

## Engineering Design

**Grades:** Post-secondary

**Duration:** 1 class session

**Objective:** Students will be assigned to find an example of a design process in an online article. Students will work in groups of three. The groups will take the design process descriptions found and create a Zazna clipping of it and send it to each other for analysis. They will then select one of their clippings and send it to their instructor along with a two-page analysis. Students will then apply their chosen design process to solve an engineering problem of the student's choice.

Objectives	Given the assignment, students will <ul style="list-style-type: none"><li>• Understand and apply various design processes</li><li>• Apply a design process to solve a problem related to engineering</li></ul>
Materials	To complete this project successfully, students will need: <ul style="list-style-type: none"><li>• A computer with internet access</li><li>• A Zazna account and a valid email</li></ul>
Procedures	<ol style="list-style-type: none"><li>1. Students will be placed in groups of three</li><li>2. The groups will be assigned to research various design processes and use Zazna to send each other clippings of the steps of that design process</li><li>3. Once the group has decided which design process they are going to use, they will submit their clipping to the teacher in addition to a two page response about why they chose that design process and what advantages/disadvantages it has in comparison to the other processes seen.</li><li>4. The students will then find a problem that they would like to solve, such as how to build a road over a swamp.<ol style="list-style-type: none"><li>a. This problem should relate in some way to a facet of engineering's, such as industrial, mechanical, etc.</li></ol></li><li>5. The group will then develop a presentation about what problem they set out to solve and how they would solve it and present it to the class.</li></ol>
Assessment	Each group will be assigned to research a variety of design processes and choose one. The group will then write a paper discussing why they chose the process they did and how it compares to others they saw. Next, the group will choose an engineering problem and apply their chosen design process to come up with the solution. They will then develop a presentation and show the class what they did using the design process.

Evaluation	<p>Students will be graded in four different areas:</p> <ol style="list-style-type: none"> <li>1. <b>10 Points</b> – Group collaboration – how much did they help the group</li> <li>2. <b>20 Points</b> – Paper – Addresses all points required and is submitted on time.</li> <li>3. <b>10 Points</b> – Submission of Zazna clipping</li> <li>4. <b>20 Points</b>- Selection of topic and application of design process</li> <li>5. <b>40 Points</b> – In-class presentation – Clearly showed how they used the design process and what steps they went through to solve their engineering problem</li> </ol> <p><b>100 Points Total</b></p>
Standards	<p>This lesson plan conforms to the following standards from the International Technology Education Association’s “Standards for Technological Literacy”</p> <ul style="list-style-type: none"> <li>• Standard 9: “Students will develop an understanding engineering design”</li> </ul>

References:

International Technology Education Association. (2000). *Standards for Technological Literacy: Content for the Study of Technology*. Reston, VA: Author.