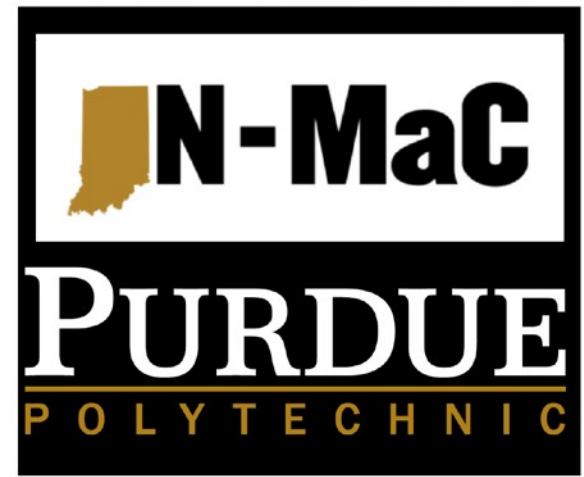


The Next Generation for Manufacturing Competitiveness?

Investigating the Influence of Industry-Driven Outreach on Children Career Perceptions

Sascha Harrell, MS

Director of Workforce Development & Education, IN-MaC



Greg Strimel, Ph.D.

Assistant Professor, Technology Leadership & Innovation

Women in Manufacturing Summit

September 11, 2019

The Problem?

**Talent Gap & Future of Work • Over
2.4M Jobs Unfilled (now - 2028)**

- Reports = Manufacturers Citing:

- Shifting Skill Sets
- *Misperceptions of MFG Jobs*
- Retirements
- Reports = Recommend:
- Starting Early



- Address New Skills
- Replace with Automation

What Are We Doing?

- Went Early/ New Skills: –Industry Partners
 - Innovation Studios
 - Robotics in MFG Camps
 - MFG Week

–Micro-grants

- Emotional Based

- **Research:** Does this influence career perceptions?

