

SCIENCE DAY TEACHER'S GUIDE

July 2024

WHY SCIENCE DAY?

Student Question:	"When will I ever use this stuff, anyway?"
Project Type:	Student- originated, personalized, inquiry-based hypothesis-based / meta-analysis or engineering design projects.
Science Day Season:	<p>Project Development: August to February</p> <p>Project Submission: December to February</p> <p>Competition: March to April</p>

STUDENT SKILLS		
DEVELOP	ENHANCE	PROMOTE
Inquiry and Problem-Solving	Written Communication	Independent Learning
Engineering and Technology	Organizational Ability	Development of Creativity
Verbal Communication	Presentation	Use of Math and Statistics
Critical Thinking and Research	Self-Concept	In-depth Knowledge of STEM

CROSS-CURRICULAR LEARNING

Vocabulary	Reading	Writing	Oral	Math
<ul style="list-style-type: none"> <input type="checkbox"/> Learning new science terminology. <input type="checkbox"/> Developing a personal glossary of the parts, procedures, equipment, methods, and processes regarding their project topic. 	<ul style="list-style-type: none"> <input type="checkbox"/> Making inferences. <input type="checkbox"/> Drawing conclusions. <input type="checkbox"/> Identifying supporting detail. <input type="checkbox"/> Using challenging articles and texts to gain Critical Reading experience. <input type="checkbox"/> Formulating testable questions. <input type="checkbox"/> Skimming and analyzing nonfiction resources for relevant information. <input type="checkbox"/> Using technical resources. 	<ul style="list-style-type: none"> <input type="checkbox"/> Taking notes. <input type="checkbox"/> Quoting authors. <input type="checkbox"/> Avoiding plagiarism. <input type="checkbox"/> Organizing a research paper. <input type="checkbox"/> Editing paragraphs of research. <input type="checkbox"/> Combining information from multiple sources. <input type="checkbox"/> Preparing an abstract. <input type="checkbox"/> Citing references. 	<ul style="list-style-type: none"> <input type="checkbox"/> Explaining science concepts and principles. <input type="checkbox"/> Increasing the ability to respond to factual, interpretive, and evaluative levels of questioning. <input type="checkbox"/> Using graphic visuals to assist in explanations. 	<ul style="list-style-type: none"> <input type="checkbox"/> Developing a deeper sense of numbers. <input type="checkbox"/> Recognizing the importance of number accuracy. <input type="checkbox"/> Collecting raw data. <input type="checkbox"/> Organizing data to show patterns and trends. <input type="checkbox"/> Using appropriate Statistical methods.

Get Started!

Create an Account on <https://projectboard.world/oas/>

HOW DO I FACILITATE A LARGE GROUP OF STUDENTS (OR MULTIPLE CLASSES) WHO EACH HAVE SEPARATE TOPICS

Science Days Teacher Guide

The key to a successful science fair program is organization!

Follow this 5-step process to successfully take your students from Science Day inception to competition.

1. **PLANNING THE PROCESS**
2. **PROVIDING LESSONS AND GUIDANCE**
3. **ORGANIZING AND MONITORING STUDENT PROGRESS**
4. **DEVELOPING A LOCAL FAIR**
5. **PREPARING FOR OAS REGIONAL COMPETITION**

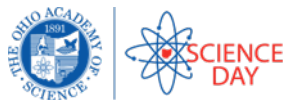


1. PLANNING THE PROCESS

Begin by reading **The Ohio Academy of Science: Science Day Standards** to become familiar with all rules, standards, and expectations for the process and the **Student Science Day Workbooks (HBR/MA and ED)** along with the **Judging Card**, before introducing the research project to students. Teachers should also explore the Science Day resources to become familiar with those available to assist both teachers and students in completing the project. After reviewing the documents, teachers may contact the Ohio Academy of Science at info@ohiosci.org with any questions or concerns about the student project expectations.

PROJECTBOARD

ProjectBoard is an online social learning platform used by the Ohio Academy of Science for building, submitting, and judging projects for Science Days. Teachers and students must create an account to register through <https://ProjectBoard.world/oas> to participate in both



Regional and State Science Days. Here students will have access to resources, a Student Workspace Template for building projects and for receiving feedback from teachers/mentors, and the ability to submit projects for Regional and State Competitions.

PROJECTBOARD NAVIGATION AND SCIENCE DAY RESOURCES

All resources are located in the Knowledge Base within ProjectBoard. Here you can find resources that will assist you in navigating through ProjectBoard, including creating teacher and student accounts, creating classes, creating a Science Day Student Workspace Project or a Science Day Submission Project, and submitting to a competition event. You may access the OAS Knowledge Base by clicking "HELP" on the menu bar then "FAQ and Resources" or at this link <https://projectboard.world/oas/faq>.

You will also find resources specific to Science Days within the Knowledge Base that can assist in developing a Science Day project. Access these directly by clicking "Science Days" on the menu bar, then selecting "Resources". See the Science Days resources listed below.

