Penny's PROJECT LAB

Teacher Resource

Lesson 8 of 28

Estimating Time and Resources

How long and what do we need?

EXPLORE

DISCUSS

PLAN

CREATE

APPLY

TASKS

SCHEDULE

MILESTONES

DEPENDENCIES

RESOURCES

COMMUNICATION



Project Focus

- Time
- Materials
- People & Tools

My Project Plan

Task	Who?	Start	End	☑
1. Plan				☐
2. Design				☐
3. Build				☐
4. Test				☐
5. Present				☐

PM

Grade Range
K – 5

Estimated Time
35 – 50 minutes

Key Concept
Tasks, Timeline, Milestones
Sequencing and Planning

STEM Connection
Engineering Design
Systems Thinking

Teacher Overview

After students break a project into manageable pieces, they need to estimate the time and resources required. Estimates are informed guesses, not promises. This lesson teaches students to consider task size, available people, tools and materials, and uncertainty before beginning work.

Learning objectives

• Explain what an estimate is and why it can change.

• Estimate how long a simple task might take using minutes or class periods.

• Identify people, materials, tools, and information needed for a project.

• Recognize when a resource limit requires a change in the plan.

> **Penny says:** “Before we begin, let’s think about how much time we need and what supplies will help us. Our best guess gives us a starting point, and we can update it as we learn!”

Key vocabulary

WORD	MEANING
Estimate	A reasonable guess based on what we know.
Duration	How long a task takes.
Resource	A person, tool, material, or information needed to do work.
Availability	Whether a resource is ready when we need it.
Constraint	A limit, such as time, supplies, or budget.
Buffer	A little extra time reserved for surprises.

Lesson Plan: Estimating Time and Resources

Duration: 45 minutes **Materials:** index cards, paper, pencils, simple classroom supplies, timer.

1. Guess, then test — 8 minutes

Ask students to estimate how long it will take to sort 20 pencils by color. Record estimates, time the activity, and compare. Discuss why estimates differed.

2. What do we need? — 7 minutes

Present a class poster project. Brainstorm people, paper, markers, scissors, reference materials, and workspace. Distinguish materials from tools and people.

3. Estimate by task — 8 minutes

Use three sample tasks: research a topic, draw a poster, and present it. Estimate each in minutes or class periods. Explain that tasks may overlap and that adding durations does not always give the full schedule.

4. Resource detective — 15 minutes

Teams use the Estimation Planner worksheet for a project from Lesson 7. They choose four work packages or tasks, estimate duration, and list the resources needed.

5. Plan for a surprise — 7 minutes

Tell teams that a needed tool is unavailable or one task takes twice as long. Ask them to adjust the plan, borrow supplies, simplify work, or allow more time.

Discussion questions

- Why is an estimate different from a promise?
- What might make a task take longer than expected?
- Can having more people always make a task faster?
- What should a team do if it does not have enough materials?

> **Duke's Resource Challenge:** Before the project starts, find one missing supply or resource and suggest a backup plan.

Student Worksheet: My Estimation Planner

Name: _____ Date: _____

Project: _____

#	TASK / WORK PACKAGE	TIME ESTIMATE	PEOPLE / MATERIALS / TOOLS
1			
2			
3			
4			

RESOURCE CHECK

What supply or tool might be hard to get?

_____

What is our backup plan?

_____

ESTIMATE CHECK

Our hardest task to estimate is: _____

We might need extra time because: _____

Reflection & Quick Assessment

Exit ticket

1. What is an estimate?

2. Name two resources needed for a classroom project.

3. What should you do if a task takes longer than estimated?

4. Circle one: I can estimate time and identify resources. YES / ALMOST / NOT YET

Teacher check for understanding

■ Student makes a plausible time estimate.

■ Student identifies relevant people, tools, and materials.

■ Student understands estimates may change.

■ Student suggests a practical response to a resource constraint.

Extension activities

STEM: Have teams estimate how long it takes to build a paper bridge, then build and compare actual time and supplies used.

Home: Estimate the time and materials needed to prepare a family meal or organize a room. Compare with the actual experience.

Teacher tip: For younger learners use “short, medium, long” or number of class periods. For older learners add ranges (best case, likely, longer case) and resource quantities.

Next resource: Identifying Risks and Making Backup Plans.