

# Unit 3 - Safety and Structures

Content Area: **Arts**  
Course(s): **Wood Arts Tec 1**  
Time Period: **Semester 1 & 2**  
Length: **3 Weeks**  
Status: **Published**

## Standards

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CS.K-2.8.2.2.ED.4	Identify constraints and their role in the engineering design process.
CS.K-2.8.2.2.NT.2	Brainstorm how to build a product, improve a designed product, fix a product that has stopped working, or solve a simple problem.
CS.K-2.8.2.2.ITH.4	Identify how various tools reduce work and improve daily tasks.
MA.K.G.B.5	Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
VA.K-2.1.5.2.Cr2c	Create art that represents natural and constructed environments. Identify and classify uses of everyday objects through drawings, diagrams, sculptures or other visual means including repurposing objects to make something new.
VA.K-2.1.5.2.Re7b	Describe, compare and categorize visual artworks based on subject matter and expressive properties.
SCI.K.PS3.C	Relationship Between Energy and Forces

## Enduring Understandings

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1. Designing and creating a project within material limitations can improve sustainability and product cost.
2. Using the design process to brainstorm a product solution and solve a problem using tools and machines.
3. Building for structural strength to support forces and loads.
4. Structural shapes found in nature and previously engineered structures help drive design and the creation process.
5. Machines can reduce the effort and time needed to process raw materials if done safely.

## Essential Questions

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1. How does limiting material affect the product?
2. What shapes are found in nature that are naturally strong?
3. How have machines impacted our society?
4. What constraints do Artists and Engineers typically face when creating?
5. What is more important in a design, Form or Function?

## **Knowledge & Skills**

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Safety And Structure Students Will Be Able To:

- Utilize machines safely to form and shape raw materials into a step stool.
- Identify constraints and design a product to solve a problem.
- Brainstorm and Design a product to support load.
- Analyze the impact of using natural resources to build and design.
- Create a product using wood working techniques and machines safely.
- Respond to Art and Designs with constructive feedback.

Machines:

- Miter Saw
- Radial Arm Saw
- Drill Press
- Sanders
- Band Saw
- Router

## **Transfer Goals**

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1. Students will be able to design a product within material constraints that balances form and function and supports a load using structural shapes.
2. Students will be able to create a product safely using machines.
3. Students will be able to respond to works of art noting their expressive properties.

## **Resources**

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Resources:

- Chromebooks for research
- Paper for drawing and design
- Lumber
- Tools and Machines
- Fasteners - Screws, Nails, Glue, ect.

- Finish

## **Assessments**

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[Assessments](#)

## **Modifications**

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[Modifications](#)