



## High School Course Outline

The High School course on Real World Inventing embodies Inventionland's mission of using the inventing process as the basis for a stimulating, multidisciplinary course that promotes creativity, problem solving, and entrepreneurship.

This is an extremely well-rounded curriculum that will easily engage students for an entire semester and then some. The course follows the proven 9 Step Method of inventing as students work in groups to invent or innovate a product, culminating in a "Shark Tank" style presentation in an actual Innovation Contest.

We've found that most classes go through the 9 Step Method in a semester, but for those that are more advanced, we've included additional course materials. Specifically, we've provided storytelling and video production modules, expanding the course into three parts, one essential and two optional:

- The 9 Step Method of inventing (core content) – 9 modules
- The ABCs of Storytelling – 7 modules
- 3, 2, 1 Production! – 4 modules

And we've composed Maker Technology modules to help you use a variety of high-tech tools effectively, from 3D printers to electronics.

This brief outline describes the instructional content in each module.





# The 9 Step Method

## 1. Create and Protect Your Idea

Students learn that new ideas usually involve solving problems. They are introduced to systematic ways of generating ideas and study real-life examples of problem solving. They then learn the importance of legally protecting ideas so they can't be stolen.



**Main areas covered:** Problem solving, communication, law

## 2. Research Your Idea

Students research products similar to their idea through the Internet and an actual store visit. They also learn about patents and how to identify a company that might be interested in their idea.



**Main areas covered:** Business, research skills

## 3. Brainstorm Your Idea

Students brainstorm and evaluate product ideas, eventually selecting one that their group will work on. Along the way, they learn to avoid becoming too emotionally attached to their own ideas and why some ideas are scientifically impossible.



**Main areas covered:** Psychology, science, interpersonal collaboration

## 4. Sketch Your Idea

Students prepare an ideation drawing (sketch) of their proposed product. Before doing so, they learn about common materials, how they are used, and various manufacturing processes.



**Main areas covered:** Visual art, science, manufacturing

## 5. Model Your Idea

Students construct a full-scale concept model of their product. They also get feedback from other people and suggest a name for the product.



**Main areas covered:** Mathematics, science, marketing

## 6. Draft Your Idea

Students design and, if the suitable equipment is available, produce an actual version of the product.



**Main areas covered:** Computer-aided design, engineering, 3D printing

**"You are coming at teaching my students in such a wonderful and unique way. The fact that you're working on providing for these students the way you are is just awesome!"**

**Kimberly Price - PA Educator**



### 7. Package Your Idea

Students study different types of packaging and their purposes, and they then determine a package design for their product.

**Main areas covered:** Packaging, marketing, business, computer-aided design



essential components of stories function and complete creative challenges that incorporate these components.

**Main areas covered:** Literature, writing, design, theater

### 8. Communicate Your Idea

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Students develop a graphic design, color scheme, and logo for their product. In preparation, they learn key issues such as the psychological impact of colors and how to market to different types of people.

**Main areas covered:** Visual art, psychology, marketing, business

### E. Telling Your Story

Students apply what they have learned to a different type of storytelling—pitching their product. They learn about three types of pitches and begin to prepare their own pitch.

**Main areas covered:** Business, marketing, public communication



### 9. Put It All Together

Students use everything they've learned to create their final product.



### F. Presentation Pointers

Students learn about other factors that contribute to an excellent presentation: attire, self-confidence, enunciation, politeness, and preparedness for questions. This module also includes a detailed review of the content of a good presentation.

**Main areas covered:** Language arts, public communication, interpersonal relations

## ABCs of Storytelling

**A to D.** The first four steps discuss essential aspects of any good story: (A) setting, (B) characters, (C) conflict and resolution, and (D) plot. Students examine how these five

### G. Class Presentations

Students use their knowledge and skill to deliver their own persuasive presentation about their product





## 3, 2, 1 Production

This part of the course covers the creation of a video infomercial in four steps:

### 4. Script-storming

Students brainstorm ideas and compose an infomercial script.

### 3. Pre-production

Students prepare a storyboard that aligns the script with video shots, and they identify locations and performers.

### 2. Production

Students film their video scenes.

### 1. Post-production

Students edit their video footage and add narration or special effects to create a complete infomercial

**Main areas covered:** Writing, theater, video production, advertising, communication



### 3D Printing

These detailed instructions cover effective use of your 3D printer, including common pitfalls to avoid.



### Laser Cutting

Learn proper setup and operation of this powerful cutting and engraving tool. We also offer suggestions on your purchase decision.

### Vinyl Cutting

These relatively inexpensive machines can pay for themselves in a hurry. We describe the most popular options and great ways to use them.

### Raspberry Pi and Arduino

These are the two most widely used basic electronics systems. Raspberry Pi is a mini-computer, whereas Arduino is a microcontroller. What's the difference, and which one is best for your students? We provide easy-to-understand answers to these key questions.



### Coding

Coding is an immensely valuable skill for today's students. We cover what coding is, why it is so important, and ways to teach it.

### Electronics Kits

We introduce and explain five amazing kits that offer fascinating ways to introduce beginners to the world of electronics.

### Stop-motion animation

With smartphones and an app, students can turn a series of still photos into a realistic video in no time. This module explains how. No background knowledge required!



## Innovation Lab<sup>®</sup> Technology Modules

These eye-opening modules will help you learn and guide your students in the use of advanced equipment that makes inventing much easier! They are not designed to replace the instruction manual, but we think you'll find them full of valuable information.