**Presenters’ Guide #2 for OMA, COMP Subject Matter Experts: “Ohio’s Future Is Built Here: Advanced Manufacturing Careers Powering the World”**

**For use with OMA, COMP K–12 Presentation Slide Deck #2: “*Ohio’s Future Is Built Here: Advanced Manufacturing Careers Powering the World*”**  
**Designed for Industry Experts Presenting to K–12 Students in the Classroom**

**PURPOSE OF THIS CONTENT SET**

The Presentation Content Sets equip industry subject matter experts (SMEs) to confidently present advanced manufacturing career pathways to K–12 audiences.

The Content Sets are scaffolded to offer varying degrees of support for SMEs. The first layer of scaffolding is the Presentation Slide Decks which include brief notes of scripts, support and suggestions for delivery. See sections under individual slides for those details. The Presentation Outlines provide additional scripts and best practices in classroom delivery on a slide-by-slide basis. The Presentation Guides extend the content by providing alternative scripts, additional questions, pro tips and classroom insights and also are organized on a slide-by-slide basis.

This guide enables industry professionals to present effectively to K12 students. No teaching experience is required—just enthusiasm, willingness to engage, and a passion for sharing the impact of manufacturing careers.

Options are considered just that - optional. They are designed to provide variations for Ambassadors to better personalize the presentations. Feel free to eliminate all options and follow the presentation strictly as the slide deck suggests.



**YOUR RESOURCES**

✅ Age-level tips   
✅ Key talking points for each slide (Speaker Notes)  
✅ Engagement strategies (questions, demos, discussions)  
✅ Pacing and timing guidance

✅ Video Links and URLs  
✅ Classroom and student interaction best practices

**YOUR GOALS** 1.Inspire curiosity about advanced manufacturing  
 2. Make real-world connections between school and careers  
 3. Encourage students to imagine themselves in high-tech, meaningful jobs Equip industry subject matter experts (SMEs) to confidently present advanced manufacturing career pathways to K–12 audiences.

**SUMMARY CHECKLIST FOR AMBASSADORS**

✅ Arrive 15 minutes early  
✅ Test slides and videos  
✅ Confirm student materials (paper/pencils)  
✅ Use clear language, smile, and make eye contact  
✅ Pause for engagement every 3–4 slides  
✅ Manage time — activities should not exceed 10–12 minutes

✅ Have fun! Laugh with kids. The more they are enjoying it, the better they will remember the experience.  
✅ End with inspiration and hope

**SLIDES INCLUDE:**

🎙 Speaker Notes include script suggestions and classroom management and adaptation ideas

for younger and older students. (Younger students defined as grades 2-6; older students

defined as grades 7-12)

Activities or demonstrations

**💬** Icebreaker suggestions

Suggested videos where appropriate

💡 Pro Tips

**HOW TO PREPARE (Before You Present)**

1. **Know Your Audience:**
   * Identify in advance what grade(s) and class size you will have. Be prepared to present developmentally appropriate content (see notes in Slide-by-Slides).
   * Get name tags or a seating chart if possible.
   * Learn how much the class already knows about technology or manufacturing.
2. **Set Up Your Tech:**
   * Test your videos and links before class.
   * Bring sample parts or 3D-printed objects if possible.
   * Have QR codes printed or ready on slides.
3. **Mindset:**  
   You’re not teaching — you’re storytelling.
   * Use **energy, curiosity, and conversation.**
   * Encourage students to share what they notice or wonder.
   * Keep things simple — focus on **why it matters** and **how it connects** to their world.
4. **Prepare:**

* Review the Slide Deck presentation, corresponding outline, and presentation guide before the presentation.
* Double check to ensure you have everything necessary to effectively deliver the presentation (technology, presentation files, demonstration materials, swag, etc.).
* Confirm with the school or teacher the day prior to the presentation.
* Practice transitions to ensure a smooth delivery.

**SLIDE-BY-SLIDE PRESENTER GUIDE**

**Slide 1 - Title Slide: The Future Is Built Here: Advance Manufacturing Careers Powering the World**

**Goal:** Capture attention and connect technology with everyday life.

**🎙 Speaker Notes:**  
Welcome students enthusiastically. Say, “If you like science, solving problems, or technology—you already belong in advanced manufacturing!”

**💬 Icebreaker:**  
Ask: “What’s something you use every day that someone had to *make* before you could use it?” Optional Icebreaker: “Name something in your life that someone had to *make* before you could use it.”

