

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 iteration.

At the end of the project, organize a school invention fair with judges to evaluate each project. The winning team(s) from this event will be eligible to enter Mission: Invent, an NAD-wide invention fair. Here they will present their inventions and engage with students from across North America. For more details about organizing a local invention fair, refer to the Invention Fair Guidelines and [Judging Rubric](#) (*available in the Invention Fair section of the Teacher Resources*).

In addition to the STEM topics, we have included a Biblical Connection with this project. Each team will select a Bible story, character, or lesson that relates to their 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

Contact us at stemconnect@andrews.edu

with any questions, comments, or suggestions.



	Topics	Activities, Assignments, & Goals
<p>Lesson 1: Who Are Inventors?</p> <p>(PowerPoint Lesson available in <i>Teaching Guides</i> section)</p>	<ul style="list-style-type: none"> Who are inventors? Give examples of young inventors Introduce the project and Student Logbook (available in <i>Project Resources</i> section) Announce schedule, school invention fair, and Mission: Invent Form project teams (3-4 students each) 	<p>Class Activity:</p> <ul style="list-style-type: none"> Young Inventors Activity (available in <i>Activities</i> section) or other discussion/journaling activity <p>Assignment: (Logbook pg. 7)</p> <ul style="list-style-type: none"> Find problems to share with your team next class (worksheet available in <i>Project Resources</i> section)
<p>Lesson 2: Real-World Problems</p> <p>(PowerPoint Lesson available in <i>Teaching Guides</i> section)</p>	<ul style="list-style-type: none"> How do I find a problem? (Invention Categories available in <i>Project Resources</i> section) Show Invention Fair Example (available in <i>Examples</i> section) 	<p>Team Activity:</p> <ul style="list-style-type: none"> Share problems you found last time Brainstorm new problems <p>Assignment: (Logbook pg. 7)</p> <ul style="list-style-type: none"> Choose a problem
<p>Lesson 3: What Is Engineering?</p> <p>(PowerPoint Lesson available in <i>Teaching Guides</i> section)</p>	<ul style="list-style-type: none"> What do engineers do? How do engineers solve problems? Engineering Design Process (refer to <i>PowerPoint lesson</i> or <i>Logbook diagram</i>) Engineering Videos (available in <i>Teaching Guides</i> section) 	<p>Class Activity:</p> <ul style="list-style-type: none"> Choose a simple problem (Example Problems available in <i>Activities</i> section) Practice solving it by following the engineering design process Use PowerPoint lesson or Logbook as a guide (only do steps 1-4 for the example)
<p>Project: Define & Research the Problem</p> <p>(PowerPoint Slides available in <i>Teaching Guides</i> section)</p>	<ul style="list-style-type: none"> Work on team projects 	<p>Goals: (Logbook pg. 7-9)</p> <ul style="list-style-type: none"> Define the problem Research the problem



<p>Project: Requirements</p> <p>(PowerPoint Slides available in Teaching Guides section)</p>	<ul style="list-style-type: none"> • What makes a good requirement? (<i>Logbook pg. 10</i>) • Work on team projects 	<p>Goals: (Logbook pg. 10)</p> <ul style="list-style-type: none"> • Finish research • List solution requirements
<p>Project: Find & Choose a Solution</p> <p>(PowerPoint Slides available in Teaching Guides section)</p>	<ul style="list-style-type: none"> • Work on team projects (may require extra time) 	<p>Goals: (Logbook pg. 11-13)</p> <ul style="list-style-type: none"> • Brainstorm solutions • Compare solutions • Research originality • Choose the best solution
<p>Project: Design & Build the Prototype</p> <p>(PowerPoint Slides available in Teaching Guides section)</p>	<ul style="list-style-type: none"> • Work on team projects (several days) 	<p>Goals: (Logbook pg. 14-16)</p> <ul style="list-style-type: none"> • Create invention design • Build the prototype
<p>Project: Test the Prototype</p> <p>(PowerPoint Slides available in Teaching Guides section)</p>	<ul style="list-style-type: none"> • Work on team projects (several days) 	<p>Goals: (Logbook pg. 17-18)</p> <ul style="list-style-type: none"> • Continue/finish building the prototype • Test the prototype
<p>Project: Improvement</p> <p>(PowerPoint Slides available in Teaching Guides section)</p>	<ul style="list-style-type: none"> • Work on team projects (several days) 	<p>Goals: (Logbook pg. 14-18)</p> <ul style="list-style-type: none"> • Improve the prototype • Run new tests • Finalize the prototype
<p>Project: Wrap-Up</p> <p>(PowerPoint Slides available in Teaching Guides section)</p>	<ul style="list-style-type: none"> • Prepare for presentations 	<p>Assignment: (Logbook pg. 19-20)</p> <ul style="list-style-type: none"> • Logbook conclusion • Presentation prep (Presentation Guidelines available in Presentation Resources section)
<p>Presentations</p>	<ul style="list-style-type: none"> • Present inventions at school invention fair • Judges will score the projects (Judging Rubric) • Enter the winning teams in Mission: Invent 	

