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PRODUCT PREVIEW

Design Thinking Curriculum

Full Process Unit · Mega Bundle

Grades 5–10 • 5 Weeks • 25 Lessons • 73 Pages

This Preview Contains:

A curated selection of **12 showcase pages** from the full 73-page mega bundle, including the cover, table of contents, lesson samples, templates, rubrics, and a complete inventory of what's inside the full resource.

The full PDF is available for purchase at the UM Printables store on Teachers Pay Teachers.

★ MEGA BUNDLE EDITION · ISTE & NGSS ALIGNED

UM PRINTABLES
PREMIUM EDUCATIONAL RESOURCES

FULL PROCESS UNIT • GRADES 5–10

Design Thinking Curriculum

A complete 5-week, 25-lesson journey through the design thinking process.

Empower students to solve real problems in their school and community using the five-phase design thinking framework — Empathise, Define, Ideate, Prototype, and Test. This mega-bundle includes 25 fully-scripted lesson plans, six printable templates, 30 ideation brainstorm cards, a complete facilitator implementation guide, and brand-new supplementary resources to make implementation effortless.

MEGA BUNDLE EDITION

ISTE Aligned | NGSS Aligned | 25 Lesson Plans | 6 Printable Templates | 30 Ideation Cards | Grades 5–10

5	25	5	6+
WEEKS	LESSONS	PHASES	TEMPLATES

Table of Contents

A complete 5-week, 25-lesson unit plus premium supplementary resources. Click any entry to jump to that section.

Introduction & How to Use This Resource

Welcome to the **Design Thinking Curriculum: Full Process Unit**, a comprehensive 5-week program designed for students in Grades 5 through 10. This resource walks learners through all five phases of the design thinking process — **Empathise, Define, Ideate, Prototype, and Test** — as they tackle a real problem in their school or community and build a prototype using low-cost materials. By the end of the unit, students will have experienced a complete human-centered design cycle, generated and tested their own solutions, and developed the collaborative and creative-confidence skills that modern workplaces and communities demand.

What Is Design Thinking?

Design thinking is a human-centered approach to problem-solving that originated in the fields of engineering and innovation but has since become a powerful framework in education. At its core, design thinking teaches students to *deeply understand the people affected by a problem* before jumping to solutions. It emphasizes empathy, collaboration, iteration, and creative risk-taking — skills that are essential for success in the 21st century. Unlike traditional problem-solving models that begin with the problem statement, design thinking begins with people: their feelings, frustrations, workarounds, and unspoken needs.

In a classroom context, design thinking also reframes failure as data. When a prototype breaks during user testing, that break is not a mistake — it is information. This shift in mindset, paired with low-cost materials that remove the fear of "wasting" expensive supplies, creates a learning environment where students take intellectual risks they would otherwise avoid. Over the course of five weeks, you will see students who initially hesitate to share wild ideas become confident contributors, and you will watch teams learn to listen — really listen — to people whose experiences differ from their own.

Why Teach Design Thinking in Grades 5–10?

Students in Grades 5–10 are at a developmental stage where they are increasingly aware of the world around them and eager to make a difference. Design thinking provides a structured yet flexible framework that channels this energy into meaningful action. By engaging in authentic problem-solving, students develop:

- **Critical thinking and analytical reasoning skills** as they decompose complex community problems into defined components.
- **Empathy and perspective-taking abilities** as they interview stakeholders whose experiences differ from their own.
- **Collaboration and communication competencies** as they work in design teams across all five weeks of the unit.
- **Creative confidence and comfort with ambiguity** as they generate divergent ideas and select among them.
- **Persistence through iterative testing and refinement** as they revise prototypes based on real user feedback.
- **A growth mindset that values learning from failure** as they document pivots and celebrate what each failure taught them.

How This Unit Is Structured

ISTE & NGSS Standards Alignment

This curriculum is aligned with the **ISTE Standards for Students (2016)** and the **NGSS Science and Engineering Practices**. Below is a detailed mapping of how each standard is addressed within the unit. Use these tables to communicate alignment to administrators, parents, and curriculum coordinators, or to cross-walk this unit against your district's adopted standards.

