GEORGE WASHINGTON CARVER SCIENCE FAIR
Providing opportunities for students to gain enriched learning experiences through scientific inquiry & discovery

2020
# George Washington Carver Science Fair
## Teacher/Student Handbook

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<td>Jacqueline Genovesi</td>
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<td>Myrtle Jackson</td>
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<td>Claudia Keto</td>
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<td>National Association of University Women</td>
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<td>Margaret Monahan</td>
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<tr>
<td>Jorge Parra</td>
<td>Health Partners Plans</td>
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</tr>
<tr>
<td>Betsy Payne</td>
<td>Consultant</td>
<td>The Academy of Natural Sciences of Drexel University</td>
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<tr>
<td>Marsha Perry</td>
<td>Consultant</td>
<td>Science Consultant</td>
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<td>Betsy Payne</td>
<td>Consultant</td>
<td>The Academy of Natural Sciences of Drexel University</td>
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<tr>
<td>Nancy Peter</td>
<td>Philadelphia Education Fund</td>
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<td>Sharlene Roberson</td>
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<tr>
<td>Jayne Scott</td>
<td>Science Consultant</td>
<td>Institute for Regenerative Medicine</td>
</tr>
<tr>
<td>Jamie Shuda UPenn</td>
<td>Science Consultant</td>
<td>Archdiocese of Philadelphia</td>
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<td>Micah Sumner</td>
<td>Science Consultant</td>
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<td>Sarah Wengryniuk</td>
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<td>Temple University</td>
</tr>
<tr>
<td>Jeremiah White</td>
<td>Science Consultant</td>
<td>Philadelphia Gas Works</td>
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<tr>
<td>Erik Wickley-Olsen</td>
<td>Science Consultant</td>
<td>Cobbs Creek Community EE Center</td>
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<tr>
<td>Jackie Williams</td>
<td>Science Consultant</td>
<td>Cobbs Creek Community EE Center</td>
</tr>
<tr>
<td>Carole Williams-Green</td>
<td>Science Consultant</td>
<td>Cobbs Creek Community EE Center</td>
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</table>
MEMO to Principals: The following are dates for the Carver Science Fair. Please be mindful when planning school activities.

### SCIENCE FAIR DATES AND LOCATIONS

#### 41st GEORGE WASHINGTON CARVER SCIENCE FAIR 2020

<table>
<thead>
<tr>
<th>GRADE</th>
<th>LOCATION</th>
<th>SET-UP</th>
<th>JUDGING</th>
<th>PROJECT REMOVAL</th>
<th>AWARDS CEREMONY</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-6</td>
<td>ACADEMY OF NATURAL SCIENCES OF DREXEL UNIVERSITY</td>
<td>Tuesday February 18 2:00-5:00</td>
<td>Wednesday February 19 12:30-4:30</td>
<td>Thursday February 20 7am-7pm</td>
<td>Wednesday February 26 1:30-3:30</td>
</tr>
<tr>
<td>7-12</td>
<td>TEMPEL UNIVERSITY Student Athletic Pavilion 15th Street Between Norris St. &amp; Montgomery Ave.</td>
<td>Monday March 2 1:00-5:00</td>
<td>Tuesday March 3 12:30-4:30</td>
<td>Wednesday March 4 9:00am-5:00pm</td>
<td>Friday March 11 1:30-3:30</td>
</tr>
</tbody>
</table>

#### DELAWARE VALLEY SCIENCE FAIR 2019

<table>
<thead>
<tr>
<th>GRADE</th>
<th>LOCATION</th>
<th>SET-UP</th>
<th>JUDGING</th>
<th>AWARDS &amp; BREAKDOWN</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-12</td>
<td>GREATER PHILA. EXPO CENTER @ OAKS</td>
<td>Tuesday April 7</td>
<td>Wednesday April 8</td>
<td>Thursday April 9</td>
</tr>
</tbody>
</table>

ALL CARVER FAIR APPLICATIONS WITH “ORIGINAL SIGNATURES” ARE DUE ON **Friday, January 10, 2020**. INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED. Complete application must include e-registration AND full paper application.

Pony, Mail or Hand Deliver Carver Fair Applications To:

Rachel Cherry  
School District of Philadelphia  
Education Center  
440 N. Broad Street, Suite 251  
Philadelphia, PA 19130  
Email- rcherry@philasd.org  
(Do NOT FAX APPLICATIONS)

Note: If, due to inclement weather, the Philadelphia Public Schools are closed for part or all of any day, Carver activities scheduled for that day will be cancelled as well. When possible, Carver activities will be rescheduled for the following day. Check the School District of Philadelphia website ([www.philasd.org](http://www.philasd.org)), visit the George Washington Carver Science Fair website ([carversciencefair.org](http://carversciencefair.org)), or listen to KYW radio (1060 AM) for updates.
Who was George Washington Carver?

The George Washington Carver Science Fair pays tribute to the late Dr. George Washington Carver, who was the director of and a noted scientist at the George Washington Carver Agricultural and Research Center at the Tuskegee Institute in Alabama. He was also an inventor, sculptor, musician, and a great humanitarian. He devoted his life to research in agriculture, developing new products from peanuts and soybeans. His scientific discoveries revolutionized the economy of the South by liberating it from an excessive dependence on cotton. Carver’s epitaph reads: “He could have added fortune to fame, but caring for neither, he found happiness and honor in being helpful to the world.”

The George Washington Carver Science Fair fosters a greater understanding and appreciation of Dr. Carver’s achievements toward improving society as we continue through the 21st century. In keeping with this philosophy, the George Washington Carver Science Fair provides opportunities for students to gain enriched learning experiences through scientific inquiry and discovery. In the process, the Fair creates an important forum for individual creativity and recognition for students in the Philadelphia County public, parochial, and private schools.

For a more detailed history about G. W. Carver, please visit the Iowa State University website at:
http://www.lib.iastate.edu/spcl/gwc/bio.html
George Washington Carver Science Fair
General Guidelines

A. INTRODUCTION

Statement of Purpose
The George Washington Carver Science Fair encourages urban youth to pursue academic achievement and careers in science. Since its inception, over 37,000 students have participated in the Carver Science Fair and have in many cases, moved on to compete in the Delaware Valley Regional and Intel International Science Fairs.

The George Washington Carver Science Fair is a year-round endeavor. In the fall, teachers attend workshops to learn about the best methods for supporting fair participants. In February, judges are selected and attend an orientation on judging criteria and techniques. The Elementary Carver Fair (grades 4-6) are held at the end of February at the Academy of Natural Sciences of Drexel University. The Secondary Carver Fair (grades 7-12) are held at Temple University at the beginning of March.

Eligibility
The Carver Science Fair is open to all students in grades four through twelve who attend Philadelphia County public, charter, parochial, and private schools, as well as home schooled students residing in the county. Fourth through sixth graders demonstrate their scientific skills in five categories: life science, earth science, physical science, team projects and consumer science. Students in seventh through twelfth grade exhibit in 15 different categories such as biochemistry, botany, engineering, environmental science, and zoology.

Who Runs the Carver Fair?
The George Washington Carver Fair is jointly sponsored by Temple University, The Academy of Natural Sciences of Drexel University, The School District of Philadelphia, and The Archdiocese of Philadelphia. The Carver Fair is run by a committee of volunteers from the above institutions as well as by several other science education advocates from the region.
George Washington Carver Science Fair
Background Information

**Brief History**

In 1976, Frank Hess, Jr., former Director of Community Relations for Gulf Oil Corporation and Alfred Morris, then President of The Philadelphia Tribune newspaper, organized an art contest as a way of showcasing the many contributions of Dr. George Washington Carver. In 1977, Thomas Anderson, Jr., then Director of Community Relations at Temple University, joined the Carver movement. Thereafter, he was asked to assume the chairmanship of the fledgling organization and conceived of the science fair to provide and enhance academic opportunities for Philadelphia public, parochial, private, and home school students.

