

Unit 05: Portable Power Tools (2 weeks)

Content Area: **Template**
Course(s):
Time Period: **Full Year**
Length: **FY**
Status: **Published**

Standards Alignment

NEW JERSEY STUDENT LEARNING STANDARDS: 21st CENTURY AND CAREERS

TECH.K-12.P.1	Act as a responsible and contributing community members and employee.
TECH.K-12.P.3	Consider the environmental, social and economic impacts of decisions.
TECH.K-12.P.4	Demonstrate creativity and innovation.
TECH.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
TECH.K-12.P.6	Model integrity, ethical leadership and effective management.
TECH.K-12.P.8	Use technology to enhance productivity increase collaboration and communicate effectively.

NEW JERSEY STUDENT LEARNING STANDARDS: COMPUTER SCIENCE AND DESIGN THINKING

CS.6-8.8.2.8.ED.1	Evaluate the function, value, and aesthetics of a technological product or system, from the perspective of the user and the producer.
CS.6-8.8.2.8.ED.2	Identify the steps in the design process that could be used to solve a problem.
CS.6-8.8.2.8.ED.3	Develop a proposal for a solution to a real-world problem that includes a model (e.g., physical prototype, graphical/technical sketch).
CS.6-8.8.2.8.ED.6	Analyze how trade-offs can impact the design of a product.
CS.6-8.8.2.8.NT.1	Examine a malfunctioning tool, product, or system and propose solutions to the problem.

Stage I: Desired Results

Transfer/Overview/Rationale

Transfer / Overview / Rationale

Unit Rationale
The purpose of this unit...

Meaning

Essential Questions

Essential Questions

Why choose to use a portable power tool?

Do you need to make different accommodations when using portable power tools?

Why is important to use power tools properly?

Enduring Understanding/Indicators of Understanding

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Students will understand the advantage of using portable power tools in the process of building their individual projects.

Students will understand that like their stationary counterparts, there are safety rules and guidelines that must be followed with portable power tools also.

Students will understand that each part of the project process plays a critical part in the outcome of the final project.

Acquisition (Student Learning Objectives)

Knowledge

Knowledge

Students will know...

Students will know how to use a jigsaw to cut lumber to length, as well as how to use it to cut curves.

Students will know how to use portable sanders to sand project parts to prepare them for finishing.

Students will know how to use portable drills to drill holes and assemble projects.

Students will know how to use a scroll saw to cut internal and external designs.

Students will be able to use a dremel/rotary tool to engrave designs into projects.

Skills

Skills

Student will be skilled at ...

Students will be able to set up power tools to prepare parts for their projects in a safe and effective way.

Students will be able to operate power tools efficiently in the shop.

Stage 3: Learning Plan

Resource and Mentor Texts

Resources and Mentor Texts

Jigsaw

clamps

try squares

sanders

80/120/150 grit sand paper

rugs

drills

drill bits

countersink bits

scroll saw

dremel/rotary tools

patterns

Formative Assessment Strategies

Formative Assessment Strategies

Teacher observation

Project work evaluation

Learning Activities/Unit of Study

Learning Activities/Unit of Study

Teacher demonstrations:

Jigsaw (use to cut lumber to length; cutting curves)

Sanders (proper order of paper; direction to sand)

Drills

Scroll saws (cutting internal and external designs)

Dremel/rotary tools

Student usage of tools in project work.

Modifications and/or Accommodations

Suggested Modifications (ELL, Sp. Ed, Gifted, At-risk of Failure)

English Language Learners

Native language support: The teacher provides auditory or written content to students in their native language.

Adjusted Speech: The teacher changes speech patterns to increase student comprehension. This could include facing the students, paraphrasing, clearly indicating the most important ideas, and speaking more slowly.

Visuals: The teacher uses graphics, pictures, visuals, and manipulatives. This helps ELL students better understand and comprehend the subjects at hand.

Front-Loading Vocabulary: The teacher front loads vocabulary. This means providing students with a list of important vocabulary words they will need to know for a book, lesson, etc. prior to the lesson being taught. Including pictures to go with the vocabulary words is also very beneficial for the students.

Special Education Students

Chunking: The teacher presents information in a way that makes it easy for students to understand and remember. Chunking is based on the presumption that our working memory is easily overloaded by excessive detail. The best way to deliver information is to organize it into meaningful units. Because students with special needs get overloaded easily, chunking is an effective strategy to use with them.

Checking for Understanding: It is important to constantly check for understanding, especially for students who have accommodations. Teachers want to make sure students understand the concepts being covered in a way that makes sense to them.

Extra time: The teacher provides students with special needs extra time to complete work or answer questions. It is important to give students enough time to process their thoughts.

Oral Reading: The teacher will read work orally to students. Class work such as tests and literature circles may need to be read aloud to the student.

Timers: The teacher will use timers as an instructional tool. The use of timers is beneficial for students who have trouble completing tasks. Timers can be helpful so the student is aware of how much time they have to complete an assignment.

Students with 504 Plans

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Gifted & Talented Strategies

Extensions/Enrichments: Teachers will provide gifted and talented students with extension/enrichment projects. Students will be challenged to further their understanding, to apply acquired knowledge, and/or to produce something in reference to acquired knowledge.

Modify/Change Activities: Teachers will monitor and modify activities to accommodate those students who need to be challenged further. Additional reading, problem-solving, writing, or project work is necessary for those students who are ready to move on at a rate more accelerated than their peers. In this way, G & T students are provided the same opportunity for support as special needs students.

Students at Risk of School Failure

Directions or Instructions: Make sure directions and/or instructions are given in limited numbers. Give directions/instructions verbally and in simple written format. Ask students to repeat the instructions or directions to ensure understanding occurs. Check back with the student to ensure he/she hasn't forgotten.

Peer Support: Peers can help build confidence in other students by assisting in peer learning. Many teachers use the 'ask 3 before me' approach. This is fine, however, a student at risk may have to have a specific student or two to ask. Set this up for the student so he/she knows who to ask for clarification before going to you.

Alternate or Modified Assignments: Always ask yourself, "How can I modify this assignment to ensure the students at risk are able to complete it?" Sometimes you'll simplify the task, reduce the length of the assignment or allow for a different mode of delivery. For instance, many students may hand something in, the at-risk student may jot notes and give you the information verbally. Or, it just may be that you will need to assign an alternate assignment.

Increase One to One Time: When other students are working, always touch base with your students at risk and find out if they're on track or needing some additional support. A few minutes here and there will go a long way to intervene as the need presents itself.

Contracts: It helps to have a working contract between you and your students at risk. This helps prioritize the tasks that need to be done and ensure completion happens. Each day write down what needs to be completed, as the tasks are done, provide a checkmark or happy face. The goal of using contracts is to eventually have the student come to you for completion sign-offs.

Hands On: As much as possible, think in concrete terms and provide hands-on tasks. This means a child doing math may require a calculator or counters. The child may need to tape record comprehension activities instead of writing them. A child may have to listen to a story being read instead of reading it him/herself.

Tests/Assessments: Tests can be done orally if need be. Break tests down in smaller increments by having a portion of the test in the morning, another portion after lunch and the final part the next day.

Seating: Seat students near a helping peer or with quick access to the teacher. Those with hearing or sight issues need to be close to the instruction which often means near the front.