Example: Robotics in MFG Summer Camp

- Weeklong

- Industry-led

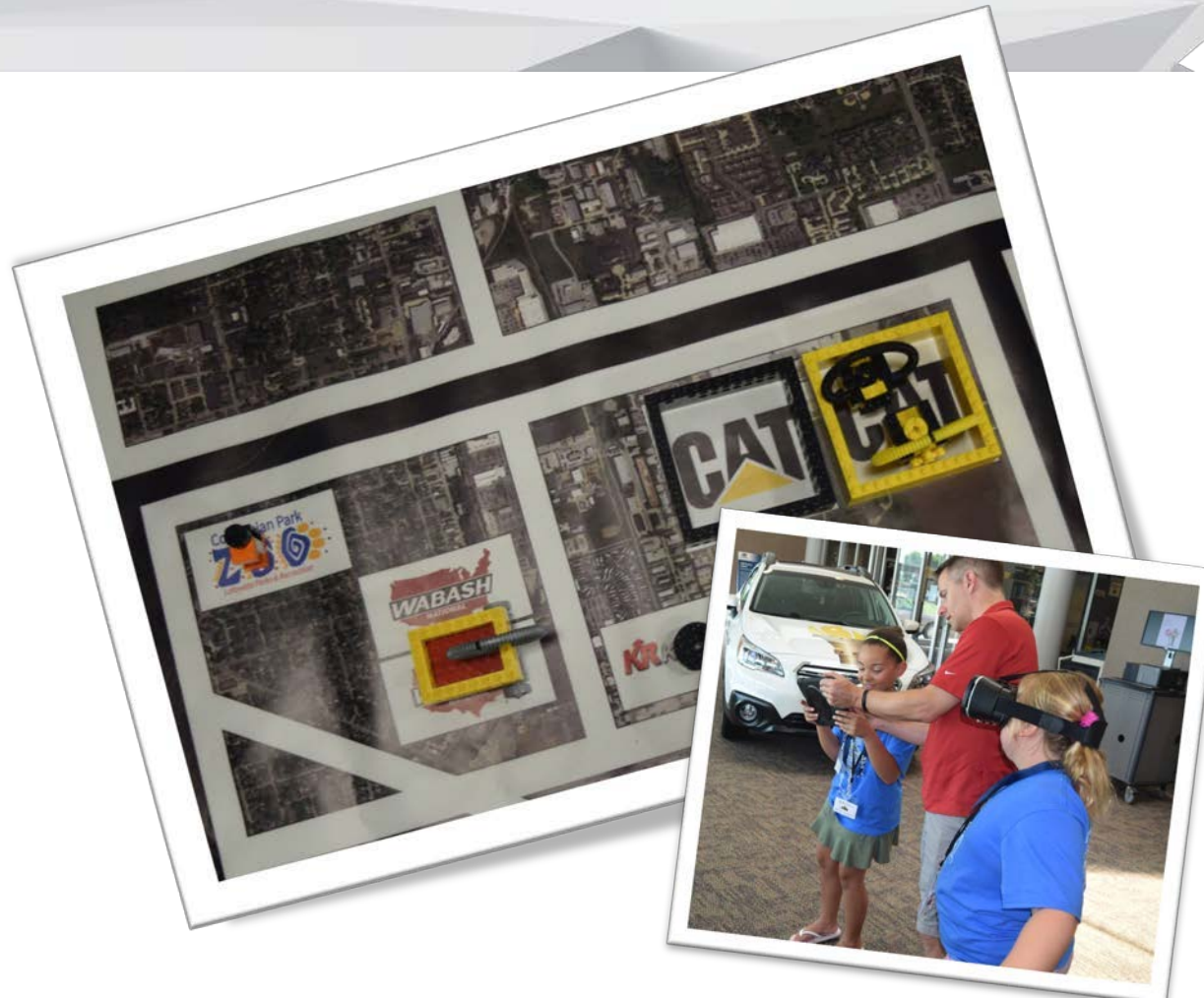
PURDUE
UNIVERSITY

Polytechnic Institute



- K-2, 3-5, & 6-8
- Number of Students
- 40 (Ages 8 -15)
- 23 (Ages 5 – 8)

Does this influence career perceptions?



Data Collection

Pre & Post-Instruments

Name: _____ Date: _____

Gender: Female / Male

Age: _____

What is your race/ethnicity?

- African-American/Black
- American Indian/Alaskan Native
- Asian
- Caucasian/White
- Latino/Hispanic
- Other: _____

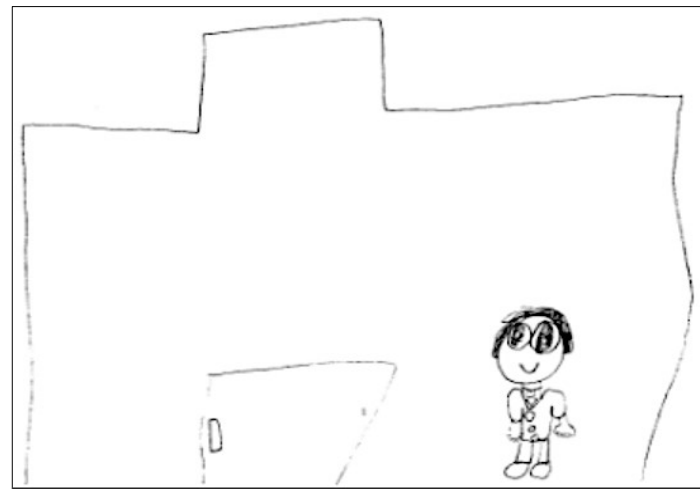
Instructions: Draw what you think a manufacturing environment looks like. Who works there? What are they wearing? What objects do they have?

- Draw a Manufacturer Test

- Career Perception Survey

A Perceptions Gap?

- Pre-Camp data:



- “Draw-A-Manufacturer” PreTest
- Unoccupied, block buildings.
- Limited people
- Limited Production Processes
- Basic hand tools
- Science fiction-oriented robots

A Perceptions Gap?

Pre-Survey Data:

- **57%** - K-2nd Not interested in a MFG-related career
- **21%** - 3rd-8th Have been encouraged to explore MFG
- **71%** - K-2nd Viewed Jobs as Unsafe
- **65%** - 3rd-8th Viewed Jobs as Unsafe
- **86%** - K-2nd Viewed Jobs as Dirty
- **73%** - 3rd-8th Viewed Jobs as Dirty

- A lot of available jobs in manufacturing
- Manufacturing careers require a college degree

The Influence?

Post-Data Suggests - Children Career Perceptions can be Influenced Through Industry-driven Outreach Initiatives.

- “Proceed with Caution” • Influence can be perceived as oppositional to talent pipeline development goals
- Influence - “not consider” a career in MFG
- Left the experience perceiving the MFG as unsafe & dirty.



