

# Project Venture Lesson Plan Format

<b>Name:</b>	Brian Sears	<b>Title:</b>	Engineering
<b>Grade Level:</b>	7	<b>Subject Area(s):</b>	Science/Social Studies
<b>School/District:</b>	Kyrene School District	<b>Time Frame:</b>	1 week

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<b>SUMMARY:</b>	<p><b>Brief description of lesson/unit.</b> In my Engineering unit, my students are to learn about the different kinds of engineers and ultimately “become” an engineer to fix a problem or improve on something in the world (i.e. air pollution, traffic jams, car accidents, water shortages, etc.). This unit is easily integrated with other subjects and I communicate with other teachers about how we can integrate across the curriculum (i.e. reading, literature, math, social studies).</p>
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<b>STANDARDS:</b>	<p><b>Listed below are the state technology and science curriculums used in my engineering lesson:</b></p> <p>1T-E2. Demonstrate increasingly sophisticated operation of technology components (State Technology Curr.)            1T-E1. Communicate about technology using developmentally appropriate and accurate terminology (State Technology Curr.)            2T-E3. Demonstrate knowledge of current changes in technologies and the effect those changes have on the workplace and society (State Technology Curr.)            3T-E3. Publish and present information using technology tools (State Technology Curr.)            3T-E4. Use technology tools to support system analysis and modeling (state Technology Curr.)            4T-E2. Use technology tools for individual and collaborative writing, communication and publishing activities to create curricular related products for audiences inside and outside the classroom (State Technology Curr.)            4T-E3. Collaboratively use telecommunications and online resources (State Technology Curr.)            5T-E1. Locate information from electronic resources (State Technology Curr.)            5T-E2. Evaluate the accuracy, relevance, appropriateness, comprehensiveness and bias of electronic information sources (State Technology Curr.)            6T-E1. Determine when technology is useful and select and use the appropriate tools and technology resources to solve problems (State Technology Curr.)            3SC-E1. Recognize how scientific knowledge, thinking processes and skills are used in a great variety of ways (State Science Curr.)            2SC-E1. Identify major milestones in science that have revolutionized the thinking of the time (State Science Curr.)</p>
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<b>OUTCOMES:</b>	<p><b>Kyrene Target Indicators (Please include reference numbers.)</b>            Kyrene School District Science Curriculum strand 5.11 states: “Students will utilize the technological design process by designing something to meet a human need or solve a problem and evaluate its merit.”</p>
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<b>ASSESSMENTS:</b>	<p><b>How will student learning be assessed? What criteria or rubric will be used to evaluate the lesson/unit?</b></p> <p>Although watching my students develop their interpersonal skills by working together to solve a problem gives me the satisfaction of a successful unit, rubrics are made in order to assess my students' understanding. I give points to the students for each of the categories in which they touched on in their presentation. I call this a content rubric. An oral presentation rubric is used in order to assess their public speaking abilities, like, volume, eye contact, visual aids and hand gestures.</p>
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<b>PRE-REQUISITE KNOWLEDGE:</b>	<p>Students should be able to describe what an engineer is before they start work on any part of the presentation. Students should also be able to recognize what the different types of engineers do. See the attachments in which I have provided for activities beforehand. Also, students should understand how to effectively work a projection system.</p>
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<b>LEARNING ENVIRONMENT:</b>	<p>This will be a very cooperative leaning environment in which the students will work with one another to achieve a solution to the problem. Students will share ideas with one another and collaborate on what the presentation should look like and what content should be included in their presentation. The atmosphere in the room should be that in which you hear talking –not silence.</p>
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## Tools and Resources

