

# How to plan an **INCLUSIVE** Manufacturing Day

As you plan your manufacturing day events with students, use these research-based prompts to connect to students' **heads**, **hearts**, and **hands**. When you follow these strategies, you can help students imagine the possibilities for a bright future in manufacturing and support your team in making your MFG day one that students will never forget.



## **HEAD** Can I do it?

- ★ Help students connect to what they already know and can do.
- ★ Provide and train diverse role models and hosts who work closely with the students throughout the event.
- ★ Reduce stereotype threat. *Stereotype threat is the risk of confirming a negative stereotype about one's group such as women don't go into manufacturing.*



## **HEART** Do I want to do it?

Start with why! Focus on key messages that help students see the impact and importance of manufacturing on their lives.

**Manufacturers  
make a world of  
difference and  
help shape the  
future**

**Manufacturing  
is essential  
to our health,  
happiness, and  
safety**

**Manufacturers  
are creative and  
collaborative  
problem-solvers**



## **HANDS** Let me do it?

- ★ Spark students' curiosity by giving them options to choose from, and providing the right support as they learn.
- ★ Create inclusive team-learning settings through deliberate planning of groups and monitoring to address stereotypes.
- ★ Design practical learning experiences that connect to real life and show how students can make a positive difference in their communities.



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napequity.org

nape@napequity.org

(717) 407-5118

**AUTHOR** Meagan Pollock, PhD



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# Rubric for Equitable & Inclusive MFG Days

Through thoughtful action, we can create equitable and inclusive environments that encourage, facilitate, and accelerate every student's success in manufacturing.

	1 INEQUITABLE & EXCLUSIVE	2 PERFORMATIVE OR STATUS QUO	3 EQUITABLE & INCLUSIVE
 <b>HEAD</b> Can I do it?			
<b>Connect to what students know and can do</b> This brain-science truth boosts confidence and self-efficacy!	Planned activities and facilitators <b>do not connect to student's prior knowledge.</b> <i>How does the manufactured product relate to their everyday lives? Where do students see manufacturing in their communities? What do they know from tv, social media, books, or people?</i>	Planned activities and facilitators connect a little bit to student's prior knowledge, but some students remain on the peripheral.	Activities are differentiated and facilitators work with every student to find a way to connect activities or content to something they know and can do.
<b>Diverse representation</b> This includes images, speakers, authors, videos, game characters, etc.	Only the <b>normative population</b> is represented. <i>For example: an all white or Asian male panel of engineers.</i>	Representation is mostly normative with the exception of one <b>tokenized individual.</b>	Representation is <b>diverse across gender, race, socio-economic status, ability, etc.</b>
<b>Accessible to every student</b> This includes scheduling, cost, transportation, physical requirements, culture/ climate, etc. In addition, are all components accessible to people with visual, hearing, and physical impairments?	<b>Many barriers exist</b> to access, opportunity, and participation. Inadequate efforts are made to eliminate barriers. <i>Whether we realize it or not, barriers exist. Use the registration process and education partners to help you recognize and reduce as many possible.</i>	While some efforts to eliminate barriers are in place, and progress has been made, <b>barriers still exist</b> to access, opportunity, and participation.	<b>No known barriers exist</b> to access, opportunity or participation, and intentional supports are provided to increase accessibility.
<b>Challenges gender norms and stereotypes</b>	Gender norms and stereotypes are <b>perpetuated.</b> <i>For example: All guest speakers who work in manufacturing are men, and the administrative staff are women. This goes unaddressed, perpetuating gender norms and stereotypes that women are not in manufacturing. Or, girls are told to have a boy help them complete a task that requires some physical strength, assuming they are not strong enough.</i>	Gender norms and stereotypes are <b>not challenged.</b> <i>For example: A guest speaker says, "girls may not like it in manufacturing because they might break a nail," and people chuckle uncomfortably, but the stereotype is not interrupted and challenged as false.</i>	Gender norms and stereotypes are <b>challenged.</b> <i>For example: A boy asks a girl in his group to prepare the presentation, because "girls are neater," and a facilitator hears him and invites him to write neatly and allow the girl to continue working with the activity.</i>

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Challenges racial norms and stereotypes	Racial norms and stereotypes are <b>perpetuated</b> .	Racial norms and stereotypes are <b>not challenged</b> . <i>For example: Asian students are assigned the math portion because "Asians are good at math."</i>	Racial norms and stereotypes are <b>challenged</b> .
Challenges socio-economic status (SES) norms and stereotypes	SES norms and stereotypes are <b>perpetuated</b> . <i>For example, if students are required to bring materials or wear specific clothing that is not provided for everyone at the event, students without access may choose not to attend, perpetuating exclusion of low SES populations.</i>	SES norms and stereotypes are <b>not challenged</b> .	SES norms and stereotypes are <b>challenged</b> .
Challenge ableist norms and stereotypes	Ableist norms and stereotypes are <b>perpetuated</b> . <i>For example: Students in wheel chairs are discouraged from welding class.</i>	Ableist norms and stereotypes are <b>not challenged</b> .	Ableist norms and stereotypes are <b>challenged</b> .