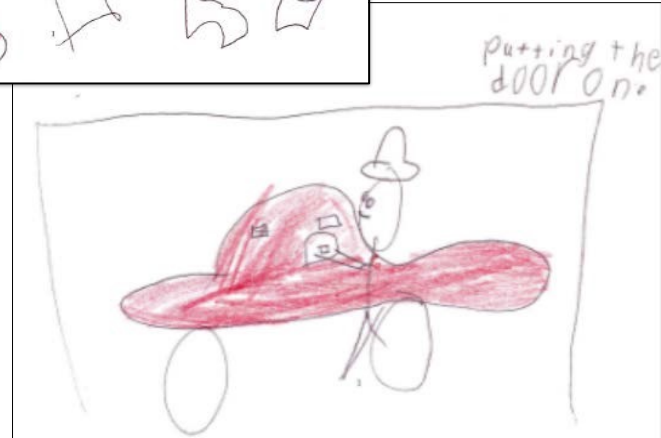
However...

Participants had little to no preconception of manufacturing

- **Post-Survey** – Shows a more accurate perception (1st Look)

- **Post-Drawings**

- **Activities happening within**



- Attention toward the human element
- Increased emphasis on safety
- Increased depiction of industrial robots

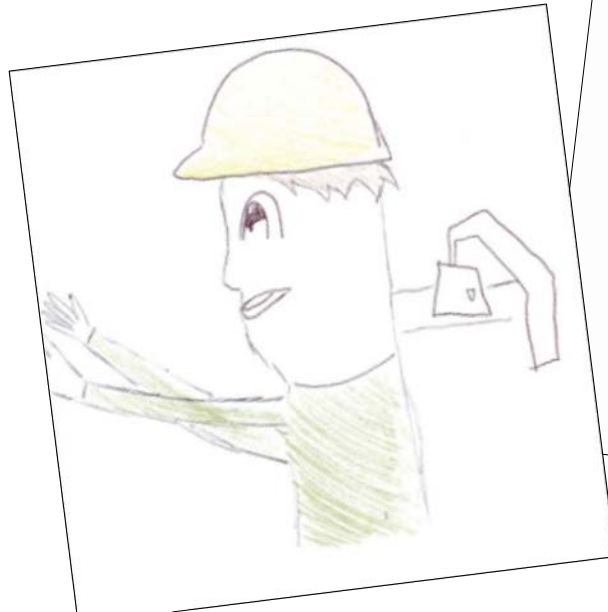
We Learned....

- Training & Pre/In-Service Teachers
 - Study with Pre-Service Teachers

- Appropriate Setting
- Context
- Age-Appropriate Language
- Orient Children to the Environment



