

Planning Effective and Engaging Science Unit Plans

Step-by-Step Guide for Instructional Designers and Facilitators

✓ Step 1: Start with the “I Can” Statements

- Review the “I Can” statements for your unit. These are your learning goals and success criteria.
- Use them to clarify the learning intentions and define what evidence of learning will look like.

Visible Learning Tip: High-impact learning starts with a clear understanding of the goal. Make the “I Can” statements visible to students and revisit them throughout the unit.

✓ Step 2: Organize Your Lesson Plans Using the 5E Model

The 5E model helps structure inquiry and deepen understanding:

5E Phase	What to Consider	Resource Match
Engage	Hook students, activate prior knowledge, spark curiosity	Demos, phenomena, images, thought-provoking questions
Explore	Hands-on investigations, group tasks, and trial-and-error learning	Labs, simulations, team challenges, research, discussions
Explain	Formalize understanding through discussion and instruction	Mini-lessons, texts, videos, anchor charts, jigsaw
Elaborate	Apply understanding to new scenarios, extend thinking	Projects, cross-curricular tasks, real-world connections/applications
Evaluate	Assess progress toward goals (formative or summative)	Exit tickets, reflections, rubrics, peer/self checks, discussions, skills assessment

Pre-sorted resources for each phase have been identified for you to choose from. When selecting, students’ needs are at the center. Is there an effective strategy that can be used for multiple steps of the 5E lesson plan to maximize the instructional block?

✓ Step 3: Embed Total Participation Techniques (TPTs)

Use TPTs to ensure all students are engaged and thinking throughout the lesson. Some examples are:

Total Participation Techniques (TPT)	When to Use
Quick Writes/Quick Draws	Engage or Explain phases
Think-Pair-Share	During Explain or Elaborate
Whiteboard Splash	Explore, Explain, or Evaluate phases
ABC Summaries	End of Elaborate or Evaluate
Ranking/Sorting	Explore or Elaborate

Visible Learning Tip: Use TPTs to check for understanding and provide feedback that moves learning forward. Additional TPT strategies can be found using [K20Learn.com](https://www.k20learn.com).

✓ Step 4: Align Activities with Learning Goals

- For each lesson:
 - What is the learning goal?
 - How will students show understanding?
 - What feedback will help them grow?

Use learning intentions, success criteria, and evidence-based feedback throughout.

✓ Step 5: Sketch Your Unit Plan

Use this simple outline for each lesson:

1. **I Can Statement(s):**
2. **5E Progression and Phases:**
3. **Activity Summary:**
4. **Total Participation Techniques (TPT(s)) Used:**
5. **Assessment (formative/summative):**
6. **Student Evidence of Learning:**



REMEMBER: Great science instruction is student-centered, grounded in active learning, phenomena-based, and driven by clear goals, student and facilitator reflection, and actionable feedback.