



Student Design Studio

Rethink a small school space | Grades 9-12 | Teacher guide

A useful idea must work within real limits.

Students observe a teacher-approved space, define one need, sketch two options, research estimated costs, and defend a recommendation. The final product is a proposal, not a physical renovation.

PLAN THE PROJECT

Suggested time: three 45-50 minute lessons, plus optional presentations. Teams: 2-4 students. Supplies: this kit, pencils, ruler, graph paper, and teacher-approved public price sources. Provide printed price cards when internet access is unavailable.

LESSON 1 | Observe and define

Use page 4. Choose a small area such as a reading corner or shared supply shelf. Agree on the need, constraints, and a teacher-set budget.

LESSON 2 | Sketch and estimate

Use pages 5-6. Draw two options, identify reuse opportunities, and record price sources, quantities, and exclusions.

LESSON 3 | Compare and explain

Use pages 7-8. Revise after a 25% budget cut, prepare a two-minute pitch, and review the evidence behind the choice.

Teacher setup: approve the location and sources. Use provided measurements or authorized observation. No purchases, vendor contact, furniture movement, drilling, or other physical changes. Avoid photos of people or sensitive building details.



Worked example: a reading corner

Fictional classroom project. Observations and layouts are illustrative, not a verified school plan.

THE NEED

During three teacher-approved observations, students had difficulty finding reading materials by topic. The team wants books to be easier to locate while keeping the existing reading seats usable.

CONSTRAINTS AND SUCCESS CHECK

Keep existing shelves and seats. Do not change circulation routes. Teacher must review access and suitability. Classroom budget: \$200. Proposed check: ask users to locate three sample books using a paper mock-up of the categories; record where the labels confuse them.

OPTION A | SORT AND LABEL

Reuse the shelf and add six book bins, shelf labels, and two small display stands. Sketch where each category goes. Benefit: more separation by topic. Tradeoff: more new materials and a larger estimated cost.

OPTION B | REUSE MORE

Reuse the shelf and four available bins, add two matching-purpose bins and labels, and omit the display stands. Benefit: lower estimated cost. Tradeoff: fewer display locations and mixed bin sizes to check.

Provisional recommendation

Start with Option B if the available bins fit and are approved for reuse. The recommendation depends on confirming fit, condition, and the price assumptions on page 3.



Worked example: price the proposal

Invented teaching prices, not vendor quotes. Students must record actual research sources for their own work.

Item / allowance	Option A	Option B
New book bins at \$18 each	$6 \times \$18 = \$108$	$2 \times \$18 = \$36$
Label pack	$1 \times \$12 = \$12$	$1 \times \$12 = \$12$
Display stands at \$15 each	$2 \times \$15 = \$30$	None = \$0
Estimated delivery allowance	\$15	\$15
Classroom tax allowance*	\$9	\$3
Planning estimate	\$174	\$66

*For arithmetic practice only: 6% of the new-item subtotal (\$150 or \$48), rounded up to the next dollar. This is not a claim about school tax treatment. Real estimates must check applicable tax, delivery, and other charges.

NOW CUT THE \$200 BUDGET BY 25%

$\$200 \times 0.75 = \$150$ revised budget. Option A is \$24 over; Option B has \$84 remaining. A revised Option A without the two stands totals \$143: \$120 items + \$15 delivery + \$8 classroom tax allowance.

What the numbers leave out

Staff setup time and suitability checks are not priced here. Reused items have no new purchase cost in this exercise but are not costless to maintain. A classroom estimate does not confirm availability or approve implementation.



Observe before you design

Team: _____ Space approved by: _____

Who uses this space, and for what?

Describe the task. Do not record names or private student information.

What did you notice? What is still an assumption?

Record two or three dated observations. Separate what you saw from what you think might explain it.

Our need statement

People using this space need a way to _____ because _____.

Constraints and existing resources

Teacher-provided dimensions, items to keep, usable inventory, access needs, and things you may not change.

Budget and success check

Teacher-set budget: \$_____. How could a drawing or paper mock-up test whether the idea helps?



Price your proposal

Copy one page per option. Team: _____ Option: _____ Date: _____

Use public prices or teacher-provided price cards. No checkout, accounts, purchases, or vendor contact.

Item / material	Qty	Unit \$	Line \$	Source + date*

*Use a source name and short reference here; attach the full product link or price card. Check pack size and units.

Items subtotal: \$ _____ Delivery: \$ _____ Installation / setup: \$ _____

Applicable tax / fees: \$ _____ Other: \$ _____ Estimated total: \$ _____

Budget: \$ _____ Remaining (budget minus estimate): \$ _____

Reuse, ongoing costs, and unknowns

List available items, maintenance / replacement needs, and costs still to confirm. Unknown is not \$0.

If a charge is unknown, label the total "partial estimate" and explain what is missing. Compare like-for-like quantities.



Choose, then handle a smaller budget

Use evidence from your observations, sketches, and price research.

Compare	Option A	Option B
How well does it meet the need?		
What can we reuse?		
Estimated total / missing costs		
What needs staff review?		

Our provisional choice: _____ Why: _____

THE 25% BUDGET-CUT CHALLENGE

Original budget \$_____ x 0.75 = revised budget \$_____. Compare your estimate with the revised budget. If already under budget, explain what you would keep and why; you do not need to spend the balance.

Keep / change / postpone - and why

Preserve the main purpose. Show the revised quantities and calculation on an attached pricing sheet.

Revised estimate: \$_____ Remaining / shortfall: \$_____ Unknowns: _____



Make the case, then reflect

Two-minute student pitch and teacher assessment guide

YOUR TWO-MINUTE PITCH

Explain the need and observation. Show both options. Give your estimate and its sources, including unknowns. Defend your choice and your response to the budget cut. Finish with the checks school staff would need before implementation.

Criterion	3 - Clear evidence	2 - Developing	1 - Needs work
Need and observation	Specific need; dated observations	Need clear; evidence thin	Need or evidence missing
Options and constraints	Two distinct options; constraints addressed	Two options; some limits missed	One option or limits ignored
Cost estimate	Units, math, sources, exclusions clear	Mostly complete; some gaps	Unsupported or unclear total
Tradeoffs and pitch	Choice and revision explained with evidence	Choice explained; revision weak	Choice or revision unexplained

Score: ____ / 12. Use the rubric to assess reasoning, not the amount spent or access to expensive materials.

Reflection: one thing our evidence changed

What did you revise after observation, pricing, or feedback? What would you verify next?
