

# Project Outline

Use the following outline with the [Teacher Logbook](#), PowerPoint lessons, and teaching notes (*available on our website in the Teaching Guides section of the Teacher Resources*) to guide your students through the invention project. This outline will help you create a schedule while giving you the flexibility to adapt the project for your class. The outline and Teacher Logbook include links to many of the handouts you will need. If you view the outline or the Teacher Logbook on a computer, you can click the links to quickly access these resources. We have also provided Assessment Rubrics to help you evaluate your students' performance. You can find these and more (worksheets, activities, examples, etc.) on our website in the [Teacher Resources](#).

We recommend working on the project at least once a week, but you will likely need additional time when the students are designing, building, testing, and improving their prototype. In total, the project will take at least 12 days of in-class time. If some topics take less time than expected, feel free to go faster or combine days to leave extra time for project revision.

At the end of the project, we recommend that your students present the class invention to the school and/or parents. This can be done at a school assembly, science fair, invention fair, parent night, etc. It is a valuable experience for your students to present to an audience, show what they did, and receive positive feedback. However, this is an optional event; the whole-class invention is not eligible to enter Mission: Invent, our NAD-wide invention fair. To enter at the K-2 level, your students must create group inventions following the small-group option (*available in the Teacher Resources*).

In addition to the STEM topics, we have included a Biblical Connection with this project. Each student should select a Bible story, character, or lesson that relates to the invention. Encourage your students to start thinking about this early and give frequent examples, such as short devotional thoughts at the beginning of each class (*devotional and character examples available in the Biblical Connection section of the Teacher Resources*).

**Teacher resources and videos available on our website:**

**[www.andrews.edu/go/invent](http://www.andrews.edu/go/invent)**

**Contact us at [stemconnect@andrews.edu](mailto:stemconnect@andrews.edu)  
with any questions, comments, or suggestions.**



Topics		Activities, Assignments, & Goals
<b>Lesson 1: Who Are Inventors?</b>  ( <a href="#">PowerPoint Lesson</a> available in Teaching Guides section)	<ul style="list-style-type: none"> <li>Who are inventors?</li> <li>Give examples of young inventors</li> <li>Briefly introduce the project and <a href="#">Logbook</a> (available in Project Resources section)</li> <li>Announce final class presentation</li> </ul>	<b>Class Activity:</b> <ul style="list-style-type: none"> <li><a href="#">Young Inventors Activity</a> (available in Activities section) or create your own activity</li> </ul> <b>Assignment: (Logbook pg. 5)</b> <ul style="list-style-type: none"> <li>Find problems to share with the class next time (worksheets for <a href="#">Kindergarten</a> &amp; <a href="#">Grades 1-2</a> available in Project Resources section)</li> </ul>
<b>Lesson 2: Real-World Problems</b>  ( <a href="#">PowerPoint Lesson</a> available in Teaching Guides section)	<ul style="list-style-type: none"> <li>How do I find a problem? (use problem worksheets from previous assignment)</li> <li>Show Invention Fair Example (available in Examples section)</li> </ul>	<b>Class Activity: (Logbook pg. 5)</b> <ul style="list-style-type: none"> <li>Share problems you found</li> <li>Brainstorm new problems</li> <li>Narrow the list</li> <li>Choose a problem and describe it in the Logbook</li> </ul>
<b>Lesson 3: What Is Engineering?</b>  ( <a href="#">PowerPoint Lesson</a> available in Teaching Guides section)	<ul style="list-style-type: none"> <li>What do engineers do?</li> <li>How do engineers solve problems?</li> <li>Engineering Design Process (refer to PowerPoint lesson or Logbook diagram)</li> <li><a href="#">Engineering Videos</a> (available in Teaching Guides section)</li> </ul>	<b>Class Activity:</b> <ul style="list-style-type: none"> <li>Option 1 – Use the engineering design process to solve a practice problem (<a href="#">Example Problems</a> available in Activities section)</li> <li>Option 2 – Organize a hands-on engineering activity (<a href="#">Dump Truck Example</a> linked in Activities section)</li> </ul>
<b>Project: Research the Problem</b>  ( <a href="#">PowerPoint Slides</a> available in Teaching Guides section)	<ul style="list-style-type: none"> <li>Work on class project</li> </ul>	<b>Goals: (Logbook pg. 6)</b> <ul style="list-style-type: none"> <li>Research the problem (If the research will include interviews, you could send that home after Lesson 3.)</li> </ul>



<b>Project: Requirements</b>  <a href="#">(PowerPoint Slides available in Teaching Guides section)</a>	<ul style="list-style-type: none"> <li>• What are requirements? (Logbook pg. 7)</li> <li>• Work on class project</li> </ul>	<b>Goals: (Logbook pg. 7)</b> <ul style="list-style-type: none"> <li>• List solution requirements</li> </ul>
<b>Project: Find &amp; Choose a Solution</b>  <a href="#">(PowerPoint Slides available in Teaching Guides section)</a>	<ul style="list-style-type: none"> <li>• Work on class project (may require extra time)</li> </ul>	<b>Goals: (Logbook pg. 8)</b> <ul style="list-style-type: none"> <li>• Draw solution ideas</li> <li>• Share and compare ideas</li> <li>• Choose the best solution</li> </ul>
<b>Project: Design &amp; Build the Prototype</b>  <a href="#">(PowerPoint Slides available in Teaching Guides section)</a>	<ul style="list-style-type: none"> <li>• Work on class project (several days)</li> </ul>	<b>Goals: (Logbook pg. 9-10)</b> <ul style="list-style-type: none"> <li>• Draw and describe invention design</li> <li>• Build the prototype</li> </ul>
<b>Project: Test the Prototype</b>  <a href="#">(PowerPoint Slides available in Teaching Guides section)</a>	<ul style="list-style-type: none"> <li>• Work on class project (several days)</li> </ul>	<b>Goals: (Logbook pg. 11)</b> <ul style="list-style-type: none"> <li>• Continue/finish building the prototype</li> <li>• Test the prototype</li> </ul>
<b>Project: Improvement</b>  <a href="#">(PowerPoint Slides available in Teaching Guides section)</a>	<ul style="list-style-type: none"> <li>• Work on class project (several days)</li> </ul>	<b>Goals: (Logbook pg. 9-11)</b> <ul style="list-style-type: none"> <li>• Improve the prototype</li> <li>• Run new tests</li> <li>• Finish the prototype</li> </ul>
<b>Project: Wrap-Up</b>  <a href="#">(PowerPoint Slides available in Teaching Guides section)</a>	<ul style="list-style-type: none"> <li>• Prepare for presentation</li> </ul>	<b>Assignment: (Logbook pg. 12)</b> <ul style="list-style-type: none"> <li>• Presentation prep  <a href="#">(Presentation Guidelines, available in Presentation Resources section, may be useful as you prepare)</a> </li> </ul>
<b>Presentations</b>	<ul style="list-style-type: none"> <li>• Present class invention</li> </ul>	

