



WEST SHORE SCHOOL DISTRICT
Manufacturing Learning Module

Title of Module	6 th grade Manufacturing	Grade Level	6
Curriculum Area	Technology Education	Time Frame	3 weeks

Desired Results

Science and Engineering Practices	Crosscutting Practices
<ol style="list-style-type: none"> 1. Asking questions and defining problems. 2. Developing and using models. 3. Planning and carrying out investigations. 4. Using mathematics and computational thinking. 5. Constructing explanations and designing solutions. 6. Engaging in argument from evidence. 7. Obtaining, evaluating and communicating information. 	<ol style="list-style-type: none"> 1. Patterns 2. Cause and effect 3. Scale, proportion, and quantity 4. Systems and system models 5. Measurement 6. Math shifts

Transfer Goals

- Understand proper use of tools and safety
- Identify different engineering and design processes, strategies, and proper application
- Apply proper measuring practices

Key Learnings/Big Ideas

- Utilize manufacturing processes
- Safe operation of tools and equipment
- Work with tools, materials, and technological concepts and processes.

Content and Reading and Writing Standards

Indicate eligible content standards by highlighting.
Include PA Core Reading and Writing for Science, Technical Subjects, Mathematics.
 3..1.7.A Describe a system as a group of related parts that work together to achieve a desired result
 3.6.7.C

- Explain basic material processes that manufactured objects undergo during production. (e.g., separating, forming, combining).
- Evaluate a construction activity by specifying task analyses and necessary resources.
- Explain the relationships among the basic resources needed in the production process for a specific manufactured object.

Essential Questions

Vocabulary (Best Practices)

Utilize concepts & competencies to add to vocabulary

Unit EQ: <ul style="list-style-type: none"> • What manufacturing processes are utilized in making an item? • How do we operate the equipment safely? 	Vocabulary: manufacturing materials processing time management tool utilization
Concepts Students will know...	Skills/Competencies (I Can...) Based on LEQs Students will be able to...
<ul style="list-style-type: none"> • How the manufacturing process is utilized in making an item 	<ul style="list-style-type: none"> • Using appropriate materials/equipment in a safe manner. • Selecting the proper equipment to make a product

Assessment Evidence

Formative Assessment

- Check student work for proper equipment usage.
- Observe students working.

Summative Assessment

- Grade project using rubric

Best Instructional Practices

- Subject Specific Best Practices (example: Science Processes)
- Extended Thinking
- Summarizing
- Vocabulary in Context
- Advance Organizers
- Non-verbal Representation
- Integration of Webb's Depth (examples)
- Integration of 21st Century Skills (examples)
- Reading and writing across disciplines (examples)

Differentiated options (examples)

21 Century Skills/ STEM		
Learning and Innovation Skills	Information, Media, and Technology Skills	Life and Career Skills
Creativity and Innovation Critical Thinking and Problem Solving Communication and Collaboration	Information Literacy Media Literacy ICT (Information, Communications and Technology) Literacy	Flexibility and Adaptability Initiative and Self -Direction Productivity and Accountability Leadership and Responsibility

Extended Thinking
Summarizing
Vocabulary in Context
Advance Organizers
Non-verbal Representation
Integration of Webb's Depth (examples)
Integration of 21st Century Skills (examples)
Reading and writing across disciplines (examples)
Differentiated options (examples)

Resources

Student	Teacher
<ul style="list-style-type: none"> • The Ruler Game http://www.rulergame.net • Teachers' websites • Bridge building and testing websites • Allen Middle School—Mr. Griffith http://www.wssd.k12.pa.us/webpages/MGriffith/ • New Cumberland Middle School – Andre Faranov http://www.wssd.k12.pa.us/webpages/AFaranov/links.cfm • Crossroads Middle School - Mr.Papieredin http://www.wssd.k12.pa.us/webpages/MPapieredin/ 	<ul style="list-style-type: none"> • Andre Faranov • Matthew Griffith • Michael Papieredin

Adapted from Wiggins, Grant and J. Mc Tighe. (1998). *Understanding by Design*, Association for Supervision and Curriculum Development, ISBN # 0-87120-313-8 (ppk)