Science Day Resources on ProjectBoard

Guides and Map

- Science Day Standards
- Regional Science Day Map
- Student Guide to Science Days
- Teacher Guide to Science Day
- Science Day Student Progress Spreadsheet.xlsx
- ProjectBoard Student Account Required Information

Getting Started

- Science Day Project Types
- Resources for Science Day Topic Exploration
- Judging Score Card

Workbooks

- HBR/MA Student Workbook
- ED Student Workbook

Background Research

- What is Plagiarism?
- Research Resources

Research Plan

- HBR/MA Research Plan Template
- ED Research Plan Template

ISEF Forms

- ISEF Categories and Subcategories
- Guide to ISEF Forms
- SRC-IRB Guidelines
- ISEF Forms Video Tutorials
- ISEF Forms Wizard

Final Report Template

- ED Final Report Template
- HBR/MA Final Report Template

Abstract Template

- Abstract Template

Project Display and Oral Presentation

- Science Day Video Guide
- Photo/Graphics Source ID Form
- Quad Chart Template
- Tri Fold Board Instructions

Transforming Your Project to Ohio STEP

- How to Transform a Science Day Project into an Ohio STEP Project NEW

Sample Projects

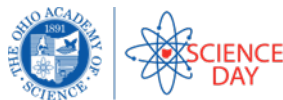
- Grade 6 Sample Project
- Grade 8 Sample Project
- Grade 10 Sample Project
- Grade 12 Sample Project
- Engineering Design Grade 7 Sample Project
- Engineering Design Grade 10 Sample Project
- Meta Analysis Grade 12 Sample Project
- Meta Analysis Grade 12 Sample Project II

Teaching Resources

- Teachers Guide to Technical Writing
- Research Worksheets
- Research Presentation
- Getting started with Science Day Topic Selection
- Choose a Science Day Topic Worksheet
- Sample Size and Trials Explanation
- Peer Review Worksheet

Videos

- Appalachian STEM Enrichment Academy
- Choosing an Original Project
- Science Fair: Working as a Team
- Stating a Hypothesis
- Experimental Design
- Replicates
- Visualize your Data
- Analyzing your Data
- Drawing Conclusions
- Display and Communication



WORKSPACE OPTIONS

There are two options for student project completion: working within the ProjectBoard platform by opening a “Student Workspace Template” or by downloading a **Science Day Student Workbook** for either Hypothesis-Based Research/Meta-Analysis projects or Engineering Design projects. Teachers should explore the online Workspace Template before choosing a method of delivery.

Student instructions for starting a project using the Student Workspace Template are in the **Student Workbooks** and in the ProjectBoard Resources. The **Student Workbook** can be used to either type online or to print and write by hand for students who do not have consistent access to computers or internet connections.

TIMELINE

Consult the OAS program Timeline as early as possible in the planning process. This will show dates when program account creation or re-activation begins and ends as well as the dates when the competition events like Buckeye Science and Engineering Fair, Regional Science Days, and State Science Days open and close for submission. Provide these dates to students along with specific in-class due dates for required sections of the research project.

PARTICIPATION AND COMPETITION

Participation in Science Days is open to all students in grades 5-12. Students may participate as individuals or as teams of up to 3 students. If working in a team, each member will need to create their own ProjectBoard account. Then, one member will create the Workspace and/or Submission Project template and add the other team members to the project. Consult the instructions for this process in the OAS Knowledge Base.

Regional Science Day: Competition in OAS Regional Science Day events is open to students in grades 5-12. Students are not required to first compete in a local science fair before submitting to an OAS Regional Science Day. Consult the OAS Regional Science Day Map for the location, Regional Director contact information, RSD website, and presentation options. These in-person fairs require presentation formats that can be displayed; options differ by Region. To participate, students create a ProjectBoard Submission Template, upload the required items to the template, and follow the submission instructions on the ProjectBoard site. There is a **\$30 entry fee per student**. Check with your Regional Director for available fee grants or scholarships.

State Science Day: Students receiving a “Superior” rating at a Regional Science Day may compete in the virtual **State Science Day Competition**. They will be able to make changes to their projects after reviewing the judges’ suggestions and uploading the required items to their ProjectBoard Submission Templates. Check the Timeline for the “SSD Submission Window” during which revisions can be uploaded for State Science Day in ProjectBoard prior to the competition deadline. **There is a \$60 entry fee per student**.