In 1979, the George Washington Carver Science Fair came into existence with the assistance of Dr. Bernard Kelner, former Assistant Superintendent for Curriculum at School District of Philadelphia, and Reverend Monsignor David Walls, former Vicar of the Archdiocesan School District of Philadelphia. The Carver Fair has been held at The Academy of Natural Sciences since 1979, but due to growth in participation, grades seven through twelve are now housed at Temple University.

In 1985, the George Washington Carver Science Fair joined the Delaware Valley Science Fair group, enabling many young scientists to compete at the regional level. Winners at the Delaware Valley Science Fair go on to participate in the annual Intel International Science & Engineering Fair.

For a more detailed history, please visit the Carver Fair website:

[www.carversciencefair.org](http://www.carversciencefair.org)

The Founders of the George Washington Carver Science Fair: Thomas Anderson, Jr., Frank Hess, and Alfred Morris
George Washington Carver Science Fair
Special Awards

Many students enter the Carver Science Fair to win first place, second place, third place, or honorable mention recognition. Others enter because they enjoy science and the opportunity to share their interests and expertise. Students also look forward to competing for the Carver Special Awards!

Since the Carver Fair began in 1979, individuals and organizations have honored student achievement through Special Awards. This year’s Special Award presenters include the Environmental Protection Agency, the United States Navy, The School District of Philadelphia, Temple University, Cobbs Creek Community Environmental Education Center, The Philadelphia Area Space Alliance, The Academy of Natural Sciences of Drexel University, Bartram’s Garden, Delaware Valley Mensa, MedImmune, Health Partners, The Women’s Humane Society, and Clara Tolbert. Their awards range from $50 gift cards to medals, saving bonds, paid internships, microscopes, and college scholarships. These awards recognize skills such as investigating environmental problems, demonstrating excellence in botany, treating experimental animals humanely, excelling in math and science, and exploring human intelligence.

For more information about the Carver Fair Special Awards, please contact Nancy Peter, Special Awards Chairperson, at 215-665-1400 ext.3342 or npeter@philaedfund.org.
## B. TIMELINE

<table>
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<tr>
<th>DATES</th>
<th>TEACHER/SPONSOR/PARENT RESPONSIBILITIES</th>
<th>STUDENT RESPONSIBILITIES</th>
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<tbody>
<tr>
<td>Oct - Dec</td>
<td>Assist students with the selection of an appropriate research project and the development of a research plan</td>
<td>Select a research topic and develop a research plan</td>
</tr>
<tr>
<td></td>
<td>If applicable, conduct a grade level or school science fair to determine which students progress to the Carver Fair</td>
<td></td>
</tr>
<tr>
<td>Jan 10, 2020</td>
<td>Submit all Carver Fair application forms to the School District of Philadelphia</td>
<td>Assist the teacher/sponsor with completing the application forms</td>
</tr>
<tr>
<td>Jan - Feb</td>
<td>Supervise student research projects</td>
<td>Complete research project</td>
</tr>
<tr>
<td>Feb - March</td>
<td>Complete display board</td>
<td></td>
</tr>
<tr>
<td>Check-in day</td>
<td>Bring students’ projects to the Carver Fair, register students’ projects with the Carver Committee, and receive students’ assigned project numbers</td>
<td></td>
</tr>
<tr>
<td>Judging day</td>
<td>Help students arrange transportation to and from the Carver Fair</td>
<td>Arrive at the Carver Fair between 12:00 and 12:30 for the judges’ interviews</td>
</tr>
<tr>
<td>Awards Ceremony</td>
<td>Help students arrange transportation to and from the Carver Fair</td>
<td>Arrive at the Carver Fair by 1:00 pm for the Awards Ceremony</td>
</tr>
</tbody>
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C. APPLICATION PROCESS

Required Forms
ALL student applications MUST include the following completed documents in addition to a completed online registration (See Online Registration Guide at www.carverssciencefair.org)

1. The Grades 4-6 OR The Grades 7-12 Carver Fair Application
   a. 17 lines of information
   b. Student’s, Parent’s, AND Sponsor’s signatures and photo permission slip
   c. For team projects, each student must submit a separate application form.
2. Checklist for Adult Sponsor (Form #1)
3. Student Checklist (Form #1A)
4. Research Plan. This is MANDATORY for students in Grades 4-6 as well as MANDATORY for students in Grades 7-12.
   a. This plan must be typed
   b. This plan must include the following sections:
      i. Research Question
      ii. Hypothesis/Problem/Engineering Goals
      iii. Method/Procedures
      iv. Bibliography – with a minimum of five major references
         (See Bibliography Guide on pg. 15)
5. Abstract This is MANDATORY for students in Grades 7-12.
6. Approval Form (#1B)
   a. Sections 1a and 1b

Additional Forms
Other forms may be necessary depending on the nature of the project. These forms include:
1. Regulated Research Institutional/Industrial Setting Form (#1C), for experiments conducted in a location other than at school, at home, or in the field.
2. Qualified Scientist Form (#2), for experiments involving human subjects, vertebrate animals, potentially hazardous biological agents, and DEA-controlled substances.
3. Risk Assessment Form (#3), for projects using hazardous chemicals, activities or devices.
5. Vertebrate Animal Form (#5A), for research involving vertebrate animals that is conducted in a Non-Regulated Research Site.
6. Vertebrate Animal Form (#5B) for research involving vertebrate animals that is conducted at a Regulated Research Institution.
7. Potentially Hazardous Biological Agents Risk Assessment Form (#6A), for research involving microorganisms, rDNA, fresh/frozen tissue, blood and body fluids.
8. Human and Vertebrate Animal Tissue Form (#6B), for projects using fresh/frozen tissue, primary cell cultures, blood, blood products and body fluids.
9. Continuation Projects Form (#7), for projects that are a continuation in the same field of study as a previous project.

Additional Information
1. Students submitting Team Projects must review the Intel International Science and Engineering Fair (ISEF) guidelines (page 4) for Team Projects.
   a. Please see handbook appendix for additional forms if required

2. Because The Carver Fair is a feeder fair for the Delaware Valley Regional Science Fair, it follows the Intel ISEF rules. There are two exceptions:
   a. Log books are MANDATORY for every grade.
   b. Official research plans are MANDATORY for all grades

Submitting Applications
1. Teachers must submit either the Elementary or Secondary Student Approval List with their student applications.
2. Applications must be received no later than 5:00 PM on January 10, 2020. **INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED. Complete application must include e-registration AND full paper application.**
3. Applications can be mailed, sent through PONY or delivered to:
   
   Rachel Cherry
   School District of Philadelphia
   Education Center
   440 N. Broad Street, Suite 251
   Philadelphia, PA 19130
   Email: rcherry@philasd.org

D. WHAT TO DO & EXPECT AT THE CARVER FAIR

Science Fair Displays
1. The maximum size for any project display is:
   a) Depth (front to back): 30 inches or 76 centimeters
   b) Width (side to side): 48 inches or 122 centimeters
   c) Height (floor to top): 108 inches or 274 centimeters

2. Displays must clearly list the following components: Title, Question, Hypothesis, Procedure, Materials, Data, and Conclusion, Bibliography.

3. Students must complete a 250-word, one-page abstract. This document should be displayed on or with the project board. The abstract should include:
   a) Purpose of the experiment
   b) Procedures used
   c) Summary of data
   d) Conclusions
e) Any possible research applications (optional)
The abstract should not include:
   a) Acknowledgments (including naming the research institution and/or mentor with which student worked)
   b) Work or procedures done by the sponsor or mentor
   c) Reference to previous work or science fair projects (minimal mention is acceptable if necessary for explaining the project)
   d) Self-promotions and/or external endorsements.

4. All students must keep a log book throughout their research project. The log book must be displayed with the project board at the fair.

5. Students’ names should be placed on a “removable” index card on the back of their display boards. School names must NOT be displayed at all.

Check-in Day (Refer to Dates and Location Chart) Students may participate in but are not required at check-in day. Adult teachers, sponsors or parents may complete the check-in process on behalf of the students.

1. Teachers, sponsors, or parents must arrive at the Carver Fair between 2pm-5 PM with the students’ completed display board, 2 copies of the abstract, and log books. Projects arriving late will not be judged.

