WILDERLAND LEARNING TRAILS

Timbit's Workshop

One shared story - three age levels - one family roundtable

StoryKeepers Press | 2026

Trail 3 · Timbit's Workshop

Engineering · Design Constraints · Testing · Failure · Redesign

Story connection: Timbit observes problems, builds devices, tests them, fails, and rebuilds. His Hydro-Harvester, Static Charge Amplifier and Photon Disruptor make engineering process part of the plot rather than an add-on.

TRAIL 3 · TIMBIT'S WORKSHOP

Upper Elementary · Grades 4-5

Learning goals

Define a simple design problem.

Identify criteria and constraints.

Generate more than one possible solution.

Explain how a failed test can improve a design.

Student Challenge · Invent for the Wilderland

1. Choose one problem: collect dew, carry water, cross a stream, move supplies, warn travelers, or invent your own.
2. Write one sentence describing the problem.
3. List three things your invention must do (criteria) and two limits (constraints).
4. Sketch three possible solutions. Circle the one you think will work best.
5. Label the important parts and materials.
6. Imagine the first test fails. Write or draw one thing that went wrong and one change you would make.

Parent notes

Do not reward complexity. A simple solution that meets criteria is good engineering.

Ask "How would you know it worked?" to introduce testing.

If building materials are available, make a paper/cardboard prototype; otherwise a labeled sketch is sufficient.

TRAIL 3 · TIMBIT'S WORKSHOP

Middle School · Grades 6-8

Learning goals

Define a design problem with multiple criteria and constraints.

Generate and compare competing solutions.

Use a decision matrix to justify a preferred design.

Develop a model and test plan.

Student Challenge · Design Brief

Design a device that helps a Wilderland community cope with drought without using electricity or fuel.

1. Define the user and problem in one paragraph.
2. Create at least four measurable criteria and four constraints.
3. Generate three distinct concepts.
4. Build a decision matrix. Score each concept on criteria such as effectiveness, materials, maintainability, safety and cost.
5. Develop the strongest concept into a labeled model or detailed drawing.
6. Write a test plan: what would you measure, what result counts as success, and what failure might occur?
7. After an imagined failure, revise one feature and explain why.

Extension

Compare your process with Timbit's. Identify one assumption he made that turned out to be wrong and explain how an earlier test might have revealed it.

TRAIL 3 · TIMBIT'S WORKSHOP

High School · Grades 9-12

Learning goals

Translate user needs into requirements.

Compare alternatives using explicit tradeoffs.

Identify and prioritize failure modes.

Design tests that reduce uncertainty before field use.

Student Challenge · Engineering Review Board

Take one of Timbit's devices or design your own drought-response device. Prepare it for a skeptical engineering review board.

1. Write a one-page requirements document separating user needs, functional requirements, constraints and assumptions.
2. Create at least three candidate designs and a tradeoff matrix.
3. Identify five failure modes. For each, estimate severity, likelihood and detectability on a 1-5 scale; prioritize the highest-risk failure.
4. Describe a prototype/test sequence that would reduce the biggest uncertainty first.
5. Write a 600-800 word design review memo: preferred design, evidence, tradeoffs, unresolved risks, and next test.
6. Optional: create a one-minute oral "go/no-go" presentation defending whether the device is ready for field use.

Family roundtable

Ask: "Is failure evidence that an inventor is bad at inventing?" Compare answers and connect them to Timbit's story.

> The story comes first. Use this trail when it makes the reading richer.