Buckeye Science and Engineering Fair: The **Buckeye Science and Engineering Fair (BSEF)** is an ISEF-affiliated fair and provides an entry point for students wanting to compete in the International Science and Engineering Fair. Students must be in grades 9-12 to submit to this competition using the same process as described above but choosing the “BSEF

Competition” section in the Event Submission page on ProjectBoard. **There is a \$50 submission fee per student.** Note that students in grades 9-12 may compete in both BSEF and Regional Science Days, but must create Submission Templates, pay the respective fees, and meet the independent deadlines for each competition event submission. **Check the Timeline carefully for these deadlines!**

CREATING A SCIENTIFIC REVIEW COMMITTEE (SRC)

Students who develop projects involving vertebrate animals, human subjects, and potentially hazardous biological agents will need to have their research plans reviewed by a school Scientific Review Committee (SRC) and complete additional ISEF forms signed by the SRC **prior to beginning experimentation or prototype testing.** Establishing and briefing this committee early in the school year allows committee members to schedule for this possibility during the timeframe teachers estimate that Research Plans will be complete, and students will begin their experiments and prototypes. An SRC consists of a minimum of three members, and they must include at least a

1. biomedical scientist (e.g., Ph.D., M.D., P.A.-C., D.V.M., D.D.S., D.O., R.N., L.P.N.),
2. an educator not overseeing the project,
3. at least one other member (e.g., school administrator).

Once your students have finalized their topics and methods/materials section of their project, teachers should inform their SRC of any projects that may need their review. Provide the committee with copies of the necessary ISEF Forms they will need for the projects they will be reviewing along with a copy of each Research Plan.

INTEGRATING INQUIRY BASED LEARNING INTO THE CLASSROOM

Develop a plan for what Inquiry Based Learning will look like in your classroom. Below are some suggestions.

- Break down the process into small sections and provide deadlines for completing each section or tasks within a section.
- Provide students with a checklist of items needed to complete.
- Provide early finisher activities.
- Allow students to ask a friend, another teacher, etc. for assistance.
- Review student work often and provide feedback. We suggest that the teacher review student work after completion of each “Section” of the Student Workspace Template or **Student Workbook**. Utilize the **Science Day Student Progress Spreadsheet** to assist with identifying check points.
- Provide opportunities for students to discuss their work with peers and provide feedback to peers.
- Provide opportunities to meet one-on-one with students or teams to ask questions and receive teacher feedback.

2. PROVIDING LESSONS AND GUIDANCE

In this section we provide sample Student Objectives, Student Project Schedule, Pacing Guide, and Expanded Discussion Topics.

SCIENCE DAY PROJECT STUDENT OBJECTIVES

- Identify a topic of interest.
- Define a specific problem or question to investigate.
- Develop a testable hypothesis or an engineering design statement based on the identified problem.
- Research existing information related to the problem or question to understand what is already known.
- Develop note taking strategies.
- Develop a detailed design plan.
- List all required materials.
- Describe the step-by-step procedure for conducting your experiment or building your prototype.
- Explain how your data will be collected and analyzed.
- Combine the hypothesis/design statement, background research, and methodology into a comprehensive research plan.
- Fill out required forms for conducting research (ISEF forms 1, 1A, and 1B and OAS Consent).
- Build and test a prototype or conduct the experiment according to the research plan.
- Record all data in a Project Data Book, maintaining detailed notes of observations and measurements.
- Organize collected data into visual formats such as graphs, charts, and diagrams for better understanding and analysis.
- Analyze and interpret results to determine if it supports the hypothesis or meets the design objectives.
- Provide a thorough discussion of the results, including any trends, relationships, and anomalies.
- Provide a conclusion including findings and implications for future research.
- Compile all sections including references into a final written report.
- Develop a visual display of your project using a Quad Chart or Tri-fold Board.
- Prepare and practice an oral presentation summarizing the project and its outcomes.



SCIENCE DAY PROJECT SCHEDULE

FOCUS AREAS	TIMEFRAME
Science Fair Kick-off	Start of School through October
Create a ProjectBoard Account and Create a Workspace Project.	Start of School through January 15th
Develop: a) Topic b) Problem c) Hypothesis/Design Statement d) Background Research e) Works Cited list	September/November
Method & Materials: Develop the Experimental Design/Engineering Design including: a) materials & equipment list b) procedures (step by step) c) data collection and analysis	November
Write Research Plan using either the a) HBR/MA Research Plan Template b) ED Research Plan Template. c) Completed and signed ISEF Forms Research Plan to be reviewed by your Scientific Review Committee (SRC) if needed.	November/December, prior to Winter Break
Begin experimentation or build prototypes. Either work at home or in class. (All data will need to be in final form by late January)	December/January
Presentation of Data, Results, and Discussion a) Create visual representation of data (graphs, charts) and drawings with labels. b) Analyze data. c) Write Discussion of Results. d) Write Conclusion.	January/February
Write: a) Final Report using HBR/MA or ED Final Report Template. b) Abstract using Abstract Template.	January/February
Work on project display; Quad Chart and possibly a Tri-fold Board or poster.	January/February
Oral Presentation: Prepare and Practice (Optionally with school staff and/or peers.)	January/February
Create a "Submission Template" in ProjectBoard: upload required items and submit to competition by the deadline.	Deadline: February 28/29
Local Science Day (if doing one)	January or February
Regional Science Day (Check the Regional Science Day Map for your date.)	Saturday in March
State Science Day – on-line virtually judged presentation	April
Celebration of Science Event for SSD "Superiors"	May

PACING GUIDE

Class Periods are estimated to be 45 minutes.

(* indicates Expanded Discussion about the topic in the section following the Pacing Guide.)