2. Teachers, sponsors, or parents must register each student’s project with the Carver Committee. All projects will receive a project number WHICH MUST BE RELAYED TO THE STUDENTS. The teachers, sponsors, or parents will then set up the students’ projects at the designated positions in the display area.

3. Do not bring or set up living materials, liquids, or glass with any project.

Judging Day (Refer to Dates and Location Chart)

1. The judges will spend the morning reviewing the students’ projects. Students are not permitted to arrive at the Fair before 12:30 PM. At 12:30, students will be seated in the auditorium (Elementary), at their projects or in the bleachers (Secondary).

2. Student interviews begin at 1:00 PM, and usually end by 3:30 PM. Students must be present for their interviews to be eligible for awards. Students are called individually, by project numbers, for their interviews. At the secondary fair, students must remain with their projects for the duration of the fair.

3. Each student will have ten minutes to speak with the judges and answer questions about their research projects. Common questions include why did
you choose this project, what did you learn from this project, and how might you conduct this project differently in the future.

4. Some students will be asked to remain with their projects and speak with additional adults who are judging Special Awards (see Special Awards description).

5. During the interviews teachers, sponsors, and parents are not permitted in the project display areas.

6. Elementary and Secondary students should remain at the Fair for the entire afternoon, or until all of the judging is complete.

7. At the end of the day the judges will select the first, second, and third place winners for each category. A Best of Fair prize will also be identified at each of the grade levels (4th, 5th, 6th, 7th - 8th, 9th - 10th, and 11th - 12th). Special Award winners will be selected as well.

8. Elementary awards are not revealed or announced until the Awards Ceremony. Secondary students, who have won awards, will find invitations to the Awards Ceremony by their projects after the completion of the fair and their sponsor will be notified via email. Secondary students, who have placed first or second, will have notices stating that they are progressing to the Regional Fair placed by their projects.

Awards Ceremony (Refer to Dates and Location Chart)
Students are not permitted to arrive at the Elementary or Secondary Awards Ceremony before 1:00 PM. At 1:00pm students will be seated in the auditorium.

1. The Awards Ceremony begins at 1:30 PM, and usually ends by 3:30 PM. Students do not need to be present to receive their awards.

2. The Awards Ceremony begins with welcomes and introductions. At the Secondary Ceremony, the George Washington Carver Award (honoring adult achievement in science and/or education) is presented next. The Special Awards follow, after which grade and category awards are presented. Finally, the ceremonies conclude with the Best of Fair awards.

3. At the end of the ceremony, teachers come forward and claim the awards for students who did not attend the ceremony. Certificates, for all Carver Fair participants, are distributed then as well. All unclaimed awards and certificates will be delivered to the schools after the fair.
E. RESOURCES FOR TEACHERS, STUDENTS, PARENTS & JUDGES

The George Washington Carver Science Fair
http://www.carversciencefair.org

The Delaware Valley Science Fair
http://www.drexel.edu/dvsf/

The Intel International Science & Engineering Fair
http://www.societyforscience.org/isef/

Science Buddies – Science Fair Ideas & Resources
http://www.sciencebuddies.org/index.htm

Showboard – Science Fair Supplies
http://www.showboard.com/
CARVER SCIENCE FAIR TIPS FOR TEACHERS

1. Visit the Carver Fair website for details, deadlines, and up-to-date information: www.carversciencefair.org

2. The Carver website also has a “Judges Handbook,” which can help prepare teachers, students, and parents for the judging day.

3. Be aware of timelines and deadlines: for prior approval forms, for student registration packets, for setting up projects, for participating in interviews, and for attending the awards ceremony.

4. Help the students follow the scientific method and the Carver rules and regulations (such as size of board, what must and must not be displayed with the project, when they should be where, etc.)

5. Double-and triple-check all the Carver paperwork and registration forms.

6. Communicate with parents regarding the students’ participation, the timelines and deadlines, and what they will be expected to do in terms of coaching (helping their kids with projects) and logistics (purchasing materials and transporting projects and students). Make sure to relay the importance of participating in the Fair.

7. Communicate with school administrators and staff regarding anything that could impact them, such as special arrangements for testing days (PSSA), release forms, space use, excused absences, approval for trip slips, etc.

8. Make sure you are available, the week of the fair, to help the kids with last minute details and transportation.
BIBLIOGRAPHY GUIDE

Underline or use italics for titles of books, periodicals and software.

Titles of articles are enclosed in quotation marks.

Note punctuation and follow exactly.

If required information, such as author or place of publication, is not available, just leave it out.

Arrange all sources in one list, alphabetically by first word, which will generally be either the author's last name or the first important word of the title.

Use the patterns below to make a list of sources you used. Put your list in alphabetical order.

Books
Last Name, First Name. Name of book. City of publication: Publisher's name, Copyright Date.

Example:

Book with Two Authors:
Authors (in the order they are given in the book). Title of book. (underlined or italicized) City of publication: Publisher, date.

Example:

Encyclopedias (print)
"Article title". Name of encyclopedia. Copyright Date.

Example:
CD-ROM Encyclopedia
Author (last name, first name). "Name of article." Name of encyclopedia. CD-ROM. City: Publisher, Copyright Date.

Example:

Online Magazine Article
Author. "Title." Journal Date. Date you read it URL

Example:

Magazine Article
Author. "Title of Article." Name of magazine DD Mo. YYYY: Pages.

Example:

World Wide Web
Author. "Title." Group Title. Date created or revised. Institution. Date you saw it. <URL>

Example:

Interview
Last Name, First Name. Kind of interview. DD Mo. YYYY.

Example:
Goodkind, Mary. Personal interview. 4 Sept. 1996.
APPLICATIONS MUST BE RECEIVED BY 5 PM ON JANUARY 10, 2020

1. Student Last Name: ________________________ First Name: ____________________

2. Home Address: __________________________________________________________________________

3. City: _______________ State: PA Zip: ________________

4. Home Phone: _______________________ 5. Grade: ______

6. Gender: __________ Age: __________

7. Student's E-Mail Address: __________________________________________________________________

8. School Name: _____________________________________ Pony #: ________________

9. School Address: ____________________________________________________________________________

10. City: _______________________ State: PA Zip: ___________________

11. School Phone: ________________________ School Fax: ________________________

12. Sponsor Last Name: __________________________ First Name: ____________________

13. Sponsor E-Mail Address: __________________________________________________________________________

14. Title of Project:_____________________________________________________________________________

__________________________________________________________________________________________

15. Category # _____ see list below for 1-5

16. Does your project require electricity? _ _Yes _ _No

17. Are you bringing a computer? _ _Yes _ _No

CATEGORIES: Schools can send 3 projects per category, per school, except categories 4 & 5*.
SELECT ONE CATEGORY (Selection MUST be the same as #15).

☐ 1. Life Science ☐ 2. Earth Science ☐ 3. Physical Science

☐*4. Team Projects (1 team of 2-3 students per school)

☐*5. Consumer Science (1 project per school)

***MUST HAVE ALL SIGNATURES***

STUDENT’S Signature_________________________________________ Date: __

SPONSOR’S Signature_________________________________________ Date: ____________

PARENT’S Signature__________________________________________ Date: ____________

By signing this form all parties understand and agree that photographs, videos, and names may be used for media and print material.

FOR ALL OTHER REQUIRED SCIENCE FAIR FORMS VISIT www.carversciencefair.org and take the Special Forms Quiz
GRADES 7-12 G.W. CARVER SCIENCE FAIR APPLICATION
COMPLETED BY STUDENT AND SPONSOR.

Check out Rule Wizard for complete rule information: https://ruleswizard.societyforscience.org/

APPLICATIONS MUST BE RECEIVED BY 5 PM ON JANUARY 10, 2020

1. Student Last Name: ________________________  First Name: ____________________
2. Home Address: ________________________________
3. City: __________________ State: PA  Zip: ________________
4. Home Phone: _______________________  5. Grade: ______
6. Gender:__________  Age: __________
7. Student’s E-Mail Address: ________________________________
8. School Name: ____________________________  Pony #: ________________
9. School Address: ________________________________
10. City: __________________ State: PA  Zip: ________________
11. School Phone: _______________________ School Fax: _________________________
12. Sponsor Last Name: __________________________ First Name: ________________
13. Sponsor E-Mail Address: ________________________________
14. Title of Project: ________________________________
15. Category Number: ______ (select a number from 1-15 using the list below)
16. Does your project require Electricity?  ☐ Yes  ☐ No
17. Are you bringing a computer?  ☐ Yes  ☐ No

CATEGORIES: 3 projects per category, per school, except category #14 and #15
SELECT ONE CATEGORY (Selection MUST be the same as question #15 above).

