

Unit: Book 1 Projects

Title: Step Stool

Skill(s) and Knowledge: Students will be able to: identify the tools and materials and processes needed to complete the step stool project, while maintaining a safe working environment.

Tasks: Fabricate the parts and assemble a step stool according to the working drawings and instructions.

Performance objective: Create a cut list, identify materials and fasteners, follow directions, read working drawings, use and maintain hand and power tools.

Tools, supplies and reference materials:

$\frac{3}{4}$ " x 12 x 5' and $\frac{3}{4}$ " x 10 x 24" plywood, 1 x 2 x 24" and 1 x 4 x 24" pine or similar, wood glue, 1 $\frac{5}{8}$ " construction screws, 80 grit sandpaper, claw hammer, mallet, tape measure, handsaw, electric drill, 1 $\frac{1}{4}$ " spade bit, drill index, screw gun, saber saw, circular saw, sliding T-bevel, block plane, framing square, straight edge, combination square, compass, $\frac{3}{4}$ " wood chisel, pencil, clamps, Career Connections Book 1 Chapter 9 pages: 216-227. *Notes: 1) 4 x 8 sheet of $\frac{3}{4}$ " cdx will yield 3 stools, instructors need to make the jig on page 225 step 1 and provide $\frac{3}{4}$ " x $\frac{3}{4}$ " scraps and 1 $\frac{1}{4}$ " screws for the temporary frame.*

Methods of instruction: Provide each student with the materials to and tools to complete the project and allow students to work at their own pace referencing the Career Connections Book 1 Chapter 9 and following the instructions, and asking questions of the instructor as needed.

Estimated time: 8-10hrs. **Number of students:** 10-15

Task analysis or activities: Students will work in small groups at shop tables, with all the previously mentioned power tools, working together to complete all activities and helping each other as they progress at their own pace.

Evaluation: Students will be graded on their use of time, safety methods, quality of work, cleaning and organization of their work area, interaction with other students, and vocational employability skills grading rubric. Step stool project evaluation on page 249.

Performance Notes:

Vocational Frameworks References

- 2.E.01.01 Demonstrate use and maintenance of layout, marking and measuring tools.
- 2.E.01.02 Demonstrate use and maintenance of fastening and clamping tools.
- 2.F.01.01 Demonstrate use and maintenance of portable circular saw.
- 2.F.02.01 Demonstrate use and maintenance of portable drills.

English/Strand 3 Frameworks References:

RST Grades 9-10 #4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases in a technical context.

Frameworks References: Math

N-Q3 Identify significant figures in recorded measures and computed values based on the context given and the precision of the tools used.

Common Core References:

- Read and listen critically for information understanding and enjoyment
- Set goals and achieve them by organizing time, workspace, and resources effectively
- Work both independently and in groups

SCANS references:

Foundation Skills:

1. Basic skills— reading, writing, mathematics, speaking, and listening.
2. Thinking Skills-- thinking creatively, making decisions, solving problems, visualizing, knowing how to learn, and reasoning
3. Personal qualities--individual responsibility, self-esteem, sociability, self management, and integrity

Work Place Competencies

1. Resources--allocating time, money, material, space, and staff.
2. Interpersonal skills--working in teams, teaching others, serving customers, leading negotiating, and working well with culturally diverse populations.
3. Information--acquiring and evaluating data, organizing and maintaining files, interpreting & communicating, and using computer to process information
4. Systems--understanding social, organizational, and technological systems, monitoring and correcting performance, and designing or improving systems.
5. Technology--selecting equipment and tools, applying technology to specific tasks, and maintaining and troubleshooting technologies

CAREER CONNECTIONS: PROJECT BOOK 1**Lesson Plan:** Chapter 9, Step Stool**Time Required:** Twelve 50-minute class periods (to construct the step stool; instructions to construct a chest and bread box are provided as alternative or additional projects, as needed)

- Allow time to check out students on safety and operation of tools to be used in the project if they have not already demonstrated safety and operation competency.
- Allow time, depending on the complexity of the project, for students to make up the cut list (1-2 hours).
- Allow time before the shop period ends for cleaning up the shop.

Goal:

Work with new tools and materials and demonstrate attention to detail to construct a step stool.

Objectives:

At the end of this chapter, students should be able to:

- Demonstrate operation of a sliding T-bevel and wood chisel
- Perform parallel and opposing bevel cuts
- Describe the differences in working with plywood
- Transfer angles
- Make accurate measurements and cuts
- Practice attention to detail

Cooperative Learning:

For more complex projects, students can work in pairs or in teams. In this case, both students in the pair or all members of the team will receive the same grade in evaluations. Working in pairs or in teams will shorten the time required to complete the projects if time in the shop is an issue. This method of building projects will also cut down on the amount of material used.

Procedures:

The following provides a summary of instructional and assessment procedures.

Teach

Minutes	Activity
Class Period 1	
10	<i>Chapter 9 Introduction</i> Review the lesson goal and objectives with students. Discuss expectations and how the project will be evaluated.
40	<i>Section 1</i> Review with students the illustrations shown of the step stool. Direct students in the development of a cut list for this project.
Class Period 2	

Carpentry Frameworks Based Lesson Plan

Framework: 2.E, 2.F

50	Review project illustrations with students. Allow time for students to finalize the cut list.
Class Period 3	
50	Have students begin cutting the legs and leg braces for the step stool. Point out the differences in working with plywood.
Class Period 4	
50	Direct students as they continue cutting the legs and leg braces.
Class Period 5	
50	Guide students through completion of the legs and leg braces.
Class Period 6	
50	Have students begin constructing the stool top.
Class Period 7	
50	Guide students through completion of the stool top.
Class Period 8	
50	Have students begin attaching the top to the legs and installing the leg braces.
Class Period 9	
50	Direct students as they continue work on attaching the top to the legs and installing the leg braces.
Class Period 10	
50	Guide students through completion of the brace assembly.
Class Period 11	
50	Have students install the shelf.
Class Period 12	
40	Have students finish the stool by sanding and staining.
10	<i>Project Review</i> Review completed results. Assign alternative projects as needed. Ask students to review Chapter 10 for the next class.

Assess

Assessment Activity	Assessment Method and Criteria
Step Stool, Chest, Bread Box	See rubrics and evaluation sheets. Additionally, a skills matrix will be provided.