ISTE Standards for Students

Standard	Description	Unit Alignment
1.4.a	Know and use a deliberate design process for generating ideas, testing theories, creating innovative artifacts or solving authentic problems.	Students follow the full 5-phase design thinking process across all 25 lessons to solve an authentic school or community problem.
1.4.b	Select and use digital tools to plan and manage a design process that considers design constraints and calculated risks.	Lessons 13, 18: Students use ideation cards and planning templates to manage their design process within material and time constraints.
1.4.c	Develop, test and refine prototypes as part of a cyclical design process.	Lessons 16–20 (Prototype) and 21–23 (Test): Students build, test, and iterate on their prototypes based on user feedback.
1.4.d	Exhibit a tolerance for ambiguity, perseverance and the capacity to work with open-ended problems.	Embedded throughout: students work with authentic, open-ended community problems with no single right answer.
1.5.b	Collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways.	Lessons 5–7: Students collect and analyze empathy interview data, identify patterns, and represent findings visually.
1.5.c	Break problems into component parts, extract key information, and develop descriptive models to understand complex systems.	Lessons 8–10: Students decompose complex community problems into defined components using POV statements and problem frames.
1.6.a	Choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.	Lessons 16–17: Students evaluate and select from available low-cost materials to best represent their solution concept.
1.6.c	Communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.	Lessons 24–25: Students prepare and deliver presentations that communicate their design process and prototype using visual aids and demonstrations.
1.7.b	Use collaborative technologies to work with others, including peers, experts or community members, to examine issues from multiple viewpoints.	Lessons 4–5: Students conduct empathy interviews with community stakeholders, and throughout the unit work in collaborative design teams.

NGSS Science and Engineering Practices

Week 1: Empathise — Lessons 1–5

This week, students learn what empathy means in the context of design, develop interview skills, identify a real school or community problem, and conduct empathy research with stakeholders. By the end of this week, each team will have rich qualitative data about their users' needs, feelings, and experiences. The week culminates in the Empathy Map, a visual artifact that will anchor all of next week's Define work.

LESSON 1
EMPATHISE

45–60 minutes

Introduction to Design Thinking

Learning Objectives

- Understand the five phases of the design thinking process.
- Recognize how design thinking is used to solve real-world problems.
- Identify a potential problem space within the school or community.

Materials

Chart paper, sticky notes, markers, Design Thinking Process Overview handout (provided earlier in this resource).

Warm-Up

- Display the prompt: "What is a problem you have noticed in our school or community?"
- Give students 2 minutes to think independently, then 3 minutes to discuss with a partner.
- Have pairs share their top problem with the class. Record these on chart paper.

Main Activity

- Introduce the five phases of Design Thinking: Empathise, Define, Ideate, Prototype, Test.
- Explain that design thinking is human-centered: it starts with understanding people, not just the problem.
- Share a brief case study (e.g., how students redesigned a school cafeteria to reduce waste by first interviewing lunch staff and students).
- Form design teams of 3–4 students. Teams will work together for the entire 5-week unit.
- Teams review the list of problems generated in the warm-up and star the ones that most interest them.

Closure

- Exit Ticket: "Which phase of design thinking are you most excited about and why?"
- Preview: Tomorrow we will dive deep into the first phase — Empathy.

Assessment

- Observe student participation in class discussions.
- Review exit tickets for understanding of the 5 phases.

Differentiation

- Provide a visual graphic organizer of the 5 phases for students who need visual supports.
- Pair ELL students with bilingual peers during team formation.

ISTE Standards

LESSON 12
IDEATE
45–60 minutes

Brainstorming Techniques

Learning Objectives

- Apply at least two structured brainstorming frameworks (SCAMPER and Worst Possible Idea).
- Use structured frameworks to push beyond obvious solutions.
- Reflect on which brainstorming technique works best for their team.

Materials

Idea sticky notes from Lesson 11, SCAMPER reference handout, chart paper, markers.

Warm-Up

- Worst Possible Idea: In 3 minutes, generate the absolute WORST solutions to your HMW. The worse, the better.
- Discuss: What makes a bad idea bad? Can we flip a bad idea into a good one?

Main Activity

- Introduce SCAMPER: Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, Reverse.
- Teams select their 5 favorite ideas from Lesson 11 and apply at least 3 SCAMPER operations to each.
- Generate at least 10 new evolved ideas.
- Mix-and-Match: Teams combine two existing ideas to create a hybrid.