☐ 13. Zoology  ☐ 14. Team Projects (1 team of 2-3 students per school)*
☐ 15. Consumer Science (7th & 8th grades only)

***MUST HAVE ALL SIGNATURES***

STUDENT’S Signature: ____________________________ Date: __________
SPONSOR’S Signature: ____________________________ Date: __________
PARENT’S Signature: ____________________________ Date: __________

By signing this form all parties understand and agree that photographs, videos, and names may be used for media and print material.

ALL OTHER REQUIRED SCIENCE FAIR FORMS VISIT www.carversciencefair.org and take the Special Forms Quiz
Due to space constraints at the Carver Science Fair, each elementary school is permitted to send a limited number of students.

- For the purpose of the Carver Fair, elementary schools include grades 4, 5, and 6. If your school contains higher grades as well, registrants from those grades will participate in the Secondary Fair and will not impact your elementary student quota.
- Each participating elementary school may register up to 3 individual student projects in each of the 3 primary categories: Life Science, Earth Science, and Physical Science (a total of 9 students). These students may be in 4th, 5th, or 6th grade.
- Schools may only register one individual student project in the Consumer Science category. This student can be in 4th, 5th, or 6th grade.
- Schools may only register one team project per school in the Team Project category. Teams are comprised of 2-3 students from any grade or combination of grades.
- Keep in mind that your entire school can only register a maximum of 13 students. It is therefore important to coordinate registration with other teachers in your school.

<table>
<thead>
<tr>
<th>SCHOOL</th>
<th>LOC #</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEACHER SPONSOR</td>
<td></td>
</tr>
<tr>
<td>EMAIL ADDRESS</td>
<td></td>
</tr>
</tbody>
</table>

Please list the names of the students your school is registering.

<table>
<thead>
<tr>
<th>Life Science (3 students)</th>
<th>Earth Science (3 students)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Science (3 students)</td>
<td>Team Project (1 team per school/max 3 students per team)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer Science (1 project/1 student per school)</td>
<td></td>
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<tr>
<td></td>
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</tbody>
</table>
CARVER SCIENCE FAIR
SECONDARY FAIR –
GRADES 7-12

STUDENT LIST

Due to space limitations at the science fair, schools are permitted to send a limited number of students per grade level and category. There are three project grade levels: 7-8th, 9-10th, 11-12th.

☐ Each participating school is permitted to send up to 3 individual student projects PER category, EXCEPT Consumer Science and TEAM Projects.

☐ Schools may register ONLY ONE individual student per school in the Consumer Science category (7-8th grade only)

☐ Schools may register ONLY ONE Team Project per school (regardless of grade level).

☐ It is important that you coordinate registration with other teachers at your school.

SCHOOL_________________________________________LOC #________

TEACHER SPONSOR ________________________________

EMAIL ADDRESS____________________________________

On the next page, please list the names of the students your school is registering. Keep in mind that your entire school can only register maximum of 43 students.
<table>
<thead>
<tr>
<th>Behavior/Social Science (only 3 students)</th>
<th>Environmental Science (only 3 students)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
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<tr>
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<td>Mathematics (only 3 students)</td>
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<td></td>
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<tr>
<td>Botany (only 3 students)</td>
<td>Medicine/Health (only 3 students)</td>
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<td></td>
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<tr>
<td>Chemistry (only 3 students)</td>
<td>Microbiology (only 3 students)</td>
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<tr>
<td>Computer Science (only 3 students)</td>
<td>Physics (only 3 students)</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Earth Space Science (only 3 students)</td>
<td>Zoology (only 3 students)</td>
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<td></td>
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<tr>
<td>Engineering (only 3 students)</td>
<td>Team Project (1 team-school/ max 3 stds.)</td>
</tr>
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<tr>
<td>Consumer Science (7th &amp; 8th Grade Only)</td>
<td></td>
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</tr>
</tbody>
</table>
OUT OF SCHOOL TIME (OST) PROGRAM
GRADES 4-6  G.W.CARVER  SCIENCE  FAIR APPLICATION

COMPLETED BY STUDENT AND SPONSOR. ALL INFORMATION MUST BE TYPED OR NEATLY PRINTED.
Check out Rule Wizard for complete rule information: https://ruleswizard.societyforscience.org/
APPLICATIONS DUE January 10, 2020 (please refer to - www.carversciencefair.org )

1. Student Last Name____________________________ First Name_____________________

2. Home Address________________________________________________________________________

3. City: __________________ State: ___ Zip: ____________________________

4. Home Phone- - ____________

5. Male: ______ Female: __________ Age: __________

6. Student’s E-Mail Address______________________________________________________________

7. Name of School_____________________________________________________________________

Grade_______

8. OST Program Name__________________________________________________________________

9. Does your OST program have 501(c)3 status, or is it formally affiliated with an organization that has 501(c)3 status? ___Yes _____ No

10. OST Program Address________________________________________________________________

11. City: __________________ State: ___ Zip: ___________________

12. OST Phone ______-_______-_______ FAX_______-_______-__________

13. Sponsor Last Name___________________________ First Name_____________________

14. Sponsor E-Mail Address_____________________________________________________________

15. Title of Project: ________________________________________________________________

____________________________________________________________________________

16. Category Number ________ (select a number from 1-5 using the list below)

17. Does your project require Electricity? ___Yes _____ No

18. Are you bringing a computer? _____Yes ____No

ELEMENTARY FAIR: OST PROGRAMS CAN SEND 3 PROJECTS PER CATEGORY, PER SCHOOL, EXCEPT CATEGORIES 4 & 5*. CIRCLE ONE CATEGORY.
1. Life Science  2. Earth Science  3. Physical Science
*4. Team Projects (1 team of 2-3 students per OST Program)
*5. Consumer Science (1 project per OST Program)

***MUST HAVE BOTH SIGNATURES***

STUDENT'S Signature _____________________________ Date: ________

SPONSOR’S Signature _____________________________ Date: ________

By signing this form all parties understand and agree that photographs, videos, and names may be used for media and print material.

ALL OTHER REQUIRED SCIENCE FAIR FORMS VISIT www.carversciencefair.org and take the Special Forms Quiz
For the purpose of this application, out-of-school time (OST) programs are defined as “A wide range of program offerings for young people that take place before school, after school, on weekends, and during the summer and other school breaks” (NOIST, 2000).

Due to space limitations at the Carver Science Fair, OST programs are permitted to send a limited number of students per grade level and category. Each participating OST program is permitted to send up to 3 students for each grade level (4th, 5th, & 6th) for the Life Science, Earth Science, and Physical Science categories. Programs may register only one student per school for Consumer Science, and only one Team Project (regardless of grade level). It is important that you coordinate registration with other staff in your OST Program, as this quota applies to programs, not individual sites.

Note: If your OST program does NOT have 501(c)3 status, or is NOT formally affiliated with an organization that has 501(c)3 status, then you must register through your school. Your students will be counted as part of your school’s student/project quota.

OST PROGRAM ____________________________________________

SPONSOR _____________________________________________________

EMAIL ADDRESS _____________________________________________

Please list the names of the students your OST program is registering. Keep in mind that your entire program can only register a maximum of 13 students

<table>
<thead>
<tr>
<th>Life Science (3 students)</th>
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<table>
<thead>
<tr>
<th>Physical Science (3 students)</th>
<th>Team Project (1 team per OST Program/max 3 students per team)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<table>
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<tr>
<th>Consumer Science (1 project/ 1 student per program)</th>
<th></th>
</tr>
</thead>
</table>
OUT OF SCHOOL TIME (OST): GRADES 7-12 G.W.CARVER SCIENCE FAIR APPLICATION

COMPLETED BY STUDENT AND SPONSOR. ALL INFORMATION MUST BE TYPED OR NEATLY PRINTED.