- Share, don't scare!
- These environments are intimidating for young children

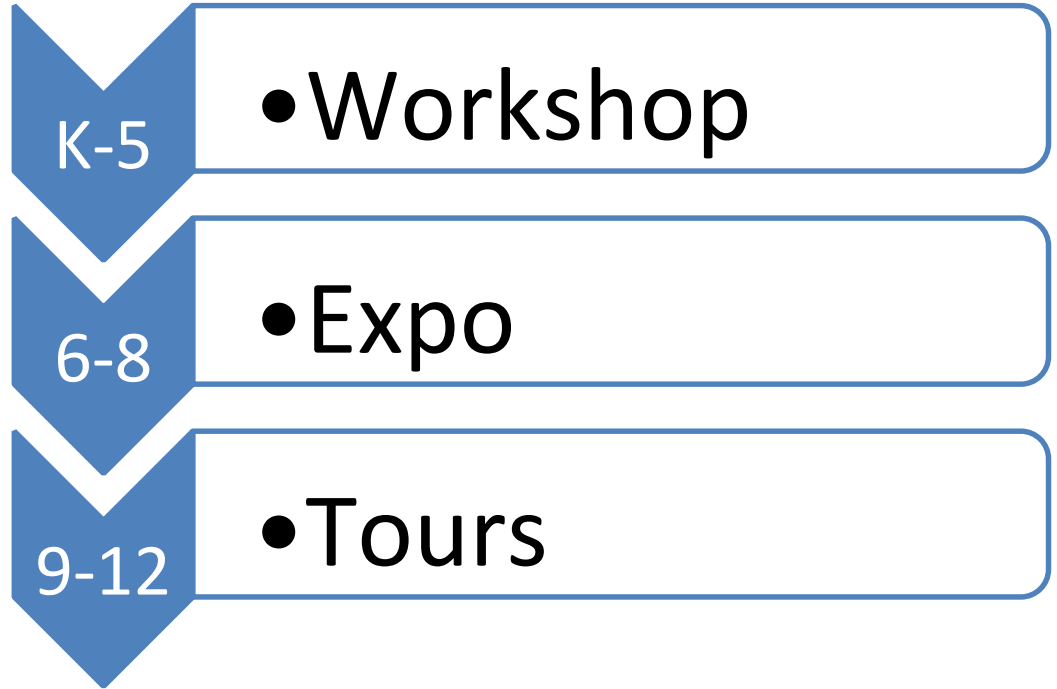




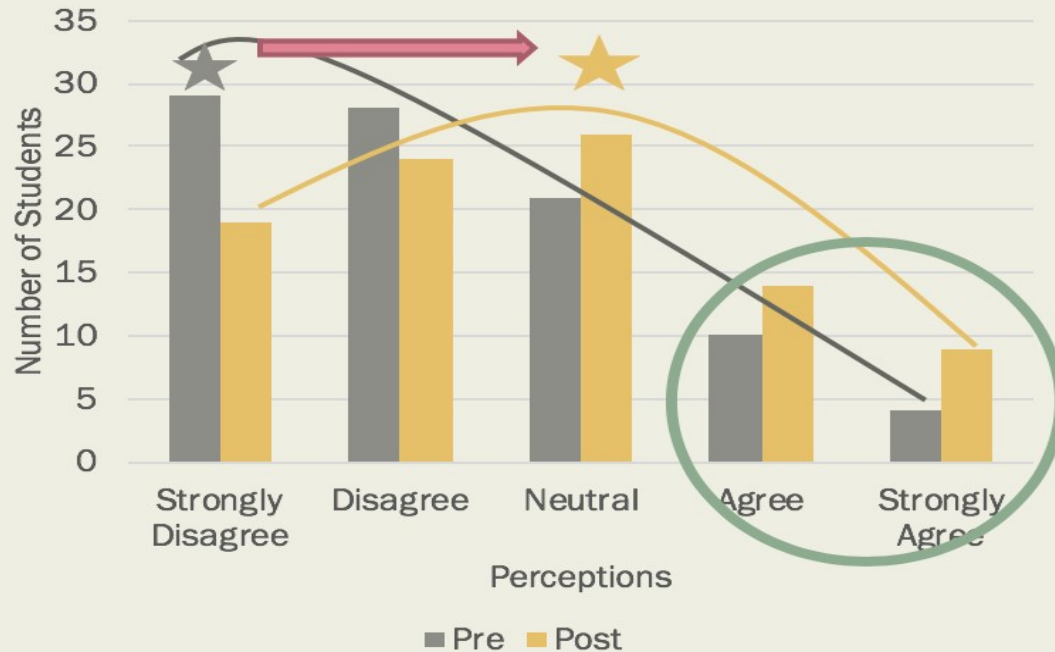
We Moved Forward...

Manufacturing Week

- 627 students (K-12)
- Workshops, Expos, Tours
- Lean
- Continuous Improvement
- Problem Solving
- Leadership



Workshop Survey Q7 Response



I THINK
MANUFACTURING
JOBS ARE CLEAN

More Data = Statically Significant Changes-Positive

Changed Perceptions

- Other Examples:



- Clean & Safe
- Felt encouraged to pursue MFG careers
- Creativity & innovation is Encouraged
- MFG jobs pay well
- Only High School Diploma

Greatest Changes Across Grades....

Workshop Average Delta Values



Greatest Changes Across Grades....

Tour Average Delta Values



We Learned More....

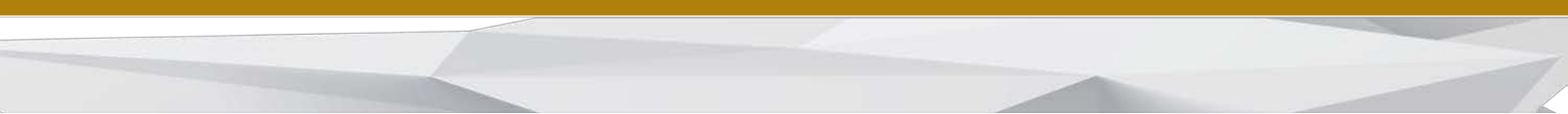
- Real-world Association/Language • Personal Stories
- Authenticity to Everyday Careers



- (Design it, Produce it, Move it, Support it)
- Group Size
- Age & Interest
- See the Full Process

- Data Informed Decisions
- Regional Expansion
- More Data





Support



N-MaC

PURDUE
P O L Y T E C H N I C

PURDUE
UNIVERSITY

Polytechnic Institute