Total Time—4-5 months

Day 1: Science Day Kick-Off (Start of School thru December)

- Explain the purpose and objectives of Science Day.
- Discuss project types using the **Science Day Project Types** guide.
- Explore the **Student Workbook** or Student Workspace Template instructions.
- Determine if students will work in teams.
- Show the video: **Science Fair: Working as a Team:**
https://www.youtube.com/watch?v=JilH_3wPVa0

● **Day 2: Create Account in ProjectBoard** (Start of School through January)

- Distribute the **ProjectBoard Student Account Required Information** worksheet for students to fill out and return.
- Guide students through the process of creating an account in ProjectBoard.
- Have students fill out the OAS Consent and Release Agreement and return (can be done all digitally or print and return).
- Have students add themselves to your class using the class code.
- Have students explore the ProjectBoard website—view past projects, find resources, etc.

Day 3: Project Workspace Setup

- Students create their online Student Workspace Templates in ProjectBoard.
- Guide students through logging into ProjectBoard, selecting “My Projects,” and choosing a template.
- Alternatively, distribute printed **Science Day Student Workbooks** for placement in a 3-ring binder or assign content on another online platform (e.g., Google Classroom, etc.).

Day 4: Choose a Topic to Research (September/November)

- Show the video: **Choosing an Original Project:**
<https://www.youtube.com/watch?v=JGkxwyr90fk>
- Present **Getting Started with Science Day-Topic Selection** Presentation.
- Hand out **Resources for Science Day Topic Selection** sheet with links to websites to explore.
- Hand out and have students use the **Choose a Science Day Topic** worksheet to help them choose a topic.
- Approve student topics.

Day 5: Develop Question/Problem and Hypothesis or Engineering Design Statement (September/November)

- Review the “Question and Hypothesis” and/or the “Engineering Design Statement” section of the Student Workspace Template or Science Day Student Workbook.
- Discuss how to narrow a topic down to identify a problem or question.
- Explain how to develop a testable question/problem or engineering design statement.
- Discuss independent and dependent variables and controls for hypothesis-based research.
- Show the video: **Stating a Hypothesis:**
<https://www.youtube.com/watch?v=0BdlI1VUnbl>
- Guide students through completing the “Question/Problem” and/or “Engineering Design Statement” section of the Workspace Template or Science Day Student Workbook.
- Have students conduct research about their question or engineering design statement to determine if the solution or engineering design already exists.
- Explore strategies to further refine a problem or question.
- Approve student work.

Days 6-15: Conducting Background Research (September/November)

- Review the “Background Research” section of the Workspace Template or Science Day Student Workbook.
- Present the **Research** presentation to explain how to conduct research and take notes.
- Distribute the **Research Worksheets**.
- Share the list of **Research Resources**.
- Guide students through the “Background Research” section of the Workspace Template or Student Workbook.
- Assist students in identifying sources and creating reference lists with citations.
- Have students summarize important background information using the **Research Worksheets**.
- Check student work regularly.

Days 16-18: Methods and Materials (November)

- Review the “Methods and Materials” section of the Workspace Template or Science Day Student Workbook.
- Show the video: **Experimental Design:**
<https://www.youtube.com/watch?v=yHgZoYuHdkU>
- Show the video: **Replicates:**
<https://www.youtube.com/watch?v=S3ZwNwUL0Pk>
- Explain design, materials, procedure, and data collection and analysis.
- Provide the **Sample Size and Trials Explanation** handout to students.
- Explain sample size and importance of conducting multiple trials.
- Guide students through the “Methods and Materials” section of the Workspace Template or Student Workbook.
- Check student work.

Days 19-23: Research Plan and ISEF Forms (November/December)

- Review the “Research Plan and ISEF Forms” section of the Template or Workbook.
- Guide students in downloading and using the appropriate Research Plan Templates.
- Instruct students to write the Research Plan.
- Video help if needed: **Science Fair Forms:**
<https://www.youtube.com/watch?v=FvjMTgKa59k&t=77s>
- Review the additional ISEF resources under “ISEF Forms” in the resources.
- Assist students in filling out ISEF Forms 1, 1A, and 1B, and saving them properly.
- Ensure students needing additional forms use the ISEF Rules Wizard.
<https://ruleswizard.societyforscience.org/>
- Collect and review Research Plans and ISEF forms; provide to SRC and facilitate approvals and necessary signatures.
- Approve student projects.

Open Period: Initial Prototype/Conduct Experiment (2-3 months) (December/January)

- Review the “Prototype” or “Conduct Experiment” section of the Workspace Template or Student Workbook.
- Explain the importance of drawing and photographing their observations and trials. *
- Explain the Project Data Book Requirements and how to record detailed quantitative and qualitative observations from their experimentation or prototype testing.
- Check student work.