Closure

- Reflection: "Which technique — Crazy Eights, Worst Possible Idea, or SCAMPER — generated your team's best ideas? Why?"

Assessment

- At least 10 new ideas generated using SCAMPER.
- Willingness to engage with "worst possible ideas" without judgment.

Differentiation

- Provide a SCAMPER prompt card for each letter with an example.
- Allow teams to focus on 2 SCAMPER letters if 3 feels overwhelming.

ISTE Standards

- 1.4.a — Know and use a deliberate design process for generating ideas.

NGSS Science & Engineering Practices

- Constructing Explanations & Designing Solutions — Apply scientific ideas or evidence to construct an explanation.

LESSON 13
IDEATE
45–60 minutes

Ideation Brainstorm Cards (30 Cards)

Print and cut out the 30 cards below. They are divided into three categories, exactly as introduced in Lesson 13. Students draw these cards randomly to push their thinking in new directions, combine unrelated concepts, and work within creative constraints.

Card Categories

- **Inspiration (Blue):** Look to nature, art, and the world around you for unexpected solutions.
- **Constraints (Red):** Limit your resources or time to force creative problem-solving.
- **Modifiers (Green):** Change the perspective, scale, or user to see the problem differently.

Instructions for Teachers

Print the following pages on cardstock or heavy paper. Cut along the dotted lines. Mix the cards together, or keep them separated by category for targeted activities (see Lesson 13). Laminating the cards will help them survive multiple class periods and years.

INSPIRATION

Biomimicry: Bird
How would a bird solve this problem? Think about nests, flight, or keen sight.

INSPIRATION

Biomimicry: Tree
How would a tree solve this? Think about deep roots, branching out, or seasonal change.

INSPIRATION

Biomimicry: Ant Colony
How would an ant colony solve this? Think about teamwork, trails, and carrying heavy loads.

INSPIRATION

Art: Sculptor
How would a sculptor solve this? Think about shaping, carving, and 3D forms.

INSPIRATION

Art: Painter
How would a painter solve this? Think about blending, layering, and creating perspective.

INSPIRATION

Nature: Water
How would water solve this? Think about flowing around obstacles, erosion, or freezing solid.

INSPIRATION

Nature: Spider Web
How would a spider web solve this? Think about stickiness, intricate networks, and trapping.

INSPIRATION

Art: Musician
How would a musician solve this? Think about rhythm, harmony, and amplifying sound.

49. Ideation Cards (Visual Layout)

INSPIRATION

Nature: Chameleon
How would a chameleon solve this? Think about blending in, adapting, and quick reflexes.

CONSTRAINT

Budget: $1.00
You only have $1.00 to spend on materials for your solution. What do you do?

CONSTRAINT

Size: Shoebox
Your entire solution must fit inside a standard shoebox when stored or not in use.

CONSTRAINT

Weight: Feather
Your solution must weigh less than 1 pound. How do you make it lightweight?

CONSTRAINT

Source: 100% Recycled
Every single material used in your solution must be recycled or repurposed from trash.

CONSTRAINT

Wearable
Your solution must be worn on the body (like clothing or a hat), not carried or set down.

MODIFIER

Scale: Giant
Make your idea 10 times bigger than normal. How does changing the scale change the function?

MODIFIER

User: Kindergartener
Redesign your solution so a 5-year-old could understand and use it perfectly.

INSPIRATION

Nature: Beaver
How would a beaver solve this? Think about building dams, altering environments, and using wood.

CONSTRAINT

Material: Paper Only
Your solution must be constructed entirely out of paper. No tape, no glue, just paper folding.

CONSTRAINT

Energy: No Electricity
Your solution cannot use any electricity or batteries. It must be 100% human-powered.

CONSTRAINT

Time: 2 Minutes
Your solution must be assembled or deployed in under 2 minutes. Speed is key.

CONSTRAINT

Sound: Total Silence
Your solution must make absolutely no noise when used. Complete silence required.

CONSTRAINT

No Fasteners
You cannot use tape, glue, staples, or string. How will you hold it together?

MODIFIER

Scale: Micro
Make your idea 10 times smaller. How could a tiny version of your solution still work?

