**Engineering Design Journal**

**WebQuest Description**: This quest examines primary source documents from Thomas Edison's design journals.

**Grade Level**: 6-8  
**Curriculum**: Technology  
**Keywords**: Design Journal, invention, Thomas Edison,  
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**Introduction**

Big Idea: The Engineering Design Process is a method that is used to solve technological challenges and improve products for the way we live.

Few things are as important to Inventors as their journals. This is where they illustrate ideas, document observations, and record data concerning prototypes. During this webquest you are going to learn about Engineering Design Journals, EDJ, by examining a journal that belonged to Thomas Edison.

You will navigate this quest by clicking the buttons on the left side of the screen. To begin click the TASK button.

**Tasks**

During this quest you are going to examine one of Thomas Edison's design journals. You must learn how to do this because during the last portion of the quest, you will be keeping your own Engineering Design Journal while you work on The Great Pencil Invention. You will record all of your thoughts, ideas, and data in your journal while working on this project. It may be the first invention that you document in your journal but it won't be the last.

**Process**

Your instructor should have given you the required worksheets for this quest but if for some reason you need additional copies you may print them from the links below. To begin use the Harcourt School link below to go to the math glossary page. Once there complete the Scale Drawings worksheet packet. Next use the documents on The Edison Papers website to complete the Journaling Like a Pro worksheet packet. Finally follow the instructions on The Great Pencil Invention worksheet to begin working in your own Engineering Design Journal. As you are working on your invention be sure to follow all of the rules and guidelines that you learned during this quest so that your Engineering Design Journal will meet the standards of the scientific community. Create something that you'll be proud of!

**Evaluation**

Before submitting your work be sure that you have completed both of the worksheet packets and that your Engineering Design Journal conforms to the standards that you learned and the requirements written on The Greatest Pencil Invention worksheet. Once you are satisfied with your work you may give it to your instructor for assessment. All work is due no later than one week from today.

<table>
<thead>
<tr>
<th>Category and Score</th>
<th>Below Basic</th>
<th>Basic</th>
<th>Proficient</th>
<th>Advanced</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sketch Entries</td>
<td>No attempt made</td>
<td>Sketches are incomplete, lack detail, or are not present.</td>
<td>Sketches are made as required but could contain additional details. Drawing is not to scale.</td>
<td>All sketches are complete and include details that make them easily understandable; they are drawn to scale.</td>
<td></td>
</tr>
<tr>
<td>Annotations</td>
<td>No attempt made</td>
<td>Few, if any, annotations are given and the ones written provide incomplete information. There are few, if any, measurements given.</td>
<td>Annotations are provided but do not enhance the sketches. Some measurements are included with sketches.</td>
<td>Annotations and measurements are included with sketches.</td>
<td></td>
</tr>
<tr>
<td>Organization</td>
<td>No attempt made</td>
<td>EDJ is unorganized, missing key information, and messy.</td>
<td>EDJ contains most of the necessary information, which is mostly organized, and complete.</td>
<td>EDJ is very organized and complete. All information is included and accurate.</td>
<td></td>
</tr>
</tbody>
</table>
Congratulations, you did it! Although it wasn't always easy you didn't quit. You continued to work on the tasks that were assigned to teach you about Engineering Design Journals. Don't worry if your journal didn't turn out exactly as you had hoped. It was your first attempt. Your journals will improve with each attempt. Before you know it you'll be able to convey your ideas on paper with more clarity than you can imagine. Now you can create sketches that technically represent an object or idea. Hold your head high and keep looking towards the future.

Unit 2: Engineering and Design
Lesson 1: Documenting Ideas

Lesson Snapshot
Overview
Big Idea: The Engineering Design Process is a method that is used to solve technological challenges to change and improve products for the way we live.

Selected Learning Objectives:
Students will learn to:
1. Apply a design process to solve problems in and beyond the laboratory-classroom.
2. Specify criteria and constraints for a design.
3. Make two-dimensional and three-dimensional representations of a designed solution.
4. Test and evaluate the design in relation to preestablished requirements, such as criteria and constraints, and refine as needed.
5. Make a product or system and document the solution.
6. Create sketches that technically represent an object or idea.
7. Draw geometric objects with specified properties, such as side lengths or angle measures.

Lesson Duration: Three hours.

Activity Highlights
Engagement: Students explore the differences between sketching technically and artistically.
Exploration: Students use the Internet to examine the engineering journals of Thomas Edison.
Explanation: The teacher explains the importance of documenting work in the journal.
Extension: Students select a product used every day and write a short narrative of what the item might be like in 20 years.
Evaluation: Students' knowledge, skills, and attitudes are assessed through a rubric that evaluates the Engineering Design Journal entries, teacher observation of students as they create sketches for the Engineering Design Journal, and completion of Student Activity Sheets.

Purpose of Lesson: In this lesson, students learn the importance of documenting and annotating their sketched ideas.

Standards

Credits

Other

Conclusion

Congratulations, you did it! Although it wasn't always easy you didn't quit. You continued to work on the tasks that were assigned to teach you about Engineering Design Journals. Don't worry if your journal didn't turn out exactly as you had hoped. It was your first attempt. Your journals will improve with each attempt. Before you know it you'll be able to convey your ideas on paper with more clarity than you can imagine. Now you can create sketches that technically represent an object or idea. Hold your head high and keep looking towards the future.