💡 **Pro Tips:** Let students call out answers (phones, sneakers, bikes). Use humor and energy to set the tone.

**Slide 2 – Why Consider a Career in Advanced Manufacturing?**

**Goal:** Review by defining and differentiating from traditional manufacturing.

**🎙Speaker Notes:**

* Review differences between traditional and advanced manufacturing from Presentation #1.

Discussion: “Manufacturing from long ago vs today’s advanced manufacturing is very different. The use of technology and precision engineering in design and production far exceeded limitations of the past.” *Note: This is a review from Presentation #1.*

* + **Technology Use**: Traditional manufacturing relies on manual processes, while advanced manufacturing incorporates automation and digital technologies.
  + **Production Speed**: Advanced manufacturing typically offers faster production times due to streamlined processes and robotics.
  + **Customization**: Advanced manufacturing allows for greater customization and flexibility in production compared to traditional methods.
  + **Quality Control**: Advanced techniques utilize real-time data and analytics for improved quality control, unlike traditional methods.
  + **Resource Efficiency**: Advanced manufacturing often uses resources more efficiently, reducing waste and energy consumption.
  + **Workforce Skills**: Traditional manufacturing requires less specialized skills, while advanced manufacturing demands a more skilled workforce proficient in technology.
* Compare old vs. new manufacturing using examples (e.g., 1950s factory vs. robotics cell today).
* Combines robotics, chemistry, biotechnology, and data.
* Emphasizes *innovation, sustainability,* and *clean tech.*

**💬 Engagement:**  
Ask: “What’s the coolest piece of tech you’ve seen lately? Someone made that!”

**Activity Option:**  
Show two images (old vs. modern factory). Ask: “What’s different?” Have them identify automation, cleanliness, and use of computers.

💡 **Pro Tips:** Use call-and-response to keep energy up. Use short pauses for questions.

**Slide 3 – On-ramps to Sustainable Employment**

**Goal:** Connect manufacturing to real-world impact.

**🎙 Speaker Notes:**

* Advanced manufacturing powers **medicine, energy, transportation, defense, and sustainability**.
* Great careers with *purpose and innovation*.

**💬 Engagement:**  
**Ask:** “ “Which industry do you think uses more robots—biotech or automotive?”  
(Take a quick show of hands before revealing the answer: *automotive, but biotech is catching up!*)  
💡 **Engagement Tips:** Reinforce that manufacturing touches *every* student’s life.

**Slide 4 – Libbey Glass in the News**

**Goal:** Real World application.

**🎙 Speaker Notes:**

* What do we use glass products for at home? In your community? At school?

💡**Pro Tip:** Reinforce that manufacturing touches *every* student’s life and important people all over the country are focusing efforts to create manufacturing environments that meet the needs of employees, the surrounding communities, as well as their customers. Ensure videos are all cued to the starting point. Eliminate any ads.

**⚙️ INDUSTRY SPOTLIGHTS Biomanufacturing, Automotive (EV, Battery), Energy, Aerospace and Defense**

Note: Wage data sourced from BLS, LMI, OMA as appropriate. Also Indeed and similar sites designed for job seekers and employers. See Citations page.

**Slide 5 – Biomanufacturing**

**Goal:** Show bio manufacturing, biotech and pharmaceutical manufacturing opportunities.

**🎙 Speaker Notes:**

* Produces vaccines, treatments, and therapies.
* Combines biology, chemistry, and automation.
* Smart systems and robotics are central to the process.

**💬 Engagement:**  
Ask: “If you could help cure any disease, what would it be?” Keep conversations brief. Note: Be aware that some students may have experienced serious illnesses - either personally or a close family member or friend. If you feel a particular student is vulnerable to this, mention it to the classroom teacher in private. They will likely already be aware and will have resources to help address it.

**Video** Share “A Day in the Life of a BioTechnology Worker”. Career OneStop. 00:01:34 <https://youtu.be/QEr_X2rDM-0?si=O3gpGresQoivcY62>

If needing more content, consider using the following:

**Optional Video:** BioManufacturing - Optional Video: Vertex Pharmaceuticals, MA. A Day in the Life of a Medicinal Chemist. 2023

<https://youtu.be/-G4GirNvTHY?si=dCSIkwsiIxmWK-ni> 00:02:25

**Salary Range:** Entry $45K–$60K | Experienced $80K–$120K+

💡 **Pro Tips:** Use relatable examples—mention local biopharma employers if possible. Ensure videos are all cued to the starting point. Eliminate any ads.