MODIFIER

User: Grandparent
Redesign your solution so a 90-year-old could use it comfortably and safely.

Final Presentation Rubric

Use this rubric to assess team presentations. Each category is worth a maximum of 20 points, for a total of 100 points. The math is designed for easy grading: Exemplary = 20, Proficient = 16, Developing = 12, Beginning = 8.

Category	Exemplary (20 pts)	Proficient (16 pts)	Developing (12 pts)	Beginning (8 pts)
Empathy & Definition	Presents deep, nuanced user insights. POV statement is specific, human-centered, and perfectly scoped. HMW question opens up rich solution spaces.	Presents clear user insights. POV statement is adequate but may lack some specificity. HMW question is functional.	Presents superficial insights based on assumptions rather than data. POV statement is too broad or too narrow. HMW question suggests a specific solution.	Shows little evidence of empathy research. POV statement is missing or fundamentally flawed. No clear HMW question.
Ideation & Innovation	Generated a high volume of diverse ideas. Successfully used SCAMPER/Ideation Cards to push beyond obvious solutions. Final idea is highly innovative.	Generated a good number of ideas. Attempted structured brainstorming. Final idea is solid and creative, though perhaps slightly conventional.	Generated only a few ideas, mostly obvious solutions. Little evidence of structured brainstorming techniques. Final idea is conventional.	Settled on the first idea generated. No evidence of brainstorming or divergent thinking. Final idea lacks creativity.
Prototype & Build	Prototype clearly tests the core function. Materials were chosen strategically for their properties. Build is sturdy enough for testing and shows high effort.	Prototype tests the core function. Materials are appropriate. Build is functional though may have minor structural weaknesses.	Prototype only loosely connects to the core function. Material choices seem random. Build is fragile or incomplete.	Prototype does not test the core function. Build is messy, non-functional, or shows minimal effort.
Testing & Iteration	Followed the User-Testing Protocol precisely. Unbiased questions yielded rich data. Iteration directly and logically addresses the most critical feedback.	Followed the protocol adequately. Some leading questions. Iteration addresses feedback, but may focus on less critical issues.	Deviated from the protocol. Leading questions influenced users. Iteration was cosmetic rather than functional.	Did not follow the protocol or gathered no useful data. No meaningful iteration was made to the prototype.
Presentation & Collaboration	Told a compelling story of the design journey. All members contributed equally. Visual aids were highly effective. Handled Q&A; with confidence.	Presented the process clearly. Most members contributed. Visual aids were helpful. Answered Q&A; adequately.	Presentation was disjointed or focused only on the final prototype. Uneven participation. Visual aids were minimal.	Presentation was disorganized. Only 1–2 members spoke. No visual aids. Unable to answer questions about the process.

Scoring Summary

Category	Score
Empathy & Definition	____ / 20
Ideation & Innovation	____ / 20
Prototype & Build	____ / 20

Aggregated Materials Shopping List

This shopping list aggregates every material referenced in the 25 lessons. Quantities are estimated per **team of 4 students** for the full 5-week unit. Adjust based on your class size and team configuration. The estimated cost covers the entire 5-week unit; most materials can be sourced from recycled donations, dollar stores, or bulk classroom supply orders.

Recycled Materials (Free — Request from Families)

Material	Per Team	Class of 24 (6 teams)	Source
Cardboard boxes (various sizes)	8–10	50–60	Family donations, Amazon deliveries
Plastic bottles (clean, dry)	5	30	Family donations, recycling bin
Paper towel rolls	5	30	Family donations, school custodian
Egg cartons	3	18	Family donations
Cereal boxes	4	24	Family donations
Plastic container lids (yogurt, etc.)	6	36	Family donations

Adhesives & Fasteners

Material	Per Team	Class of 24 (6 teams)	Est. Cost
Masking tape (1" roll)	2 rolls	12 rolls	$1.50/roll = $18
Duct tape (10 yd roll)	1 roll	6 rolls	$4/roll = $24
Glue sticks	4	24	$0.50 each = $12
White glue (4 oz bottle)	1	6	$1.50 each = $9
Rubber bands (assorted)	20	120	$3 (1 lb box)
Brass brads	15	90	$3 (100-count box)
Paper clips	20	120	$2 (100-count box)
Pipe cleaners	15	90	$3 (100-count pack)
Zip ties	10	60	$5 (100-count pack)

Cutting & Drawing Tools

Quick Reference Card

This one-page reference card summarizes the entire 5-week unit at a glance. Print and pin it near your desk, share it with substitute teachers, or distribute it to families who want to follow along. Each phase includes its key question, key deliverable, and the lesson numbers that cover it.