Days 24-28: Presentation of Data and Results (January)

- Review the “Presentation of Data and Results” section of the Workspace Template or Science Day Student Workbook.
- Show the video: **Visualize your Data:**
<https://www.youtube.com/watch?v=NR8S-W4-dO8>
- Teach students how to choose and create appropriate graphs.
- Introduce any necessary statistical programs for data analysis (e.g., DataClassroom).
- Guide students in completing the “Presentation of Data and Results” section of the Workspace Template or Science Day Student Workbook.
- Check student work.

Days 29-33: Interpretation of Results and Discussion (January/February)

- Review the “Interpretation of Results and Discussion” section of the Workspace Template or Science Day Student Workbook.
- Show the video: **Analyzing your Data:**
<https://www.youtube.com/watch?v=EoM6DZVhIG0>
- Guide students in completing the “Interpretation of Results and Discussion” section of the Workspace Template or Science Day Student Workbook.

- Check student work.

Days 34-36: Conclusion **(January/February)**

- Review the “Conclusion” section of the Workspace Template or Science Day Student Workbook.
- Show the video: **Drawing Conclusions:**
<https://www.youtube.com/watch?v=FqInnYgym1E>
- Guide students in completing the “Conclusion” section of the Workspace Template or Science Day Student Workbook.
- Check student work.

Days 37-46: Final Report **(January/February)**

- Guide students in downloading and using the **Final Report Templates**.
- Check student drafts.

Days 47-48: Abstract **(January/February)**

- Guide students in downloading and using the **Abstract Template**.
- Students should write their abstract AFTER they are finished with their final reports.
- Check student drafts.
- Guide students in saving a copy of their abstract for upload.
- Guide students in copying their final approved abstract into their **Final Report Template**.

Days 49-52: Project Display **(January/February)**

- Present the **Quad Chart Template** presentation and **Tri-fold Board Instructions** presentation, if needed, and explain required elements.
- Show the video: **Display and Communication:**
<https://www.youtube.com/watch?v=U2wgeqSoxco>
- Guide students in creating their Quad Chart or Tri-fold board presentations.
- Provide the **Photo/Graphics Source ID** to students to include in Quad Chart and/or Tri-fold Board as needed. *
- Check student work.

Days 53-55: Oral Presentation **(January/February)**

- Guide students in writing their oral presentations on notecards.
- Facilitate practice sessions where students present to their peers.
- Provide feedback about presentations using the **Judging Card** and/or the **Peer Review Rubric**.
- **ONLY IF you have students participating in the “Virtual Regional Science Fair”.**
- Review the **Science Day Video Guide**.
- Guide students in creating and recording their video presentation to upload to their ProjectBoard Submission Template.

Days 56-57: Preparing for Competition **(January/February)**

- Start a Submission Template Project in ProjectBoard (one per team).
- Upload required documents: OAS Consent and Release Agreement, ISEF

Forms, Abstract, and Final Report.

Expanded Discussion Topics

Importance of Including Student Photos

Encourage students to take photos throughout the research process for the experiment, model, or prototype trials. The photos provide evidence that the student completed the work themselves and will be useful visuals for the student's ProjectBoard Quad Chart, poster display, and/or in written reports.

Project Data Book

Students will record all quantitative and qualitative observations of the experimentation or engineering design trials in their Project Data Book. This can be a physical notebook kept just for this purpose or can be recorded in the Science Day Student Workbook and printed as needed. Students should number each page and record the date each time they add any notes. Detailed notes are essential during the process of setting up the experiment, the conditions, variables, observations, measurements, and calculations. Teachers should check that the students are writing everything that is occurring in the experiment, the trials, the model building, the designs, etc. and that students are noting any procedural changes that deviate from their Research Plan.

Data Needs for Patents

Keeping a good Project Data Book is extremely important for students and for professional scientists, especially if they ever apply for a **U.S. Patent**. Have students record any original thoughts, concepts or procedures in their numbered Project Data Book, sign and date those pages, and have an adult also witness sign and date the page(s) to attest to the event. Use or disclosure of this written record may be required if a patent is applied for and may help assure the claim of originality.

Photo/Graphic Source Identification

Instruct students to identify the sources of all photos, graphs, and drawings used on the presentation display which were created by outside sources and not the students themselves. Download the **Photo/Graphic Source ID Form** from the Science Days Resources on ProjectBoard, then complete and print all photos/graphics used from outside sources. Include this on the students' Display Board.

Practice Presentations/Peer Judging

Providing students an opportunity to practice their oral presentations in front of others allows them to reduce their anxiety during local and regional competitions. Consider using the **Peer Review Rubric** located in the Science Day Resources on ProjectBoard to include all students in the review process.

If inviting adult judges for the practice presentations, use the **Judging Cards** provided at the Ohio Academy of Science's Science Day events to assess each student's oral presentation. Students should follow all feedback to improve their projects before displaying at a Local or Regional Science Day. Take time to review the **Instructions to Judges** documents available on The Ohio Academy of Science website <http://ohiosci.org>

3. ORGANIZING AND MONITORING STUDENT PROGRESS

Teachers have the **option** of using and adapting the **Science Day Student Progress Spreadsheet** to keep track of each student’s progress through each part of the research project or creating their own tracking method (See below). This workbook contains 2 worksheets: Hypothesis/Meta-Analysis and Engineering Design; click on the appropriate tab at the bottom of the workbook. Each spreadsheet includes the tasks found within each section of the Science Day Student Workbooks and the Science Day Workspace Templates. Use the spreadsheet to indicate which tasks have been completed and add notes under each task for every student to monitor their progress.

