

## Construction: BIM Technology Volunteer Guide

The BIM station introduces students to Building Information Modeling (BIM), a smart 3D model of a building that shows how everything will work before construction starts, helping builders and trades workers plan better and avoid mistakes. During the BIM session, students will learn how a middle school building will look and function before construction begins.

Before the session begins, **please review:**

- **BIM Volunteer Guide**
- **BIM Introduction PowerPoint**
- **BIM Device Preparation (below)**

### Device Preparation

Before students arrive:

#### Laptop Access

If the laptop is locked, use the following login credentials:

- **Email:** bim03@jastl.org
- **Password:** JAcadbim33

#### Open BIM Introduction PowerPoint

- Click the **BIM PowerPoint** icon to open the introduction slide deck. Click on slideshow icon in lower right corner.

#### Start the BIM Project

1. Click the  symbol to open the program.
2. Double-click the **Junior Achievement Training** project icon to open the project.



3. Ensure **3D mode** is selected at the top of the screen.
4. A 3D model of **NEW OPS MIDDLE SCHOOL** should appear on all devices.
5. If gridlines appear, click the **Toggle Grids** icon (bottom bar) to hide them.
6. Students will sit **five per side** at the BIM station.
7. If a student becomes lost in the model, click the [**home**] icon  (bottom bar) to reset.

## Improving Software Performance During Session

- The [home] button  acts as a reset in between tasks.
- As students navigate from task to task, please remind them to click the [home] button (lower right) between all activities.
- Students should not navigate from room to room.
- Students should work in a room then click on [3D] at the top of the page then click [home] to bring up the entire school on the screen. Click on the next room that they would like to work in.
- If you or the students are experiencing issues that cannot be resolved, X out of the program without powering down, then restart the program.
- Clear the cache on each computer at the end of the visit day and, if possible, in between student groups.
  - Go to [Project] in the upper left corner.
  - Click [Open].
  - Right click on [JA Trades].
  - Click [Clear Cache].
  - Click [Select data to clear].
  - Check [All].
  - Clear all data.
- At the end of the visit day after clearing the cache, download for field.
  - Go to [Project] in the upper left.
  - Click [Open].
  - Right click on [JA Trades].
  - Click [Download for field].
  - Close out (X out) at the end of the day but do not power down.

## Restarting the Program

If issues occur that cannot be fixed:

- Close the program (X out) but **do not power down the laptop**. Restart the program.

## Instructions: Bolded sections are to be read aloud.

Greet students as they arrive and invite them to take a seat at one of the ten stations.

## Introduction

**Today, you'll get hands-on trades experience with Building Information Modeling, or BIM, using the design of a middle school.**

## What Is BIM?

Direct students' attention to the BIM Introduction PowerPoint.

Key talking points:

- (Slide 2) **Have you ever heard of blueprints? They are detailed drawings or plans used in construction. BIM takes the place of blueprints. BIM stands for Building Information Modeling.**
- **BIM is a smart 3D model of a building that shows how everything will work before construction starts, helping builders and trades workers plan better and avoid mistakes.**
- **BIM shows how a building will look and function before construction begins.**
  
- (Slide 3) Review 7 points of discussion from slide including the following if time allows.
- **It helps construction teams and trades workers plan building systems like HVAC, plumbing, lighting, and structure.**
- **Different trades jobs such as plumbers, electricians, HVAC, fire protection, steelworkers use BIM to make sure their systems fit together.**
- **BIM improves safety, reduces errors, and helps build energy-efficient structures.**
- **BIM works on computers, tablets, and smartphones.**
- **Careers in BIM are high-demand and well-paid, with multiple training pathways.**
  
- (Slides 4-7) Briefly review slide talking points.

## Video Game Analogy

Who plays video games (Minecraft)? BIM uses the same type of 3D technology, so let's explore!

### Activity 1: Navigation and Trade Identification

#### Navigation Basics

- **Use the mouse to look around.**
- **Use W-A-S-D keys to move, use your mouse or touchscreen, or a combination of all.**
  - **W – Forward**
  - **A – Left**
  - **S – Backward**
  - **D – Right**

#### Exploration Task

Navigate around the screen and find some objects outside the building. Locate:

- **Dump truck**
- **Crane truck**
- **Cement truck**

Did you find them all?

## Using Viewpoints

Click on the Viewpoints icon  in the upper left of your laptop. These are saved views within the model.

- Click the arrow next to Home Base.
- Click the arrow next to the Junior Achievement folder.
- Click on Gymnasium.
- What do you see?" (They should see a basketball player, scoreboard, bleachers, etc.)
- BIM is all about the collaboration of different trades job roles in the construction industry in a virtual environment leading to more efficient project delivery.

## Assigning Trade Jobs

Give each student one trade card:

- **Plumber:** condensate pipes, roof drains, water lines
- **Electrician:** electrical conduit, lighting systems, fixtures
- **Fire Protection:** sprinklers, alarms, suppression systems
- **Steelwork:** structure, framing, carpentry
- **HVAC Technician:** air ducts, sheet metal, welding

## Find Your Trade Objects

- Click 3D at the top of the screen.
- Click the Rooms icon.  It looks like a door.
- Type Instrumental 203 in the search bar.
- Find the objects that match your given trade.
- Color Coding: Point out the colors associated with each trade (top left of the screen).

Trade	Color
Electrician	Yellow
Fire Protection Contractor	Bright Red
Plumber	Gold
HVAC Technician	Blue Green
Steelwork Contractor	Dark Red

Does anyone want to share what they found?



## Activity 2: Collaboration and Issue Tracking

The next activity is about collaboration between job roles. What is collaboration?

You will enter a room and find a conflict, or problem. You will then decide what job roles are involved and what two trades workers will fix the issue first and decide why.

- Click "Issue Tracker".
- Give students the following Issue ID numbers one at a time. Give the students time to determine the problem and what two trades workers will fix the problem. Ask for volunteers to provide the answers.
  - **12:** Electrician and HVAC Contractor
  - **72:** Plumber and Steelwork Contractor
  - **11:** Plumber and HVAC Contractor
  - **10:** Fire Protection Contractor and HVAC Contractor

## Closing

Thanks for exploring BIM technology with us today! We hope you enjoyed discovering how virtual construction helps build safer, more efficient buildings.