<b>NUMBER OF COMPUTERS:</b>	<p>A minimum of 15 computers for a class of 30 is required for this lesson. The more computers the better to better utilize the students' time.</p>
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<b>SOFTWARE:</b>	<p>Any of the following:</p> <ul style="list-style-type: none"> <li>PowerPoint</li> <li>Front Page Express</li> <li>Dreamweaver</li> <li>Publisher</li> </ul>
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<b>PERIPHERALS:</b>	<p>Projection system (required to present)          Internet access (required for research)</p>
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<b>INTERNET URL'S:</b>	<p><a href="http://www.eweek.org/1999/nbm/intro.html">http://www.eweek.org/1999/nbm/intro.html</a></p>
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<b>PRINTED MATERIALS:</b>	<p><b>Please include file name and short description of printed material or URL</b>  <i>(see attachments sent via email to Suzi Mast)</i>          Breaking Through: The creative Engineer (describes what engineers do)          Engineer Collaboration Form (helps students collaborate their ideas)          Computer Lab Form (rubric for students to work from)          Which Engineer is This? (activity to help students understand what engineers do)          Engineer Lesson Plan (lesson plans for teachers)</p>
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<b>SUPPLIES:</b>	<p>Printed materials (see file attachments sent to Suzi Mast via email)</p>
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<b>RESEARCH MATERIALS - BOOKS:</b>	<p>None</p>
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<b>OTHER:</b>	<p>Videos from Kyrene School District Instructional Materials Center:          1. "Engineers – Turning Ideas into Reality"          2. "Who Are Engineers – You?"</p>
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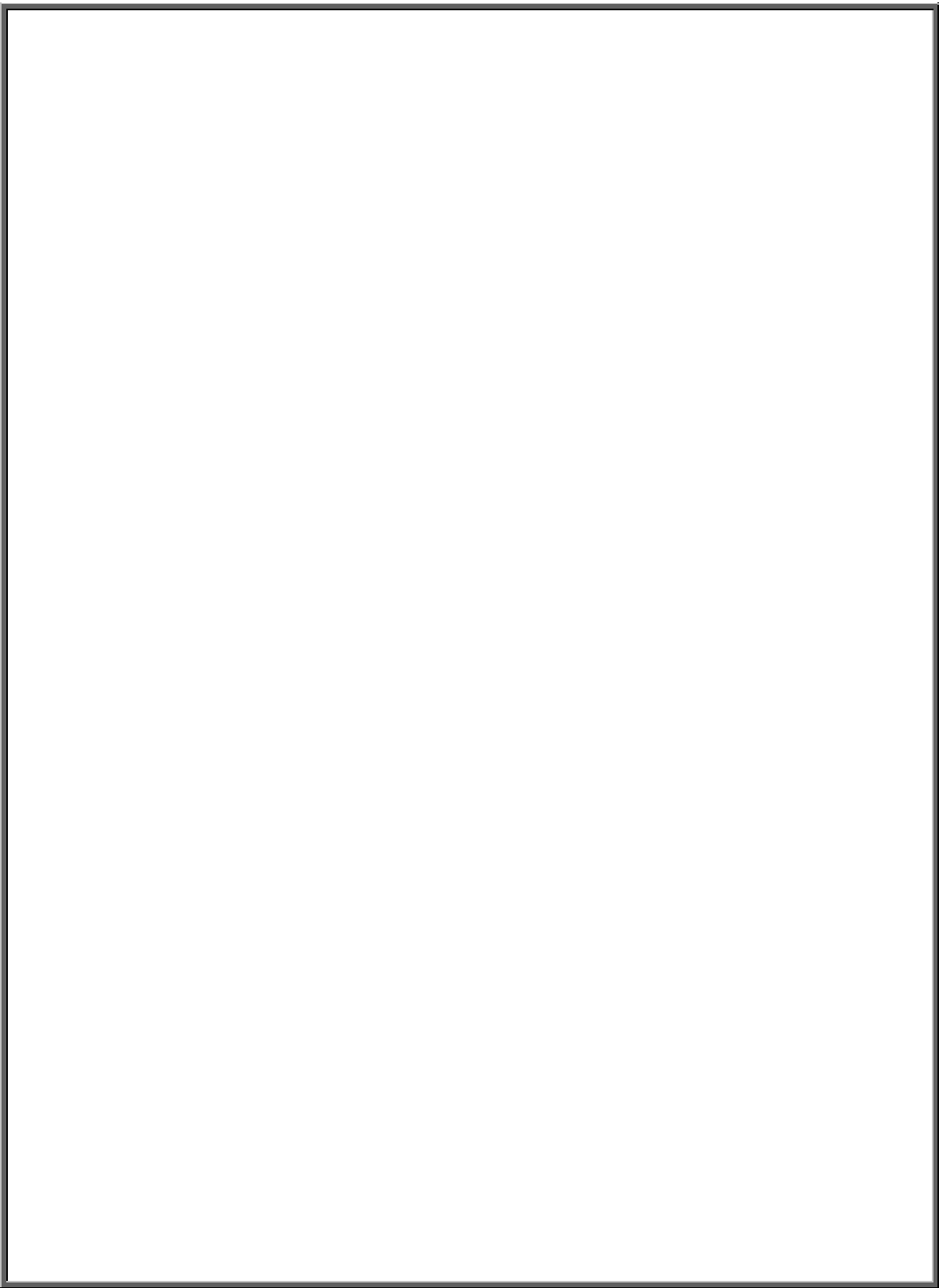
## Procedures

### Provide information necessary for another teacher to replicate your lesson/unit.

Students will utilize the technological design process by designing something to meet a human need or solve a problem and evaluate its merit. In my Engineering unit, my students are to learn about the different kinds of engineers and ultimately “become” an engineer to fix a problem or improve on something in the world (i.e. air pollution, traffic jams, car accidents, water shortages, etc.). This unit is easily integrated with other subjects and I communicate with other teachers about how we can integrate across the curriculum (i.e. reading, literature, math, social studies).

After learning about who engineers are and what they do with direct instruction/activities, students team up with one another and decide upon a problem/improvement that they would like to work on. These brainstorming sessions usually entice the students because it is a problem/improvement that they are interested in. Once the problem is decided upon, the students are to work together on developing a presentation to a group of people (the class) that will either support their decision or not. The presentation will walk the audience through: what the problem is; how they can fix the problem; what kinds of engineers will be working on this problem; what materials are involved with solving this problem; and a cost analysis for the project.

Furthermore, towards the end of the unit, I invite Electrical and Computer Engineers from *Intel* into my classroom to speak to my students. Overall, I very am pleased with my Engineering unit because of the many different aspects of learning that takes place. Students must share information and ideas with one another in order to solve their problem or make their improvement. Students see real-life engineers who are men *and* women. They learn about careers in the science field by hypothesizing, researching and solving the problem at hand. By writing, reading and presenting their solution to the class using a presentation system, my students in the audience become engaged, and, in many cases, work on new and innovative ways of solving the different problems in which they were presented with.



## Modification for Differentiated Instruction

<b>SPECIAL EDUCATION:</b>	<p>(optional)</p> <p>Modify for length of presentation. Partner with a gifted child.</p>
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<b>ESL:</b>	<p>(optional)</p> <p>Have the students type in native language or work with a gifted student.</p>
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<b>GIFTED:</b>	<p>(optional)</p> <p>Give assignment more areas to be graded (i.e. pictures, custom animation, working models, etc.).</p>
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