	REQUIRED FORMS	PROBLEM/DESIGN STATEMENT		BACKGROUND RESEARCH		METHODOLOGY					RESEARCH PLAN & ISEF FORMS		TEACHER CHECKS	INITIAL PROTOTYPE	PRESENTATION OF DATA & RESULTS		INTERPRETATION OF RESULTS & DISCUSSION	SUMMARY AND FUTURE RESEARCH	FINAL REQUIRED ELEMENTS				FOR IN-PERSON DSD		
STUDENT	OAS CONSENT	PROBLEM	DESIGN STATEMENT	SOURCES	IDENTIFIED CRITERIA FOR SUCCESS	PROTOTYPE DESIGN	CONSTRAINTS	MATERIALS	PROCEDURE	DATA COLLECTION	ANALYSIS	RESEARCH PLAN	ISEF FORMS	PROJECT APPROVAL	DATA NOTEBOOK	GRAPHS, CHARTS, ETC.	WRITTEN SUMMARY OF RESULTS	DETAILED RESULTS & DISCUSSION	CONCLUSION	FINAL REPORT	ABSTRACT	QUAD CHART	VIDEO	TRI-FOLD, QUAD CHART POSTER, OR	
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Teachers using the ProjectBoard Student Workspace Template for project development will be able to monitor and assess students’ progress during each stage of the research process. Teachers may leave comments below each “section” that students have completed within the online Student Workspace Template. (It can be helpful to leave or respond to comments within each section, attach URL links to additional resources, or to upload pdf documents or videos in this space to guide students to additional resources. Teachers should also schedule individual meetings with students and teams to provide feedback throughout project development. These meetings allow teachers to assess progress by reviewing the Student CheckList, answering questions, and providing suggestions.

4. DEVELOPING A LOCAL FAIR

Any student may enter an OAS-affiliated Regional Science Day without first attending a local fair, but we encourage teachers to hold one. Local science fairs are a wonderful way for students to present their work to their peers, teachers, and families! Students have an opportunity to gain practice discussing their project, describing their design and process, and answering questions about their conclusions before competing at a Regional Science Day. This real-world practice gives students confidence and allows them to improve their projects

where possible after reviewing the local judge's comments.

All student projects and local fairs are expected to follow the official **Science Day Standards** located on the ProjectBoard website at <https://projectboard.world/oas/sciencedayresources>. Included in these Standards are the Judging Criteria for both individual and team projects that teachers should use locally and that must be used at all Regional Science Days. **The Ohio Academy of Science discourages the assignment or use of special points or a scoring rubric unique to local science days and does not permit their use by Regional or State Science Days.**

Local Science Day Planning Considerations

Set Date and Location

Consult your school and district calendars for a date and location to hold your fair as early as possible. For some, this may require scheduling the date as early as the preceding spring to secure the date and location needed in the necessary timeframe before the OAS project submission deadline. When selecting the location, it is necessary to keep in mind:

- a) the estimated number of students who will participate,
- b) the number of Judges required,
- c) the room needed for the Judges' meeting,
- d) the room for recording scores, rating and awards,
- e) the location for the Awards Ceremony.

Acquire Support

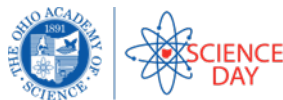
The need for financial and/or in-kind support will depend on the size of your Science Day (number of participants and Judges) and what you choose to award student participants. Many PTA/PTO Organizations will have funds to provide most of the Science Day needs. Small grants within the school Regional may also be available.

Coordinate Volunteers

Many volunteers are needed to implement a Local Fair in your school. Officers/coordinators of the school's PTA/PTO may be willing to assist. It is important to establish a contact person within the group that will coordinate with you and the group of volunteers. The contact person should be given a written list of the specific areas where volunteers are needed. We suggest that you appoint specific trusted volunteers like teachers or staff to sensitive tasks such as: the Judges Room, the initial student set up of projects, and the room where the scores and ratings are calculated. The directions for the tasks and procedures should be clearly stated to avoid any misunderstandings and should be printed and posted. You may want to establish a method and time with your coordinators/volunteers that you will be available to answer any questions or concerns.

Determine the Schedule

It is essential to have a manageable schedule for everyone participating in your Science Day. Obviously, the larger the number of participants, the longer the time needed for both Set Up and Judging. If it is a school day, students will need to be released from classes and monitors will be needed in the project location. The date and schedule will also be a determining factor for the number of professionals available to Judge.



Consulting with your staff, administration, and other professionals should help you gain the support of colleagues to serve as Judges and/or coordinators.

