

# Basic Shop Safety Module

## Suggested Timeline:

Tour: 30min to 45min

Tool Safety: 30 min per tool with a large group. 5 to 15 min per student.

Basic shop safety is the most important skill students learn in any maker environment. While every shop is different and presents its own unique challenges. For the SIPP program, the summer orientation offers a chance for the students to become familiar with the workshop and it's possibilities: that means safety first.

## Objectives:

Students gain familiarity with shop and environs

Students demonstrate knowledge of shop rules and procedures in context and written assessments

Students demonstrate safe tool use

## Tour of Shop (Day One)

- Types of hazards in a workshop/maker shop
  - Trips/Falls
  - Lacerations/Amputations
  - Catches and Nips
  - Fires
  - Chemical
  - Thrown debris
- Identifying Potential Hazards
  - Power cords
  - Fire Sources (Laser cutter, chemical/finishes, debris)
- Workspace Organizations & Courtesy
  - Return it how you found it or better
  - Safe space is a clean space
  - Pictures of work areas clean and ready for use.

Each tool should be demonstrated. Tools can be integrated into specific units and lessons as needed by the instructor. Some tools, such as hand tools and handheld power tools can be

grouped together by instructor. Other tools, such as the table saw, CNC router or CNC mill will need extensive, intensive training for appropriate use.

## Tool Demos (Throughout Summer, Integrated In Projects)

- **Short tool lecture (<20 min)**
  - Identify type of hazards per tool
  - Describe purpose and potential use of the tool
  - Demonstrate safe use of the tool
  - Describe most common safety issues with tool (l.e. kickback, hair caught in drill press, chuck key left in chuck, etc)
- **Student demonstration of competency**
  - Checklist based rubric of competency
- **Student basic skills exam**
  - 10 to 15 questions, multiple choice, using straight ahead, everyday language. No gotcha tricks
- **Student Resources Kit**
  - Pre-Flight/Post-Flight Check Lists
  - Picture of Clean Workstation
  - Video Resource Explaining the Tool for Later Review
  - Website/QR code for Reading

## Sample Lesson Plans for Safety Lessons

### Day One

#### Objectives:

Students gain familiarity with shop and environs

Students demonstrate awareness of shop rules and procedures

#### Activities

Shop & Facilities Tour

Review of First Aid/Emergency Procedures

Demonstration of basic hand tools

#### Project to Demonstrate Competency

Simple Prototype (Design Thinking)

1 Day Build: Cardboard Chair

Problem

Brainstorm

Design

Build

Tinker

Share

## **Day Two**

### Objectives

Students gain familiarity with shop and environs

Students demonstrate awareness of shop rules and procedures

### Activities

Demonstration of Basic Power Tools (Drills, Sanders, Etc)

### Project to Demonstrate Competency:

Challenge 2: Articulated Crane Arm

Problem

Brainstorm

Design

## **Day Three**

### Objectives:

Students gain familiarity with shop and environs

Students demonstrate awareness of shop rules and procedures

### Activities:

Demonstrations of Shop Bench Tools (Bandsaw, Sanders, Etc)

Activity #3 from Day One

### Project

Challenge 1 Day Two

Prototype

## **Day Four**

### Objectives:

Students gain familiarity with shop and environs

Students demonstrate awareness of shop rules and procedures

### Activities

Reflections on Lessons

Big Picture Questions

SEL Focused Questions

-emotion check-ins about different stages of learning

-moments when they showed grit, resilience, growth mindset

-how do they feel about their ability to use these tools/concepts

-how to ask for help with these tools and basic concepts  
Prime the Learner for Tomorrow's Reflection

Project:

Challenge 1 Day Three

Prototype

Test

## **Day Five**

Objectives:

Students gain familiarity with shop and environs

Students demonstrate awareness of shop rules and procedures

Activities

Week Reflections

Maker Design Cycle

Compare To: Writing, Scientific Method, Design Thinking,

Engineering, etc.

SEL Final Connections

-their first week experience vs. transition expectations

-reflect on thoughts, feelings, and behaviors they had during week

Project:

Share



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