pts		
Graphs are well presented and easy to understand = 0-2 pts		
Display includes at least 1 relevant hand-drawn graph = 2 pts		
CONCLUSION: How well are the results interpreted? No interpretation of data = 0 pts; Partial interpretation of data = 1 pt Correct and appropriate interpretation of data = 2 pts Comprehensive, significant interpretation of data (use of math skills such as averages or percentages) = 3 pts Conclusion includes basic conclusive sentence = 2 pts		
Hypothesis is reviewed = 2 pts		
Student refers specifically to data = 2 pts		
Student cites application to situation outside of experiment = 2 pts		
CREATIVITY: Project is a creative and interesting idea = 0-5 pts		
VIDEO PRESENTATION: (-3 pts if no video) 0-5 pts considering the following topics: Appropriately summarizes project - does not simply duplicate the trifold content Explains why student chose project - what sparked interest Conveys understanding of relevance - why it is important to student/school/business/world Shows understanding of potential impact of results - how findings could be used Student's <i>presentation</i> is clear and persuasive - <i>please do NOT score on video aesthetics</i>		
TOTAL POINTS (Maximum points = 50 plus 10 Bonus/Tie Breaker)		
Comments:		

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Calling all 4th and 5th graders, welcome to 2017 Science Fair!

Students can work individually or in pairs, and provide:

1. **Info Sheet** back to homeroom teachers by Friday, January 19th; **Complete this form fully, clearly and carefully!** Including **Parent email address and signature**
2. Your project, poster board, and a **short video clip** (maximum 3 minutes long) about your project, must be completed by Friday, February 16th. *Your video must be uploaded to Youtube with "unlisted" setting and the link should be included in your video submission form due the same day;*
3. Your **Science Project** should be displayed on a standard 3-part folded project display board, with any other demonstration you'd like to put in front of the display board, due to school by 7:55am Thursday, March 1st.
4. **Donut party and award ceremony** 7:30-8:30am Friday, March 2nd!

-----Cut here, keep the top part at home, and submit the bottom form-----

4th and 5th graders Science Fair Information Sheet (due back to homeroom teachers by Friday, January 19th)

Student Information:

Student Name: _____ Grade / Teacher: _____

Email: _____ Phone: _____

Partner's Name: _____ Partner's Grade / Teacher: _____

Problem Question: (Fill in the blanks.)

Hypothesis: (Remember to write a complete sentence.)

Student Signature

Parent Signature

Every student must complete this form. It is due Friday, January 19th, 2018. Turn it in to your homeroom teacher. For more information, please contact Science Fair chairs at 2018WCEScienceFair@gmail.com and access to student packet go to <http://www.wilchesterpta.org/> then PTA Activities, then Science Fair.



Have fun! Let your creativity shine!

SCIENCE FAIR VIDEO CLIP FAQ'S

How to I upload my video to YouTube and what should my settings be?

You should follow the instructions in this tutorial video and set your channel to "unlisted". That way no one can view your video or even search for your channel. The only way to access the video will be through a link that you would have to specifically send to someone you know. "How to post an unlisted video to YouTube":

<https://m.youtube.com/watch?v=1f-Zogch8cw>

Should the student or the parent upload the video?

The student should prepare the content of video independently, and should directly participate in the upload process, but a parent should always supervise access to live internet. Parental supervision of the upload itself is especially important to make sure the channel settings are correctly configured as "unlisted". Additionally, the parent should be the "owner" of the channel and the only one able to send the video link to anyone

Should I appear in the video?

No, you should narrate the video, however, you should not show your face or full body. Demonstrations, such as moving materials around with your hands are fine.

Should I say my name in the video?

No, just like with your trifold, you should identify your project by your assigned project number. You will be assigned that number after you submit your Science Fair Information Sheet and both your teacher and the science fair chairs have approved your project.

Should I include my name in my channel name or description?

No, you should identify your channel by either your assigned project number, or some name associated with the content of your project only, not your person. "WCE Science Fair Project A184", and "Soap and Water Temperature Testing" is also fine



How long will my video remain on YouTube?

You and your parents may remove the video anytime after science fair judging is complete. However, you may elect to leave it posted to send links to friends and family in the future.

Should the information in my video be exactly the same as the information on my trifold?

No, the information should not be identical in both media. There will be some overlap, however, the video should contain only a summary of the project, not retelling every step by step detail. The video should focus on the student's creativity in problem selection and the student's understanding of real world relevance. It should answer questions like: What sparked your interest in the subject? (What really made a connection for you with this project?); How your project is relevant in the world (Is this a real world problem? Why did this question need to be answered?); How might the results impact the student's life? (or the world, or a specific business, or the environment, or the future?); and What other questions arose from this experiment? (What might the next experiment look like?), etc Further ideas aligned with this concept can be found at <http://www.jpl.nasa.gov/edu/teach/activity/how-to-do-a-science-fair-project/> READ: Step 5: How to communicate your experiment and results

Should I consider the video requirement when choosing a project?

Yes, you should consider the questions that are meant to be answered in the video. Choose a project that you can easily articulate why it is important to you and answer some of the other example video questions. The following are some additional links to help you select an age appropriate project. <http://www.education.com/science-fair/fourth-grade/> <http://www.simplycircle.com/science-fair-projects-4th-grade/> <http://www.education.com/science-fair/elementary-school+fifth-grade/> <http://www.simplycircle.com/science-fair-projects-5th-grade/>



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Should I add music, animation or other clever scene changes to my video?

You may, but you don't have to! While we encourage you to have fun with the video, **you will not gain any points from any of these features.** Your points will be scored on your presentation skills and communication only. At a technical level, your display board must be clearly visible at some point in the video, and your voice must be clearly audible throughout.

Who will have access to my video?

Only people that you send the link to. Be sure to only send to friends and family that will not forward it to people you do not approve. Do not post the link on any social media sites. The science fair chairs will forward the links to the judges.

Can I share my video with friends and family?

Your parents can make that decision with you. No student should independently share the video with anyone.

Who are the science fair judges?

The science fair judges are professionals in our local community that the science fair chairs have invited to participate. They come from a wide variety of careers that apply science every day.

Will the science fair judges know my name?

No, not during the judging process, however, the winners' names will be announced at the award ceremony.

What should I do if I don't have recording equipment or a way to upload my video?

Generally, if you have a mobile phone available in your household, the video feature on that will be sufficient. You can also attend one of three equipment and technical support open houses held at the school by the science fair chairs on February 3rd, 6th or 7th. We will have equipment available for both recording and uploading and can answer other technical questions.