Check out Rule Wizard for complete rule information: https://ruleswizard.societyforscience.org/

APPLICATIONS due January 10, 2020 (please refer to - www.carversciencefair.org)

1. Student Last Name_________________________________________First Name____________________________________

2. Home Address____________________________________________________________________________________

3. City: _______________________ State: ___ Zip: __________________________

4. Home Phone_______-________-__________

5. Male: _______ Female: ___________ Age: __________

5. Student’s E-Mail Address____________________________________________________________

7. Name of School_________________________Grade_____

8. OST Program Name______________________________________________________________

9. Does your OST program have 501(c)3 status, or is it formally affiliated with an organization that has 501(c)3 status? ___Yes _____ No

10. OST Program Address________________________________________________________

11. City: _______________________ State: PA Zip: __________________________

12. OST Phone ______-_______-__________ FAX________- ________- ______________

13. Sponsor Last Name___________________________First Name____________________________________

14. Sponsor E-Mail Address__________________________________________________________________________

15. Title of Project: _______________________________________________________________________________

16. Category Number_______ (select a number from 1-15 using the list below)

17. Does your project require Electricity? ___Yes _____ No

18. Are you bringing a computer? _____Yes ____No

SECONDARY FAIR: OST PROGRAMS CAN SEND 3 PROJECTS PER CATEGORY, PER SCHOOL, EXCEPT CATEGORIES 14 & 15*. CIRCLE ONE CATEGORY.

14. Team Project (1 team of 2/3 students per school)* 15. Consumer Science (7th/8th grade only)*

***MUST HAVE BOTH SIGNATURES***

STUDENT’S Signature_________________________________________Date: __________

SPONSOR’S Signature_________________________________________Date: __________

By signing this form all parties understand and agree that photographs, videos, and names may be used for media and print material.

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SPONSOR _______________________________________________________________

EMAIL ADDRESS __________________________________________________________

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Overview of Rules Changes  
May 30, 2019

General
• Expanded Ethics Statement
• Roles and Responsibilities of the Students and Adults has been rewritten and reformatted
• Added Responsibilities for Qualified Scientist and Designated Supervisor
• Clarified PHBA rules
• Revised "Engineering Projects Guide"

Human Participants
• Pg. 9, Rule 6: Students are prohibited from independently diagnosing disease, administering medication and/or performing medical procedures.
• Pg. 9, Rule 1 of Human Participant Involvement in Student-designed Invention, Prototype, Computer Application & Engineering/Design Projects: IRB review and pre-approval is necessary when the student-designed invention, prototype, application, etc. is tested by human participants other than the student researcher(s) or a single adult guardian, adult sponsor/QS/DS when the testing requires an adult tester.

PHBAs
• Pg. 14, Rule 8: insertion of antibiotic resistance markers for the clonal selection of bioengineered organisms is permitted, with the following exceptions:
  o Students are prohibited from the insertion of antibiotic resistance traits...
  o Students are prohibited from designing or selecting for multiple drug resistance organisms...

Engineering Projects Guide
• Changed section heading from "Human Participants" to "Device Testing with Human Participants" Ethics Statement
• Expanded Ethics Statement:
  o Addresses integrity, legality, respect for confidentiality and intellectual property, and stewardship of the environment.
  o Student researchers, as well as adults who have a role in their projects, are expected to maintain the highest ethical standards.

For complete rules please visit: https://student.societyforscience.org/international-rules-pre-college-science-research
APPENDIX
## Science Fair Project Rubric

<table>
<thead>
<tr>
<th>PROJECT#</th>
<th>Excellent/Expert</th>
<th>Good/Proficient</th>
<th>Needs Improvement/Emergent</th>
<th>Not Present/Novice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research Question</strong></td>
<td>--- Clear &amp; focused purpose</td>
<td>--- Research question has minor clarity and focus issues</td>
<td>--- Research question is not answerable or does not fit with the actual experiment performed</td>
<td>--- No attempt to define a research question</td>
</tr>
<tr>
<td><strong>Design &amp; Methodology</strong></td>
<td>--- Well designed plan and data collection methods</td>
<td>--- Method had minor flaws, but an attempt for control or comparison was made</td>
<td>--- Method was inappropriate, but an attempt for control or comparison was made</td>
<td>--- Experimentation was not performed (i.e. demonstration or exhibit).</td>
</tr>
<tr>
<td></td>
<td>--- Variables and controls defined, appropriate, and complete</td>
<td></td>
<td></td>
<td>--- No control group present</td>
</tr>
<tr>
<td><strong>Execution: Data Collection, Analysis, &amp; Interpretation</strong></td>
<td>--- Systematic data collection and analysis</td>
<td>--- Minor errors or flaws in technique(s)</td>
<td>--- Major errors or flaw in technique(s)</td>
<td>--- No techniques reported.</td>
</tr>
<tr>
<td></td>
<td>--- Reproducibility of results</td>
<td>--- Measurements mostly accurate and precise.</td>
<td>--- Little attention paid to accuracy and/or precision.</td>
<td>--- No accuracy or precision in measurements.</td>
</tr>
<tr>
<td></td>
<td>--- Appropriate application of mathematical and statistical methods</td>
<td></td>
<td>--- Too few trials or sample size too small</td>
<td></td>
</tr>
<tr>
<td></td>
<td>--- Sufficient data collected b support interpretation and conclusions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Creativity</strong></td>
<td>--- Project demonstrates significant creativity and originality in two or more of the above criteria</td>
<td>--- Project demonstrates creativity in the one of the above criteria</td>
<td>--- Project demonstrates some creativity – a new twist on an old experiment</td>
<td>--- Project lacks creativity: experiment copied exactly from a published source</td>
</tr>
<tr>
<td><strong>Presentation: Poster</strong></td>
<td>--- Logical organization of material</td>
<td>--- Information and results displayed somewhat organized, some difficulty in following.</td>
<td>--- Information and results could be more organized, major difficulty in following.</td>
<td>--- Unorganized poster</td>
</tr>
<tr>
<td></td>
<td>--- Clarity of graphics and legends</td>
<td>--- Minor errors in graphics or legend</td>
<td>--- Major errors in graphics or legends</td>
<td>--- Graphics or data tables missing</td>
</tr>
<tr>
<td></td>
<td>--- Supporting documentation displayed</td>
<td>--- Some background information given</td>
<td>--- Little or irrelevant background information given.</td>
<td>--- No supporting documentation of research provided</td>
</tr>
</tbody>
</table>
# Science Fair Project Rubric

<table>
<thead>
<tr>
<th></th>
<th>Excellent/Expert</th>
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<th>Needs Improvement/Emergent</th>
<th>Not Present/Novice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Presentation: Interview</strong></td>
<td>⋯Clear, concise, thoughtful responses to questions ⋯Understanding of basic science relevant to project ⋯Understanding interpretation and limitations of results and conclusions ⋯Degree of independence in conducting project ⋯Recognition of potential impact in science, society, and/or economics ⋯Quality of ideas for</td>
<td>⋯Clear, concise, thoughtful responses to almost all of the questions ⋯Student has some misconceptions about the science related to the project ⋯Student can answer most questions posed, but had not really given ideas much thought prior to interviews</td>
<td>⋯Student cannot answer some questions clearly, but generally understands his/her project ⋯Student can answer a few questions posed to some extent, but had not really given ideas much thought prior to interviews</td>
<td>⋯Student unable to explain their project ⋯Students unable to explain the science related to their project ⋯Student did not conduct this project independently – parent did all of the work ⋯Students can not communicate any ideas for future research</td>
</tr>
</tbody>
</table>

**Judges Comments:**
Risk Assessment Guide

The purpose of this guide is to assist student researchers, teachers/mentors and local IRB’s as they evaluate risks and design research projects that respect the rights and welfare of human subjects. The complete Human Subjects rules and guidelines can be found on the Web at: [www.societyforscience.org/isef/document/](http://www.societyforscience.org/isef/document/).

