

**Manufacturing the Future Lesson Plan #5  
Sustainability / LEAN**

CD time is 13 minutes + 10-15 minutes for discussion

**Lesson Objectives:**

1. To understand sustainability is critical to a healthy environment and a healthy society.
2. To gain a greater appreciation for reusing and recycling resources.

**Key Points:**

1. Sustainability is the foundation on which the 21<sup>st</sup> century economic model is built.
2. Sustainability supports
  - a. reducing the amount of required incoming materials through reuse and recycling of current materials.
  - b. energy management decreases the carbon footprint.
3. There are specific skills needed to design and influence sustainability in manufacturing.

**Vocabulary:** (List of words with definitions to share with students prior to viewing this segment.)

1. Sustainability  
[Three dimensions of sustainability -- social, environmental and economic performance](#) -- and strive to find the right balance among them to help create long-term value for our customers, for society and for our company
2. Transitional technology  
[Transitional technology is a change to a machine or process which bridges the gap between old and radically new. It might be an “add-on” to an old technology to make it more competitive or a short lived competitive technology that will lose out to the next new revolutionary process.](#)
3. Hydroelectric  
[Production of electricity by waterpower](#)
4. Wind energy  
[Capturing the power of wind for clean energy](#)
5. Waste stream  
[A waste stream is the complete flow of waste from domestic or industrial areas through to final disposal.](#)

6. Associate degree  
A degree granted by a two-year college on successful completion of the undergraduate course of studies.
7. Bachelors degree (or difference between association degree and 4-year degree)  
An academic degree conferred on someone who has successfully completed undergraduate studies.
8. Apprenticeship  
A “learner” of a trade. On the job training for variety of occupations including Maintenance craft. Apprentices education is paid for by the employer, along with they attend school during the work week. The apprentices are being paid while they are at school. A path to becoming a Journeyman.

**Activity and/or Discussion Questions:** (Select one activity or 2 discussion questions)

**Activity ideas** (Pick the activity of interest to your students)

1. Skype activity (or other electronic media) or have an in-person speaker discuss sustainability practices within their organization.

**Discussion Questions** (Pick the discussion questions of interest to your students)

1. What are companies doing to promote sustainability?  
Answer: Lower emissions, reform business practices, use recycled materials
2. What challenges does manufacturing face with sustainability?  
Answer: Consuming more energy than they product
3. What steps did you see KI take to reduce waste within their organization?  
Answer: #1 Dump, #2 Sort/Weigh, #3 Follow-up with suppliers
4. What in our classroom may you use from renewable resources?  
Answer: Pencil, Paper, Plastics

List the careers available in sustainability?

Answer: Solar Energy, Renewable Energy, Engineer, Chemist, Insulators

5. What types of skills will you need in the future to be able to design and influence sustainability in manufacturing?  
Answer: Creative Thinking, Innovation, Math Skills, Chemistry, Materials
5. What types of things can you do at school and home to promote and support sustainability?  
Answer: Recycle, make informed decisions about which companies to support
6. What types of renewable resources are found in nature?  
Answer: Solar Wind, Trees, Water

**Follow-up for students (and parents):**

1. NEW Manufacturing Alliance All Star magazine (direct students to Alliance's website [www.newmfgalliance.org](http://www.newmfgalliance.org) for future reference) and/or bookmark
2. Career Cruising
3. WISCareers
4. School counselor
5. PIE/Chamber Industry Tours
6. Boys & Girls Club
7. After School Programs
8. Job Shadow
9. Youth Apprenticeship
10. Technical College in your area

**Contact for more information:**

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