

Finding Activities for Your School's Science Club

Grade level: 9-10

Whether you have an existing Science Club at your school or want to start one, this guide offers ideas for new science activities and projects and demonstrates how educators and students can use Science Reference Source to get started.

Objectives

Students will be able to:

- Read and follow step-by-step procedures provided in text
- Ask questions based on observations of phenomena, models or gathered data
- Compare information gathered in their own experimentation and/or simulation with that found in texts
- Find content that includes interesting science activities or science project ideas
- Create multi-step procedures from basic activity outlines
- Define a problem that can be solved through development of an object, tool or process and the criteria/constraints that limit the solution
- Develop a model to recreate scenarios in which a solution can be tested
- Develop and carry out an investigation, including controlling variables and developing data collection methods
- Evaluate design/engineering solutions to determine if they meet problem criteria and constraints

Standards

CCSS.ELA-Literacy.RST.6-8.9, CCSS.ELA-Literacy.RST.6-8.3, MS_ETS1-1, MS-ETS1-2, MS-ETS1-4

Materials

1. Computer/laptop/tablet
2. Access to Science Reference Source
3. Various materials dependent on the activities conducted

Procedures

Educator

Each of these tasks can be completed separately or in sequence:

Task 1: Use lesson plans available through Science Reference Source.

- a. Choose the “Experiments, Worksheets, Lesson Plans” category under Explore topics. Then click Lesson plans. Next, browse lesson plans by subject area or click **All Lesson Plans** and **View all results** for a complete list of search results. Click the **All filters** button to filter results by subject, Lexile range, etc.
- b. Present applicable sections of a chosen lesson plan to students.

Task 2: Provide activities from a Science Reference Source result list as options for students to choose from for individual research or to vote on as a group project.

- a. Use one of the following methods to search for science activities on Science Reference Source:
 - i. Choose the “Experiments, Worksheets, Lesson Plans” category under Explore topics and navigate as described in Task 1.
 - ii. Run a Basic Search using the search string, **((project OR experiment OR procedure) and student)**. You may also wish to further narrow your results by Source Type.
 - iii. Run a Basic Search using the search string, **(classroom AND activity)**
 - iv. Add another search term related to a desired topic by using **AND [topic here]**.
- b. Ask students to choose an activity to investigate.

Task 3: Have students evaluate and improve on existing research.

- a. Have students search for research conducted on a topic of interest by using the search string **(research and method* AND [topic here])**. *Note: Assist students with searching if necessary.*
- b. Ask students to evaluate the methodology used in the research.
- c. Have students brainstorm ways to improve data collection or analysis.

Task 4: Ask students to research a small problem/task they have encountered in their lives and design and/or engineer a solution.

Student

Each of these tasks can be completed separately or in sequence, as determined by your teacher.

Task 1: Follow teacher’s instructions.

Task 2: Conduct an experiment or activity assigned by your teacher or discover through individual research on Science Reference Source:

- a. Search for an activity.
- b. Read through the entire activity.
- c. Conduct the activity/research as presented in the article.

Task 3: Improve on existing research:

- a. Search for an article with primary research on a topic of your choice.
- b. Read the article and critically evaluate the methodology used:
 - i. Choose the “Experiments, Worksheets, Lesson Plans” category under Explore topics and navigate as described in Task 1.
 - ii. Run a Basic Search using the search string, **((project OR experiment OR procedure) and student)**. You may also wish to further narrow your results by Source Type.
 - iii. Run a Basic Search using the search string, **(classroom AND activity)**
 - iv. Add another search term related to a desired topic by using **AND [topic here]**.
- c. Design your own methodology for data collection or analysis that improves upon current research.

Task 4: Use Science Reference Source to research a small problem or task from your lives that could be improved through some kind of design/engineering solution.

- a. Choose a task or problem you would like to simplify or find a solution to (e.g., sorting recycling materials, waking up on time, choosing an outfit for school, etc.).
- b. Research the problem using Science Reference Source to identify major factors causing this problem or limitations of current solutions.
- c. Identify the criteria that must be met to call your solution successful, constraints that will hinder the solution, and a method for analyzing the success of your solution.
- d. Design and/or build a solution (object or system) that will fit within the criteria and constraints.
- e. Test multiple scenarios or multiple solutions to determine a successful solution.

Assessment

Formative Assessment

Students should keep track of questions, research, data, analysis, and designs and tests in their notebook, organized so that all information for a single task or activity is together.

Summative Assessment

Students present their research and findings in a poster session. Posters should include their question, important background info, variables tested, analysis and a solution.