



Middle School Course Outline

The middle school version of Inventionland's course on Real World Inventing provides an ideal introduction to project-based learning, group collaboration, and technology application—all essential components of an effective education program for grades 6 to 8.

Our multidisciplinary curriculum covers a wide range of topics in a flexible manner, with lots of support for teachers at all skill levels. It has been used effectively by teachers who thrive on makerspaces and by ones with no technology background.

The core of the course makes project-based learning fun and relevant by inviting students to select and develop their own invention. Additional optional modules cover storytelling skills (to prepare students for the "Shark Tank" style presentations in which the course culminates), video production (so that students can create their own promotional infomercial), and how to use various advanced technologies such as laser cutters and 3D printers.

Our three-day professional development program will get you thoroughly equipped and excited about giving your students the

most creativity-enhancing experience of their middle school years!

This brief outline describes the instructional content in each module, to help you plan your use of the course material. You can also find simple, student-friendly summaries in the introduction to each of the three main parts.

- 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

8



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

9. Put It All Together

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



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



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

Innovation Lab[®] 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.

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 realistic video in no time. This module explains how. No background knowledge required!