**Optional Activity:** “What If”

Ask: “If you helped develop one life saving medicine or device, what disease or condition needing treatment would be first on your list? Write down your idea.” Give them three minutes to consider and write. This activity is suitable for all age groups.

Give Directions for Pair and Share: “You will have one minute to share your idea with a shoulder partner (someone sitting nearby so they do not need to get up to complete the task). When you hear me say, “Switch”, the other person has one minute to share their idea. Are there any questions about what you need to do next?” Track one-minute intervals and say “switch” at the one-minute marker. If time allows, ask if anyone wants to share their ideas.

**Slide 6 – Automotive**

**Goal:** Explore mobility innovation from design to sustainability.

**🎙 Speaker Notes:**

* Merges robotics, design, and AI for next-gen vehicles.
* EVs, automation, and advanced materials drive change.

**💬 Engagement:**  
Ask: “Who wants to help design a car of the future? What would it include?”

**Salary Range:** Entry $45K–$65K | Experienced $85K–$120K+

💡 **Pro Tips:** Encourage creativity; for younger students, use drawing as an alternative.

**Slide 7 – Marshmallow Tower Activity**

**Goal:** Students work in groups to achieve a winning design.

**Materials:** Raw spaghetti, standard size marshmallows, tape measure

**Student Instructions:**

1. Divide students into teams of four or five. Each group receives 20 spaghetti sticks and only one marshmallow.
2. Tell them that the tower must be free-standing (can’t lean on anything, be suspended, or anchored to the floor with tape). The tallest and most stable tower wins.
3. The entire marshmallow must rest on or be attached to the top of the tower.
4. Use as much or as little of the materials as you want.
5. Students can break or cut the spaghetti if needed. They can have additional pasta sticks if needed
6. Tell students they have 12 minutes to build a tower.
7. When time is up, the tower must be freestanding as defined above.
8. The winning tower is the tallest and most stable.
9. Debrief celebrating the diversity in ideas and styles.

Debrief celebrating the diversity in ideas. Point out specific examples and use student names when possible. This activity is suitable for all age groups.

💡 **Pro Tips:** Younger students may benefit from having fewer members in groups. Five or fewer may be the optimal number of Design Teams given time constraints.

**Slide 8 Energy and Clean Technology**

**Goal:** Highlight renewable energy and sustainability careers.

**🎙 Speaker Notes:**

* Covers solar, wind, hydrogen, and smart grids.
* Emphasizes innovation and environmental impact.
* Energy tech and battery manufacturing are growth areas.

**💬 Engagement:**  
**Ask:** “Where does your electricity come from?” Follow-up: “What if we could store sunlight in a battery?” How have batteries improved the world (used during storms - REAL WORLD EXAMPLE: Puerto Rico <https://markets.businessinsider.com/news/stocks/solarmax-technology-awarded-158-million-epc-contracts-for-400-mwh-battery-storage-projects-in-puerto-rico-1035682708> Business Inside. Jan 5, 2026 SolarMax Technology Awarded $158 Million EPC Contracts for 400 MWh Battery Storage Projects in Puerto Rico. Discuss how hurricanes cause life-threatening conditions and how battery storage projects like this are literally saving lives by providing energy during catastrophic events. Batteries are also critical for every day use (e.g. mobile devices such as laptops and phones)

**Salary Range:** Entry $42K–$65K | Experienced $80K–$120K+

💡 **Pro Tips:** Use maps or photos of local energy projects to bring relevancy to the discussion. Can they see themselves working as an engineer, specialist, or technician on a job site like this?

**Slide 9 – Aerospace and Defense**

**Goal:** Explore high-tech, high-precision engineering in flight and defense.

**🎙 Speaker Notes:**

* Designs jets, spacecraft, drones, and navigation systems.
* Combines materials science, robotics, and data systems.
* Safety and precision are top priorities.

**💬 Engagement:**  
Ask: “Who’s ever seen a rocket launch or jet fly overhead? What makes it fly?”

**Optional Activity:** Paper airplane challenge — test lift, balance, and distance. Discuss how engineers improve design.

**Salary Range:** Entry $48K–$70K | Experienced $90K–$130K+

**Activity Option:** Demonstrate flight by folding and flying a paper airplane. What is necessary for flight to occur? What features made it lift? What features could be improved? Optional Activity: Challenge students to design their own aircraft or space vehicle either by folding or drawing on paper. Ask: “What would it need to do? Where would it go? How would it help people?”