This document contains information on the following topics:

A. Risk Assessment and Risk Reduction

B. Types of Risks and Suggestions for Reducing Risk
   1. Physical Risks
   2. Psychological Risks
   3. Risks due to Invasion of Privacy & Breach of Confidentiality
   4. Risk Groups

C. Informed Consent

D. Online Studies

E. Examples of Research Studies with Suggested IRB Decisions

F. Additional Resources

A. Risk Assessment and Risk Reduction

Risk Assessment involves consideration of [physical](http://example.com) and [psychological](http://example.com) risks along with the [protection of privacy](http://example.com). The student researcher, adult sponsor and qualified scientist must develop procedures that reduce and minimize any risks to human subject participants.

The IRB will review the Research Plan and make the following determinations:

- whether the study is approved or must be revised
- whether the study contains no more than minimal risk or more than minimal risk to potential participants. The IRB will consider characteristics (e.g., age, health status, vulnerability to coercion) of the study population, the specific risks (e.g., physical, psychological, social, privacy) associated with the research activity and local norms when making a risk level determination;
- whether documentation of informed consent/subject assent and/or parental permission are required or can be waived
- whether a qualified scientist is required

No more than minimal risk exists when the probability and magnitude of harm or discomfort anticipated in the research are not greater than those ordinarily encountered in daily life or during
performance of routine physical or psychological examinations or tests. Studies must involve **anonymous data** to be considered no more than minimal risk.

**More than minimal** risk exists when the possibility of physical or psychological harm or harm related to breach of confidentiality or invasion of privacy is greater than what is typically encountered in everyday life.

**B. Types of Risk**

1) **Physical Risks:**

   a. **Exercise** other than ordinarily encountered in daily life *by that subject* would be considered more than minimal risk. One must consider characteristics of potential research subjects as well as the type of exercise involved in the study.

   Examples:
   
   - Walking the length of standard hallway
     - For most healthy subjects, this activity could be considered “minimal risk.”
     - For the elderly or someone recovering from knee surgery, this might be considered “more than minimal risk.”
   
   - Swimming 500 meters
     - For the general population, this activity would be considered “more than minimal risk.”
     - For members of the varsity high school swim team, this activity could be considered “minimal risk.”

   b. **Ingestion, tasting, smelling, application of a substance** that pose any health risk are considered “more than minimal risk.” Ingestion or tasting projects that involve commonly available food or drink will be evaluated by the IRB who will determine risk level based upon the nature of study and local norms around food typically encountered in the research setting. For Example:

   - Some school IRBs may consider a tasting study minimal risk based on the fact that the food being studied is commonly available to all students in their school.
   - Conversely, an IRB at another school may deem the same study more than minimal risk if the food being studied is not commonly available to students or they believe that parents in their community would want to provide parental permission before their minor child could participate in the study.

   c. **Medical examples**

   Blood glucose testing with a glucometer that is conducted by a diabetic on a daily basis could be considered minimal risk. However, it would be considered more than minimal risk when a glucometer is used by a subject who does not perform this test as a function of their daily life. Student researchers must receive training by a qualified scientist on the proper technique of capillary blood glucose sampling. Risks to the subject include pain, infection, and injury and risks to the researcher could include possible exposure to blood/body fluids, or needle stick.

   A project involving the measurement of blood pressure in which a student researcher uses a commercially available automatic blood pressure device would be considered a minimal risk study. The study would be considered more than minimal risk if a manual sphygmomanometer is used. Risks include vascular spasm, nerve damage, and bruising due to improper technique. The IRB
must examine the context of the research plan to ascertain these risks. Training of the student researcher should be required by the IRB. The IRB may also require a qualified scientist. Most often, these measurements are obtained in conjunction with exercise. If that is the case, the IRB should refer to item 1a above to assess the overall risk to the subject. Each research plan that employs vital sign measurements should also include a plan of how to deal with vital signs measurements that are out of range. For example, when a reading is obtained that is outside of the normal range, the person should be referred to their healthcare provider or the nearest emergency facility.

2) Psychological Risks

A research activity (e.g. survey, questionnaire, viewing of stimuli) or experimental condition that could potentially result in emotional stress would be considered more than minimal risk. For example, answering questions related to personal experiences such as sexual or physical abuse, divorce and/or psychological well-being (e.g. depression, anxiety, suicide) must be considered more than minimal risk and should have documented informed consent/minor assent/parental permission (as applicable).

Additionally, research activities that involve exposing subjects to stimuli or experimental conditions that could potentially result in emotional stress must also be considered more than minimal risk. Examples include violent or distressing video images, distressing questions, materials or activities that could potentially result in feelings of depression, anxiety, or low self-esteem in subjects.

Reducing Risk associated with Emotional Distress: Care must be taken to try to reduce potential emotional distress. For example, to reduce risk in a study involving a survey about depression and suicide, consider having a school counselor available to talk with students if they are feeling distressed or having a statement at the end of the survey directing students to the school counselor or school psychologist.

3) Risks due to Invasion of Privacy & Breach of Confidentiality

The student researcher and the IRB must consider whether any activity could potentially result in negative consequences for the subject due to invasion of privacy or breach of confidentiality. For example, if the study involved collecting a student’s GPA and the data were accidentally made available to unauthorized persons, the research subject could suffer embarrassment and feelings of distress related to the invasion of his privacy.

Reducing Risk:
Risk level can be reduced by appropriately protecting confidentiality or collecting data that is anonymous and uses data collection procedures that make it impossible to link any identifying information with his/her responses or data.

a) Anonymity involves collecting research data in such a way that it is impossible to connect research data (e.g. responses, questionnaires) with the individual who provided the data. That is, personal identifiers (e.g. names, birthdates, social security numbers) are not collected. Whenever possible, student researchers should collect data anonymously.
(While collecting data anonymously does reduce risk, not all anonymous studies are considered minimal risk.)

- To collect data anonymously, student researchers must not require subjects to give their name or any other identifiable information (birth date, email address, etc.)
- If documented informed consent, assent, and/or parental permission is/are required, the forms must always be kept in a secure location separate from the data.

b) **Confidentiality** is necessary when personal identifiers such as name, birth date, telephone number, photograph, email address or mailing/street address are collected.

- Protecting confidentiality involves taking careful measures to ensure that the research data and/or responses are not disclosed to the public or unauthorized individuals with identifiable information. When research activities involve collection of personal information (e.g. history of abuse, drug use, opinions, fingerprints, emotional functioning, grades) or health-related data (genetic material, blood, tissue) the researcher must consider risks related to invasion of privacy and possible breach of confidentiality.
- If the research involves data from the same subject on multiple occurrences, the data or survey would need to be labeled with an identifier to be linked with the data collected at a later date. In this case, confidentiality could be maintained by labeling the surveys or data with a subject number and keeping a list of names and subject numbers in a separate and secure (e.g., locked file cabinet, password protected computer) location. Once the 2nd round of data is collected, the surveys/data may be matched using the subject number and any identifiers should be removed from the data/surveys. At this point, the list of names and subject numbers should be securely discarded (e.g., shred). If documented informed consent, assent, and/or parental permission is/are required, the forms must be kept in a secure location separate from the data.
Special Considerations:

Threats to Anonymity

- If the number of participants is relatively small and/or all participants are from an identifiable source (e.g., an English class, softball team), the anonymity of the data could be threatened. That is the student researcher or anyone with access to the data could potentially link the survey responses to an individual. In addition, presenting the results of the study (even in aggregate) could threaten the subjects’ privacy or result in negative consequences for the subjects.
- If informed consent/assent/parental permission forms (which include names) are collected and the sample is relatively small, it could be possible for the student researcher or an unauthorized person to link the survey responses with subjects.

Making Data Anonymous

- Sometimes data may not be collected anonymously, but can be made anonymous after data collection. For example, if the student researcher uses interviews or observations to collect the data, the data would not be anonymous at the time of collection. However, if names are not collected or are removed from the data soon after collection, the data set would then be anonymous.