Recruitment and Instructions for Judges

The need for the participation and support of the professionals in your community cannot be overstated. The date and location, as well as the actual judging time period assigned, will determine their availability and willingness to assist. When recruiting Judges keep in mind the number of projects entered in each science area, as well as the grade level of the students. Contact all school administrators; community doctors, dentists, veterinarians, optometrists; government officials, and business professionals. Fairness in the assessment of student projects is essential.

Three factors are major contributors to a fair and equitable project judging:

- 1) the qualifications of each Judge (level of education, no connection to students, etc.),
- 2) the implementation of the Ohio Academy of Science criteria,
- 3) the explanation of the instructions given to the Judges prior to their interviewing students.

The goal is to have every student feel assured that they were judged by a professional who was both knowledgeable in their field of study, and responsible in the use of the established criteria to assess their score.

Provide all Judging material offered on our website to each Judge as they are recruited. Hold a Judges Instructional Meeting within the first half hour of the event. This is extremely important to ensure that they understand their responsibilities, how to allow for the expected understanding of different grade bands within the judging criteria and implement the judging process using the Academy's criteria and rating numbers.

Assemble Judges Folders

Prepare a folder for each judge to receive as they arrive at your Science Day event for the Judges Instructional Meeting prior to judging. Even though you may have sent Judging Instructions in your response when confirming their assistance as science fair judges, it is likely that they did not read it. The folders should be assembled prior to the event by volunteers if possible.

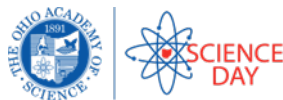
You will need to provide the documents that will be included:

- 1) print and copy the Ohio Academy of Science's Judging and Ethics Guidelines,
- 2) print a brief outline of the requirements issued to each student participant,
- 3) a sample scoring card with a place designated for Judges' Comments to the student,
- 5) a "Thank You" note for their participation.

Name Tags identifying each Judge is also necessary. Every adult volunteer, judge, staff person, etc. must be identified to be present with students during the judging process.

Develop Entry Form

Create either an online or paper form requesting such information as name, project title, category, class, grade, etc. along with both student and parent signatures. An Entry Form may seem unnecessary especially if your Science Day is small, but it is an official,



written consent from the parent and student that they will be prepared and intend to participate in the event. It becomes even more important when a misunderstanding occurs with a parent or the student as to their intention to participate. Knowing the number of participants and their topics will assist you when recruiting judges.

Create a Program

An official program that lists each student participating with their specific Project Title provides participants and their guests with a keepsake/record of their participation. The relevant information to create a program would be available from the student Entry Forms.

Draw Floor Plan

Designate space assignments prior to the event. Volunteers may tape numbers to tables that will be used the day of the Science Day, but you should sketch a floor plan as soon as the registration deadline is reached, and all entry forms have been received to ensure that the location size will be adequate.

Prepare Name Tags

All Volunteers, Judges, Participants, and Administrators should have a name tag. Security is always important, so anyone working at the Science Day event needs to be identified. Anyone without a name tag should be asked for identification and their role at the event. Blank name tags and markers need to be available.

Set Up Tally Room

The Tally Room is a designated area where the Judges submit their completed judging cards. The Ohio Academy of Science Standards and Judging Policies should be available in this location. Teachers, working with a few volunteers, will calculate the scores, determine the Ratings, and prepare the Certificates. This area should be off limits to parents of participants, and participants themselves. Trusted professionals should be assigned to this area to ensure scores are not debated or discussed. School staff personnel should be assigned to read the Judges' Comments before the Judging Cards are returned to the students. Student Scores are not to be revealed until the Awards Ceremony.

Acquire Supplies

Prepare a listing of the supplies that you will need throughout the event and make it available to a volunteer to acquire or purchase. Copying programs, documents, instructions, policies, etc. may be extensive and needs to be addressed when requesting support and funding.

Order Awards

Awards are personal preference when involved with Local Science Days. The Ohio Academy of Science awards each participant at Regional and State Science Day an official Certificate that includes the earned rating. Some schools prefer to present certificates of participation, ribbons and/or trophies similar to athletic awards. This should be discussed and coordinated with your school staff and administration.

Award Ceremony

Receiving awards is another area of personal preference. Some schools want an

evening event to allow parents and friends to attend and be able to highlight the students' accomplishments. Other schools prefer a shorter program that may take place soon after the scoring has been completed.

Sponsored Awards

Local Science Days may have community business members and/or professional organizations, or industries that are interested in recognizing student accomplishments in their field of interest. These awards may consist of plaques, financial awards, internships, or something significant for the specific industry. The student participants earning the awards are chosen by the professional or community organization.

Publicity

Initially, the teacher will want to announce the date and time of the Local Science Day early so that students, parents, and Regional Fair staff can plan and prepare. Public announcements and recruitment of judges through local media may be an option but may conflict with district student safety policies.

Once the local competition is complete, send the results to your regional, neighborhood, and local media outlets to recognize the students' participation and accomplishments. If additional sponsored awards were offered, be sure to include the donor's name for the well-deserved positive publicity. Any publicity articles should be written by the Local Science Day organizer to ensure that all names are correctly spelled and that any discussion of the Ohio Academy of Science Standards involving student requirements, project components, and the Judging Criteria are addressed correctly.