💡 **Pro Tips:** Not everyone has been taught how to fold a paper airplane nor do they understand what makes it able to take flight. Discussion and demonstration of paper airplane angles and flight is great for hands-on learning; keep paper airplanes controlled and safe!

**Slide 10 – Semiconductor Manufacturing**

**Goal:** Introduce microchip production and cleanroom technology.

**🎙 Speaker Notes:**

* Chips power every device — phones, cars, satellites.
* Ohio is growing fast in this field.
* Focus on nanotech, chemistry, and precision robotics.

**💬 Engagement:**  
Ask: “How many chips do you think are in your phone?”  
Show an image of a silicon wafer.

**Video:** Intel. “How Intel Manufactures Chips”. 00:05:04. <https://www.youtube.com/watch?v=4oQoZF_KRCc&t=1s>

OR

**Video Option** - well suited for older students: Intel, “How Chips are Made”. 00:04:44 <https://www.youtube.com/watch?v=_VMYPLXnd7E>

**Salary Range:** Entry $45K–$70K | Experienced $85K–$125K+

💡 **Pro Tips:** Stress cleanliness and precision “dust-free zones.” The second video listed in this section may be too advanced for younger audiences.

**Activity Options:** Use printed circuit board or wafer images. Have students label the parts or trace the chip’s journey from design to final product. Option: Use candy (like M&Ms or Skittles) or dried beans to demonstrate wafer patterns for fun younger-grade engagement.

**Slide 11 – The Possibilities Are within Your Reach**

**Key Points:**

* Review of on-ramps and pathways from Presentation #1
* STEAM, STEM, CTE classes currently available in schools
* Entry through multiple higher education routes: certificates, apprenticeships, 2-year, or 4-year programs.
* Many companies offer tuition reimbursement and paid training (provide current example).
* Certifications: MSSC, NIMS, SME, BioWork, Chemical Process Tech.
* High pay, full benefits, and job stability
* Work in clean, high-tech environments
* Impact industries that matter: medicine, clean energy, and mobility

**Highlight:** Average manufacturing salary: **~$76,000/year (U.S. BLS)**

**Engagement Tip:** “What if your first job paid you to keep learning? Does anyone here get paid to go to school? Why do you think some employers might choose to pay someone to learn?”

💡**Pro Tips:** Remind students that not only are there opportunities to earn strong wages, there are many existing routes to get into the industry. From completing stackable certificates as a high school student to Senior to Sophomore programs to apprentice, externships and internships programs, opportunities exist to help you get started! Use this slides to wrap up by connecting skills → training → opportunity. Reiterate the process of Student → Technician → Engineer → Innovator. Encourage curiosity, creativity, and continued exploration through provided resource links.



**Slide 12 – Demonstration**

***Activity Option:*** Demonstration - content based upon Ambassador’s experience, industry, materials available. Under 10 minutes.

**Demonstrations** areslated to allow time for a demonstration option. Demonstrations should stay within 10 minutes and can vary based upon Ambassador’s expertise, what they can share from their industries, materials available, etc. Getting students involved in the demonstration is a plus but not an absolute. Select a demonstration you feel students may not have witnessed before, something with a “Wow! Factor” if at all possible.

💡**Pro Tip:** Select a demonstration you feel students may not have witnessed before, something with a “Wow! Factor” if at all possible. Note: *If more time is needed, eliminate activity in slide 7.*



**Slide 13 - Ohio’s Future is Made Here, with You!**

**Key Points:**

* Creativity and teamwork are essential
* Diversity of talent drives innovation
* You are part of something bigger - building the world around us
* **Engagement Tip:** ““What problem will *you* help solve in the future?” Thank them for being engaged and let them know you look forward to visiting again soon to talk more about careers in Advanced Manufacturing.

Note: Be sure to leave online resource ideas or handouts for future (follow up) discovery sessions with teachers or counselors.

**Presenter Wrap-Up Tips**

* Keep presentations interactive every 3–4 minutes.
* Use energy, curiosity, and visual aids.
* Share personal career stories or how your company impacts the world.
* End with a challenge: “What problem will *you* help solve in the future?”