Risks Related to Threats to Anonymity

- Be sure to consider any ramifications of the student researcher being able to link responses with subjects. Most importantly, would there be any negative consequences for the research subjects if the student researcher could link responses with the subjects. This is especially important when the research subjects are peers to the researcher. When the subjects are peers of the student researcher, the researcher/QS/IRB should give extra consideration to any potential risks related to the student researcher having knowledge of his/her peers’ data (e.g., grades, body weight, etc). To eliminate such risks, it may be prudent to have an adult collect the data and hand it over to the student research after identifiers are removed and it is anonymous.
- Be sure to consider the possibility of and ramifications of an unauthorized person (e.g., another student, parent, teacher, administrator) getting access to the data and being able to link responses to individual subjects or groups of subjects (e.g., softball team).
- Consider the nature of the study/data collected. Issues of anonymity and confidentiality are most salient for studies involving sensitive and personal information. Examples of data that should receive special consideration include grades, health/mental health information, experiences of child abuse, illegal behavior, socially unaccepted behavior, anything that could cause the subject embarrassment or legal or disciplinary negative consequences.

4) Risk Groups:

As noted above, the physical, psychological and other risks of participation in a study may depend on the specific sample of subjects involved. The physical risk of an activity such as jumping roping will be much higher for an elderly (or even middle aged subject) than for a middle or high school subject. In contrast, the risks of a breach of confidentiality or anonymity would be greater for a group of high school students answering questions about alcohol use than for a group of older adults for whom it would be easier to collect the data in a anonymous fashion.
Some groups deserve special consideration. If the research study includes subjects from any of the following groups described below, the student researcher and the IRB must consider whether the nature of the study requires special protections or accommodations for subjects in these risk groups.

1) Any member of a group that is naturally at-risk (e.g., pregnant women, mentally disabled persons, economically or educationally disadvantaged persons, individuals with diseases such as cancer, asthma, diabetes, cardiac disorders, psychiatric disorders, learning disorders, etc.). The nature of the study is an important consideration when determining if special protections are required. For example, special protections would not typically be necessary to include pregnant women in a study involving performance on a cognitive test or completion of a simple survey.

2) Special vulnerable groups that are covered by federal regulations (e.g. children/minors, prisoners, pregnant women, students receiving services under the Individuals with Disabilities Education Act). Specifically, the IRB and the student researcher should consider whether potential study participants who are receiving services under the Individual Disabilities Education Act need special accommodations and/or are appropriate for inclusion in the study as a research subjects. For example, an IRB may choose to require parental permission for minor subjects receiving special education services even when parental permission has been waived for general education students. Confidentiality must be maintained so as not to identify/isolate students.

C. Informed Consent

Informed consent refers to the process of ensuring that potential human subjects understand that they may choose whether or not to participate in a study. Individuals should never be forced or coerced to participate in a research study. A teacher, school administrator or anyone requiring students to participate in a research study as a human subject would be considered a serious violation of informed consent principles. That is, the research subject must freely decide to participate and not feel coerced or forced into doing so.

To make an informed decision about whether an individual wants to participate, the human subjects must be informed about what they will be asked to do and if there are any risks or benefits involved. For example, if the subject will be asked to complete an interview or a survey, the nature of the survey should be described (e.g., questions about emotional functioning, students experiences around divorce, grades and SAT scores). In most cases, the informed consent process also includes a description of the purpose of the study. However, in rare circumstances detailed information about the purpose of the study will not be included if purpose of study requires innocuous deception that poses minimal risk to the human subject. A school’s IRB may allow innocuous deception studies such as a study designed to determine if colored paper affects the time it takes a student to complete a given written task. The IRB may require a QS to help develop appropriate informed consent procedures which respect the rights of human subjects but do not threaten the validity of the study.

Subjects 18 years and older must be provided with all of the information mentioned above and give their Informed Consent before participating in a research study. In most cases, if subjects are under the age of 18, a parent or legal guardian must be presented with all of the information described above before giving Parental Permission for their minor child to participate.
**Assent** refers to procedures giving developmentally appropriate information to children and to adolescents about the study and giving them a choice as to whether or not they will participate. **High school students should be supplied with ALL of the information mentioned above and give their verbal and/or written assent to participate.**

**Obtaining Written Informed Consent, Parental Permission or Minor Assent**
An informed consent form is typically used to provide written information to the human subject or parent/guardian and to document written informed consent/parental permission/minor assent. This form typically includes the purpose of the study, what the subject will be asked to do, the nature of any surveys, questionnaires or interviews, any risks and any benefits to the subject. The form should also contain information that explains to the potential research subject or parent/guardian that participation in the study is voluntary and that the subject is free to stop participating at any time. The Sample Informed Consent Form provides an example of how this information can be presented.

A copy of any survey or questionnaire must be attached to the form when parents/guardians are being asked to give their permission for their minor child to participate. This process allows the parent to review the material to which their child will be exposed and make an informed decision about whether they want their child to participate. However, in some cases sending home a copyrighted survey may be a violation of the test publisher’s regulations. In other cases, sending home a copy of the survey may threaten the validity of the study. The IRB must decide whether an appropriate description of the survey on the Sample Informed Consent Form provides enough details so that the parent or guardian can make an informed decision.

**Waiver of Written Informed Consent/Parental Permission/Minor Assent**
Obtaining informed consent from an adult or minor assent is always required. However, the IRB may waive the requirement for documentation of written informed consent/assent and/or parental permission if the research involves only minimal risk and anonymous data collection and if it is one of the following:

a) Research involving normal educational practices
b) Research on individual or group behavior or characteristics of individuals where the researcher does not manipulate the subjects’ behavior and the study does not involve more than minimal risk.

c) Surveys and questionnaires that are determined by the IRB to involve perception, cognition, or game theory and do NOT involve gathering personal information, invasion of privacy or potential for emotional distress.

d) Studies involving physical activity where the IRB determines that no more than minimal risk exists and where the probability and magnitude of harm or discomfort anticipated in the research are not greater than those ordinarily encountered in DAILY LIFE or during performance of routine physical activities.

As explained above, informed consent/minor assent or parental permission is always required. It is merely the process of obtaining a signature to document informed consent/minor assent or parental permission that can be waived in the circumstances mentioned above. **If there is any uncertainty regarding the appropriateness of waiving written informed consent/assent or parental permission, it is strongly recommended that documentation of written informed consent/parental permission be obtained. In addition, it is recommended that parental permission not be waived for minor participants who are younger than high school age.**
D. Online Studies

Studies that collect data via use of the internet (e.g., email, web based surveys) require special consideration from the IRB. The use of the internet for data collection will pose challenges in
a) collecting anonymous data (e.g., IP addresses are recorded by many online survey tools),
b) obtaining informed consent and
c) ensuring that participants are of the appropriate age to give informed consent.
The research plan must explicitly address how these challenges were evaluated and addressed.

Guidelines to school IRBs:
1) It is recommended that studies deemed to be “more than minimal risk” (e.g., about personal/sensitive issues) only be conducted online if the student is working with a qualified scientist who has experience conducting IRB approved research at a Research Institution, University or College. Because IP addresses are gathered by many online survey tools, specialized procedures are needed to ensure that the data is collected anonymously. Ideally, this type of research should be done through a Research Institution, University or College with formal IRB approval by the institution.
2) Studies deemed to be “minimal risk” and targeted to adult subjects (18 years and older) can be conducted online and/or subjects can be recruited by email. The research plan must address how the researcher will ensure that only adult subjects are actually recruited. See below for more information about what is needed in the informed consent process for an online survey.
3) Studies deemed to be “minimal risk” that include minor subjects (under the age of 18 years) can be conducted online with the subjects’ parental/guardian permission. In this case, the parent/legal guardian must give consent using a traditional, paper consent form before the minor participant completes the online survey. After formal parental permission is secured, the researcher can email or give the subject a link to the online study. As always, minor assent procedures must also be included. That is, the minor must be given the same information given to the parent/guardian and must be aware that participation is completely voluntary. See below regarding what information must be given to parents/guardians and minor subjects to secure parental permission and minor assent.
4) It is strongly recommended that members of the IRB test the link the student will provide to human subjects to complete the online study to ensure that the correct procedures for obtaining adult consent and/or minor assent are in place.
5) The student researcher, adult sponsor or QS, and at least one member of the IRB should be knowledgeable about the specific online survey tool (e.g., whether IP addresses or other identifiers are gathered, how secure the online survey is, who has access to responses, whether responses are able to be securely deleted, etc).