TIMELINE FOR PLANNING A LOCAL SCIENCE DAY EVENT

- **Four or more months prior**
 - Students are registered in ProjectBoard, and project work is in process.
 - Ask for support from the PTA or PTO.
 - (Need volunteers, awards, judges, “snacks”)
 - Confirm date, location, and schedule.
 - (Plan the local science day minimum 2-3 weeks prior to the Regional Science Day competition event submission date; check OAS Timeline.)
 - Prepare a list of possible sources for Judges’.
- **Two months prior**
 - Begin contact with judges.
 - Order materials (judging cards, certificates, ribbons, plaques, etc.).
 - Acquire Supplies (Name tags, pencils, pens, markers, a folder for each judge, masking tape, scissors, staplers, paper clips).
 - Devise record keeping strategies.
 - Check facilities (all rooms to be used for student displays, judges’ room, tally room, award presentation space and Public Address System).
- **One month prior**
 - Collect or download all Entry Forms.
 - Mail/Email information to Judges (include Judging Criteria, time, place, and

- age group of students).
 - Design a floor plan placing all registered students.
 - Produce and assemble printed Program.
 - Make space assignments (projects in 36" sections)
 - Print Judging cards
 - Display Awards for Student Motivation (if providing)
 - Contact media
 - Print Certificates
 - Complete name tags (for participants, judges, officials, other volunteers)
 - Confirm list of Volunteers (time available and task)
- **One week prior**
 - Review the entire schedule with student participants.
 - Offer encouragement and support to student participants.
 - Assign Judges to Individual Projects (if possible).
 - Assemble Judges' folders (OAS Mission, Standards, Judging Criteria, and Ethics).
 - Re-contact Media.
- **Science Day**
 - Meet with Volunteers.
 - Issue Participant name tags.
 - Project set up (36" space allowance)
 - Assemble students at their assigned space number.
 - Judges' Briefing
 - Review the Judging Criteria, the procedures and the point system used.
 - Discuss Judging Expectations and Ethics.
 - Emphasize the need for Judges to write constructive comments and suggestions on the judging card that will be returned to the student participant.
- **Tally Room**
 - Essential to have a responsible, professional in charge of this room to ensure that the two Judging cards for each student have been totaled and then averaged correctly. The ratings are not to be discussed.
 - Stamp or write the Rating on the certificates.
 - Prepare lists of Awardees and all Superior Rated student Projects
- **Awards Program**
 - Recognize all students individually when issuing the Certificates.
 - Distribute special Awards as applicable.
 - Announce that all students may enter the OAS Regional Science Day and provide information about the fee **or** name students awarded "Superiors" that the school is advancing for Regional Science Day if the school is covering the fee.
 - Thank all teachers, volunteers, and judges for their time and participation.
 - Issue summary news release immediately for Media that are present and/or to send to local newspapers.

5. PREPARING FOR OAS REGIONAL COMPETITION

Having the opportunity to share and discuss their research and process with adult professionals is extremely rewarding for students (once they get over their nervousness). Seeing the work of their peers from other regional schools from surrounding counties can be eye-opening. The experience can teach them about planning and preparation, how to answer questions they may not have anticipated, and can be a valuable boost to their confidence.

Regional Science Days

Each Regional Science Day conducts their fair according to the Ohio Academy of Science's Science Day Standards. All required documents to be submitted for Regional Competition are the same for each Regional Fair. However, the requirements for the display at each Regional Science Day may differ. It is vital to consult both the OAS Timeline for potential early submission deadlines and the Regional Science Day Map to determine the date of your Regional Science Day for the presentation requirements or options allowed at your Regional Science Day. **The fee per student to enter any Regional Science Day is \$30.** Consult your Regional Science Day Director to find out if they have any special grants or scholarships that cover fees for students.

Regional Science Day Submission Checklist:

- OAS Consent and Release Agreement
- ISEF Forms 1, 1A, & 1B (possibly others)
- Abstract
- Final Report

Regional Science Day Competition Checklist:

- Project Data Book
- Printed Final Report
- Project Display - Tri-fold Board or Quad Chart Poster or Digital Quad Chart
- Photo/Graphics Source ID Form
- Oral Presentation notecards

State Science Day

Students who receive a Superior and advance to the State Science Day competition will receive instructions at the Regional Science Day event regarding when they may update any changes to their Final Report, Quad Charts, or Video Presentation and upload them to submit for State Science Day. **There will be a per student fee of \$60 with this submission.** State Science Day is judged virtually. All students who receive a Superior in the State Science Day judging will be invited to attend the State Science Day Celebration of Science in May.

State Science Day Submission Checklist:

- OAS Consent and Release Agreement
- ISEF Forms 1, 1A, & 1B (possibly others)
- Abstract
- Final Report
- Digital Quad Chart
- Video Presentation