**HEART** Do I want to do it?

<b>Positive career messaging</b> 1) Manufacturers make a world of difference and help shape the future 2) Manufacturing is essential to our health, happiness, and safety 3) Manufacturers are creative and collaborative problem-solvers. <sup>1</sup>	Positive messaging is <b>missing</b> from the communication, design, and implementation. <i>For example: Manufacturing is for the elite math and science students, and collaboration is ignored. Or the primary emphasis is on wage potential, assuming that will motivate everyone.</i>	Positive messaging is <b>additive</b> , yet not fully integrated into the communication, design, and implementation.	Positive messaging is fully <b>integrated</b> into the communication, design, and implementation.
<b>Multiple work<sup>2</sup> and cultural values<sup>3</sup></b> <b>Primary Work Values</b> EXTRINSIC: make money, job security INTRINSIC: autonomy, interest PRESTIGE: respected, high status SOCIAL: work with people, make a contribution to society <b>Cultural Values</b> Individualistic (the most dominant and normalized values in the USA) and collectivist values contrast in their approaches and mindsets in many ways. When we prioritize one over the other, we do not foster inclusive environments.	Only individualistic cultural values and extrinsic work values are included. Collectivist and other work values are <b>missing</b> . <i>For example: the nature of the intervention is competitive, with no social value. All of the benefits of wage earning is emphasized, but no reference to the benefit of manufacturing to society.</i>	Collectivist cultural values and social/ intrinsic/prestige work values are <b>additive</b> , yet not fully integrated.	Collectivist cultural values and social/ intrinsic/prestige work values are fully <b>integrated</b> and equally valued as ways of knowing, doing, and being.

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Encourages career exploration outside of norms	Facilitators <b>do not encourage</b> students to explore careers outside of norms.	Students are <b>passively encouraged</b> to explore careers outside of norms.	Students are <b>actively and directly encouraged</b> to explore careers outside of norms. <i>For example: Students are personally invited and encouraged to consider nontraditional careers.</i>
Encourages college AND career readiness	<b>Only four-year college</b> pathways are represented as acceptable post-secondary options.	Some two-year college, certificate, and apprentice pathways are included, but <b>implicitly presented as secondary</b> to four-year college pathways.	Two-year college, certificate, apprentice, and four-year college pathways are included, and presented as <b>equally valuable post-secondary options</b> .



<b>Student-centered</b> Promote student-centered, rather than content or teacher-centered learning, by stimulating student agency and scaffolding learning appropriately.	Activities do not allow student agency (choice) or scaffold learning appropriately. <i>For example: Events are lecture-based, prioritize content over the student experience, and/or do not provide enough support for student learning.</i>	Activities allow for some level of student agency, or modestly scaffold learning.	Activities allow for student agency and scaffold learning appropriately. <i>Spark students' curiosity by giving them options to choose from, and providing the right support as they learn.</i>
<b>Team-learning environments</b> Create inclusive team-learning settings through deliberate planning of groups, monitoring behaviors, and giving students what they need to succeed.	Activities include no team learning. <i>The best teaming is groups of 4, where no student is the "only" (girl, student of color, English learner, etc.), and responsibilities rotate so that everyone has a task and no one is watching others do. Equity means giving students what they need to succeed!</i>	Activities include some team learning, but groups are not designed with equity in mind or monitored for inclusive behaviors.	Activities include team learning, and groups are designed with equity in mind and monitored for inclusive behaviors.
<b>Authentic, hands-on, real-world learning activities</b> Create authentic, hands-on, real-world learning activities that highlight social impact and also relate to the student's lived experiences.	Activities are not hands-on, authentic, or real-world examples that highlight social impact relevant to the student's lived experiences. <i>For example, a company doesn't just make extrusion die machine parts, they improve products such as air bladders for athletic shoes, automobile windshield gradients, and packaging films that keep our food safe.</i>	Activities are hands-on, but not authentic, or real-world examples that highlight social impact relevant to the student's lived experiences.	Activities are hands-on, authentic, and real-world examples that highlight social impact relevant to the student's lived experiences.

# How to plan an **Inclusive** Manufacturing Day

HELP STUDENTS ANSWER THE FOLLOWING



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Can I do it?  
Do I want to do it?  
Let me try it?

## ENDNOTES

- 1 **STEM Messaging:** National Academy of Engineering. 2008. Changing the Conversation: Messages for Improving Public Understanding of Engineering. Washington, DC: The National Academies Press. <https://doi.org/10.17226/12187>. See also NAPE's Explore STEM Careers Toolkit: <https://napequity.org/product/stem-toolkit/>  
Watch a quick overview here: <https://www.youtube.com/watch?v=w-Jp4Cte6ZMU&t=682s>
- 2 **Work Values:** Learn more: <https://nape.courses/topic/stem-4-1-agenda-2/>  
See also NAPE's Explore STEM Careers Toolkit: <https://napequity.org/product/stem-toolkit/>  
Watch a quick overview of work values here: <https://www.youtube.com/watch?v=wJp4Cte6ZMU&t=964s>
- 3 **Cultural Values:** Watch a video "Individualism vs Collectivism: Why it Matters in the Classroom" [https://youtu.be/5mIGIS\\_ObIE](https://youtu.be/5mIGIS_ObIE)



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