Procedures for Obtaining Adult Subjects’ Consent and Minor Subjects Assent for Online Surveys
1) All information required for the Informed Consent/Assent Process must be presented to the potential research subject before the survey begins.
2) The following statement or something similar must also be included:

   There is always the possibility of tampering from an outside source when using the internet for collecting information. While the confidentiality of your responses will be protected once the data are downloaded from the internet, there is always a possibility
of hacking or other security breaches that could threaten the confidentiality of your responses. Please know that you are free to decide not to answer any question.

3) The survey should be set up in a way that the potential subject must click on a “button” or type in a response indicating that he/she has read the consent/assent information and agrees to participate to take the potential subject to the actual survey. That is, the survey questions are not viewed by subject until he/she clicks on or types in a response to indicate his/her voluntary participation.

Extra Information to be Included on the Parental Permission Form

1) Parental permission cannot be obtained online. When required, a traditional, paper form must be signed by the parent before a minor can participate.

2) In addition to all of the information required for parental permission, the following statement or a similar statement must also be included:

   There is always the possibility of tampering from an outside source when using the internet for collecting information. While the confidentiality of your child’s responses will be protected once the data are downloaded from the internet, there is always a possibility of hacking or other security breaches that could threaten the confidentiality of your child’s responses. Your child will be instructed that he/she is free to decide not to answer any question.

Procedures for Protecting Confidentiality Related to Downloading of Data

• If IP addresses are collected by the survey tool, the addresses should be deleted from the downloaded data file. All responses should then be deleted from the online survey. The resulting data file that is used for data analysis should be free of any identifier, including an IP addresses or other electronic identifiers.

• The data file should be stored on a password protected computer. Any back up data files should be stored in a secure location.

Examples of Research Studies with Acceptable Suggested IRB Decisions note that IRB’s have the prerogative to be more conservative.

• Student researcher wants to compare career choices between 10th, 11th, and 12th graders. *Minimal risk study*: Parental permission not required if data are collected anonymously and if subjects are informed of voluntary nature and right to withdraw at any time.

• Student wants to compare the amount of television and type of television shows viewed by boys and girls. *Minimal risk study*: Parental permission not required if data are collected anonymously and if subjects informed of voluntary nature and right to withdraw at any time.

• Student researcher wants to examine the relationship between favorite restaurant and weight in 9th–12th graders. *More than minimal risk study*: Parental permission required because of emotional risks and impact on self esteem associated with a student reporting on his/her weight. Even with parental permission, procedures for anonymous data collection should be used. Care should be taken to ensure that the student researcher is not able to link data with a particular subject.
• Correlate television viewing with mood

*Potentially more than minimal risk study:* Parental permission may be required depending on the nature of questions regarding mood. The IRB would want to consider how to handle subject reports of depressed or anxious mood. The IRB would also consider whether completing a questionnaire asking questions about mood is detrimental to subjects who might be prone to depression? If so, parental permission would be required. The IRB might also require a school psychologist or counselor to be present to respond to any negative reactions by subjects. Subjects would then be told that a counselor is available to help subjects deal with any negative reactions to the study.

• Student researcher wants to investigate the relationship between SAT scores and GPA through peer’s self report.

*Minimal risk study:* Parental permission not required if data are collected anonymously and subjects are informed that their participation is voluntary and that they can withdraw at any time.

• A student wants to show his classmates an optical illusion graphic and compare the responses of boys and girls.

*Minimal risk study:* The IRB would want to consider the nature of the optical illusion. Would anyone find it offensive? If not and the data are collected anonymously, parental permission could be waived. The student researcher must provide information to the research subjects about what they will be asked to do, the voluntary nature of participation and their right to withdraw at any time.

• Do students do better memorizing words while listening to Mozart or rock music? *Potentially more than minimal risk study:* The IRB would first want to know exactly what music was to be used. What if the rock music had profanity? Who determines the definition of profanity - the most conservative parent?

If the IRB determines that the music might be offensive (even slightly) to someone, parental permission should be required. The consent form should describe the music to be presented and give parents the opportunity to hear the music if he or she requests.

If the IRB determines that the music would not be offensive to anyone and the data are collected anonymously, they may waive the requirement of documentation of informed consent. However, the student researcher must provide information to the research subjects about what they will be asked to do, the voluntary nature of participation and their right to withdraw at any time.

• Do students who have math class in the morning do better on a test of “simple” math problems than those who have math class in the afternoon?

*Potentially more than minimal risk study:* The IRB must determine the stress level associated with a “simple” math test. The committee might consult with both math teachers regarding the level of stress associated with the test for all students. If math teachers and IRB are comfortable with the “simple” math test not resulting in stress, the data are collected anonymously and the potential participants are not at risk for negative feelings related to the findings, the IRB could waive need for documentation of parental permission. However, some IRBs may require documentation of parental permission in this situation.

The student researcher must develop recruiting procedures that highlight that participation in the study is voluntary and that students can withdraw from the study at any time. Efforts must also be taken to ensure that students that do not want to participate must be able to decline participation inconspicuously.
A student wants to show elementary students an optical illusion graphic and compare the responses of boys and girls.  

*Minimal risk:* As long as the optical illusion is not offensive to anyone, the study could be considered minimal risk and parental permission could be waived. However, some IRBs and school professionals may decide to require parental permission.

- Do children do better on a spelling test after listening to a certain type of music?  
  *Minimal risk:* The IRB should consider potential risks associated with whether some might find the music “offensive,” or whether there is stress associated with taking a spelling test. Are there privacy and confidentiality issues?  

If the music was deemed to be innocuous, parental permission could be waived.  

*More than minimal risk:* The IRB, school principal or teacher should require parental permission due to any reservations they have about the impact of the project on the subjects or parents’ reaction to their child being part of a research project.

- Student researcher wants to know how fast boys and girls can run upstairs.  
  *More than minimal risk:* Documented parental informed consent required due to risk of injury. IRB might require safety precautions (e.g., a school nurse must be present, limit amount of stairs to 1 flight)

- Student researcher goes to the swim practice and times the swimmers as they are engaged in their regular swim practice (supervised by an adult coach)  
  *Minimal risk:* Student researcher is only observing. IRB may waive the need for parental permission because the swimmers are not being asked to do anything by the student researcher.

- Student researcher asks members of the swim team to participate in her study in which they have to swim 2 laps. This occurs after swim practice or on a day in which there is not practice  
  *Potentially more than minimal risk:* two possible options for IRB: 1) Require parental informed consent and require that a lifeguard present , 2) Instead of parental permission the swim coach gives the OK that swim team members are capable and the coach and/or lifeguard are present. In either case, the research subject must be informed directly that participation is completely voluntary and that he/she is free to stop participating in the project at any time.

- Student researcher wants to know if listening to rock music affects driving ability. He plans to test driving ability in the school parking lot with students driving their own cars around cones.  
  *More than minimal risk:* Requires documentation of parental permission for subjects and multiple safety precautions. The IRB may also require documentation that the school principal is aware of and approved the study. Many IRB’s would not allow this project to be conducted because of school liability issues.

- Student researcher wants to know if listening to rock music affects driving ability. He plans to test driving ability with a video game.  
  *No more than minimal risk:* The IRB should listen to the proposed music and consider whether any parents would be take offense to the music. IRB would also want to consider the nature of the video
Different IRBs may come to different conclusions or different courses of action. IRBs that decide to waive parental permission in such situations may wish to document that the study was reviewed and approved by a principal or administrator.

**Additional Resources**


[http://www.hhs.gov/ohrp/irb/irb_guidebook.htm](http://www.hhs.gov/ohrp/irb/irb_guidebook.htm) A guide produced by Office for Protection of Research Risk (OPRR) of the US Department of Health and Human Services (HHS). This resource can be used by IRBs to help them with their review. Includes an extensive appendix of additional resources.