Phase	Key Question	Key Deliverable	Lessons
1. EMPATHISE Week 1	Who is my user, and what do they *really* need?	Completed Empathy Map (Says / Thinks / Does / Feels)	Lessons 1–5
2. DEFINE Week 2	What specific problem am I trying to solve, and for whom?	Problem Statement (POV) + "How Might We" question	Lessons 6–10
3. IDEATE Week 3	How many different solutions can I imagine?	Top idea selected from Impact/Feasibility matrix	Lessons 11–15
4. PROTOTYPE Week 4	How can I make my idea physical enough to test?	Functional, testable V1 prototype	Lessons 16–20
5. TEST Week 5	What does my user think, and how can I improve?	Iterated V2 prototype + final presentation	Lessons 21–25

Daily Pacing Snapshot

Each daily lesson is designed for a 45–60 minute block. Combine two lessons for 90-minute block periods, or split longer lessons (5, 19, 20, 22) across two periods for shorter schedules.

Week	Phase	Daily Lesson Titles
1	Empathise	L1: Intro to DT · L2: Empathy vs. Sympathy · L3: Identifying Your Community · L4: Interview Techniques · L5: Empathy Research
2	Define	L6: Organizing Data · L7: Patterns & Themes · L8: POV Statements · L9: Problem Statements · L10: HMW Questions
3	Ideate	L11: Intro to Ideation · L12: Brainstorming Techniques · L13: Ideation Cards · L14: Building on Others' Ideas · L15: Selecting Top Ideas
4	Prototype	L16: Intro to Prototyping · L17: Materials Exploration · L18: Prototype Planning · L19: Building (Day 1) · L20: Building (Day 2)
5	Test	L21: Intro to User Testing · L22: Conducting User Tests · L23: Iterating · L24: Preparing Presentations · L25: Final Presentations

The Four Brainstorming Rules

- **Defer Judgment.** No idea is "bad" during a brainstorm. Critique comes later.

73. TPT Review Request Page

WHAT'S INSIDE

The Complete Mega Bundle

Everything you receive in the full 73-page Design Thinking Curriculum

73	25	6	30
TOTAL PAGES	LESSON PLANS	TEMPLATES	IDEATION CARDS

CURRICULUM FOUNDATION

- Premium branded cover page
- Clickable Table of Contents
- Introduction & How to Use This Resource
- ISTE & NGSS Standards Alignment (2 tables)
- 5-Week Unit Overview & Pacing Guide
- Design Thinking Process Overview
- Pre-Unit Teacher Preparation Checklist

PRINTABLE TEMPLATES (6 TOTAL)

- Empathy Interview Guide
- Problem Statement Template (POV formula)
- 30 Ideation Brainstorm Cards
- Prototype Build Journal
- User-Testing Protocol
- Final Presentation Rubric (100 pts)
- Facilitator Implementation Notes

WEEKLY LESSON PLANS (25 TOTAL)

- Week 1 — Empathise (Lessons 1–5)
- Week 2 — Define (Lessons 6–10)
- Week 3 — Ideate (Lessons 11–15)
- Week 4 — Prototype (Lessons 16–20)
- Week 5 — Test & Present (Lessons 21–25)
- Each lesson: Objectives, Materials, Warm-Up, Main Activity, Closure, Assessment, Differentiation, ISTE & NGSS Standards

MEGA BUNDLE ADDITIONS (NEW)

- Aggregated Materials Shopping List
- Glossary of Design Thinking Terms (27 terms)
- Family Communication Letter Template
- Student Self-Assessment Rubric
- Sample Filled-In Templates (worked examples)
- Quick Reference Card (one-page summary)
- Premium TPT Review Request closing page

★ Get the full 73-page Mega Bundle at the UM Printables store on TpT ★