💡 **Public Speaking & Storytelling Tips – See Speaking Tips Guide for more**

**For Subject Matter Experts Presenting to K–12 Students**

**Before You Begin: Know Your Audience**

| **Grade** | **Typical Traits** | **What Works Best** |
| --- | --- | --- |
| **Elementary (K–5)** | Energetic, curious, short attention spans | Bright visuals, short stories, props, movement |
| **Middle (6–8)** | Social, testing independence | Humor, relatable analogies, hands-on demos |
| **High School (9–12)** | Curious about real-world relevance | Career talk, real-life success stories, interactive Q&A |

💡 **More Pro Tips:** Adjust your pace and tone. Younger students will benefit from simpler concepts and more visuals. Older students can handle deeper dives into discussions and real-world scenarios. All students will benefit from personalization and making the point through story telling. Do not be afraid to be animated. Laugh with them. If you make a mistake, laugh at yourself. Be relatable. Humanize the experience. Model the behavior you want to see from them. Use the short, occupational highlight videos from Career OneStop. <https://www.careeronestop.org/>

**Start Strong — The First 60 Seconds**

* **Smile, make eye contact, and start with curiosity.**  
  Example: Older students: “How many of you used your phone today? Guess what — my job helps *build* the technology that makes that possible.” Younger students: “How often do you think your parents will use their phones today?”
* Introduce yourself in a student-friendly way:
  + “I build robots that help make electric cars.”
  + “I work in a lab that helps doctors create new medicines.”
* Avoid long bios, acronyms, or industry lingo — keep it light and exciting.

**Keep It Simple and Visual**

* Use **plain language**, not industry jargon.
  + Instead of *“semiconductor wafer fabrication,”* say *“tiny computer chips built in dust-free labs.”*
* Bring **props or pictures**: tools, parts, or materials students can touch or see.
* Use **short videos (under 3 minutes)** to break up talking time.

💡**Pro Tip:** Every 5–7 minutes, change the “mode” — talk → show → ask → move → reflect.

**Tell Stories, Not Stats**

Students remember stories, not spreadsheets.

* Use **short real-life examples**:
  + “One time, we found a way to make airplane parts 40% lighter.”
  + “We used AI to test 10,000 designs overnight — something humans couldn’t do.” The Puerto Rico electricity and hurricane story found in slide 8 is a good example of this. Connect it to how advanced manufacturing helped to solve those issues and create life-saving measures.
* Add a **personal hook**:
  + “When I was your age, I took apart my dad’s radio just to see how it worked. That’s how my career started.”
* End each story with a **connection**: “That’s why math and teamwork matter — it’s how we solve real problems.”

**Engagement = Conversation, Not Lecture**

* Ask open-ended questions:
  + “Why might engineers care about how light moves through glass?”
* Use **show of hands**, polls, or group challenges.
* Praise participation: “Great idea! Engineers do that kind of thinking every day.”

**Body Language & Delivery**

* **Stand tall, move with purpose.** Avoid pacing or crossing arms.
* **Use your hands** naturally when explaining — it helps emphasize.
* **Make eye contact** with different parts of the room.
* **Vary your voice:** slow down for key points, speak louder when excited, pause before important lines.

**Classroom Management Basics**

* Wait for students’ attention to be refocused — do not talk over students. Thank them for staying focused with you. If given a chance, some groups will begin to compete with you for floor time. Eliminate that challenge by politely asking for their attention and wait to talk until you have it.
* Use gentle humor or curiosity to redirect (“Let’s test that idea — can we find out?”).
* Encourage positive participation (“That’s a great question — let’s explore that.”).
* For younger groups especially, give simple instructions and model what you want them to do.

**Time and Flow – General Rules of Thumb**

* **Elementary:** 30–40 minutes max of speaking, with at least one activity.
* **Middle school:** 40–50 minutes, two short interactive moments.
* **High school:** Up to 60 minutes, mix of discussion and video or demo.
* Always end with:
  + A quick recap (“What surprised you most today?”)
  + A positive call to action (“The future is made by people just like you.”)

**Handling Questions**

* Repeat the question before answering — helps everyone hear.
* If you don’t know the answer, say, “That’s a great question. I’d have to look that up. Scientists do that all the time.”
* Keep responses short and relatable.

**Finish with Impact**

* End on *inspiration*, not information.
  + “Everything around you — from sneakers to satellites — started as an idea. Maybe the next one comes from you.”
* Leave them with a way to explore more (QR codes, local programs, or websites).
* Thank them genuinely: “You’ve been awesome today — I can’t wait to see what your future will bring.”