

6 Phases of Learning: Designing Student Learning Experiences that Stick

Phase 1 – Become Interested

[Jump to Planner](#)

For learning to begin, students must filter out distractions and focus their minds on new learning—in short, they must pay attention to it. Every second, our brains receive millions of bits of information, yet can only process a hundred or so bits of information per second. So, to avoid sensory overload, our brains employ a pecking order to filter information, focusing first on emotionally charged stimuli, then novel or interesting stimuli, and ignoring most everything else. What this means for us as teachers is that to start the learning process for students, we must help them feel emotionally safe and become interested, or curious about, what they’re learning.

Learning Phase	Guiding Questions →	Brain Science Design Principles →	How Teachers Guide Learning
Become Interested <i>Stimuli in our sensory register catch our attention</i>	Why should students care?	Emotional Valence <i>Our brains have a “pecking order” for stimuli; we first pay attention to stimuli that have emotional valence.</i>	Prime emotion
	What will spark student interest?	Curiosity <i>After emotionally laden stimuli, our brains attend next to the novel stimuli - the unexpected, incomplete, controversial, mysterious, or gaps in our knowledge.</i>	Spark curiosity

The Classroom Toolkit

- **Emotional cues and questions:** Help students connect emotionally to their learning - feeling excitement, surprise, sadness, joy, anger, disgust, fear, contempt.
- **Show them you care:** Students will be more likely to learn if they feel their teachers are committed to helping them grasp the content or skills at hand.
- **Ask curiosity questions:** Use mystery and suspense, incomplete sequences, “I have a secret,” unusual or unexpected events to hook interest.
- **Structure academic controversy:** Engage students in rich/robust debate about content that challenges them cognitively and, when appropriate, emotionally.
- **Mind the gap:** Stimulate student background knowledge to prepare students for learning by revealing gaps in their knowledge.

Learner Experience Look-Fors

Students have an opportunity to connect and get excited about today's learning.

- Students know what standard(s) are being taught, know D11 Graduate Profile connections and what success looks like
- Students have an opportunity to review/recall previous learning and connect it to today's learning goal (through reteach, introduce new topic, pre-assessment, addressing misconceptions, etc.)
- Teachers draw students' interest into new learning through a “hook” activity

--

Once something grabs students' attention, their brains quickly size up whether to stay focused on it, turn their attention elsewhere, or simply exert less mental energy altogether. In short, students only learn what they commit to learning. And they're more apt to do that if they find personal meaning or value in what they're being asked to learn. As teachers, we can help students commit to learning by helping them see "what's in it for me" with new learning, frame learning around big ideas or compelling questions, provide (or develop with students) learning objectives and success criteria, and help students set their own personal goals for learning.

Learning Phase	Guiding Questions →	Brain Science Design Principles →	How Teachers Guide Learning
Commit to Learning <i>We determine the stimuli worthy of further attention</i>	<i>What meaning will students find?</i>	Meaning and purpose <i>Our limbic (emotional) system is more powerful than our pre-frontal (logical) cortex; thus, we must "feel" like learning.</i>	<i>Give a why</i>
	<i>What will motivate students to learn? What will connect them to the learning?</i>	Commit to learning and mastery <i>Self-reference (connecting learning to our personal lives) is a powerful motivator of learning. Thus, students are more motivated to learn - and recall later what they've learned - when they set personal goals for learning.</i>	<i>Set goals</i>

The Classroom Toolkit

- **Essential questions:** Students must see the big picture of where learning is headed, so use big ideas/essential questions to guide learning.
- **Give students a WIIFM (what's in it for me):** Students must see why something is important to learn. How will they use it later in life? How do people use it in the real world?
- **Encourage personal learning goals:** Ensure goals are mastery, not performance-oriented.
- **Develop and provide success criteria that describe mastery:** Help students set goals for mastery and/or above-and-beyond stretch goals.
- **Use organizers and objectives to show the path:** Provide lesson-specific objectives that show students how to achieve goals. Keep the objectives - the path to success - transparent, visually available, and understandable.
- **Encourage effort:** Help students develop a growth mindset/internal locus of control by tracking effort as well as anticipating roadblocks and how to overcome them.

Learner Experience Look-Fors

- Students have opportunities to set their own personal "why" through a student-friendly objective or learning target.**
- BIG enduring understanding is referred to during instruction
 - Targeted "today's why" is connected back to the BIG why and connected to the D11 Graduate Profile skills
 - Throughout the lesson, students are prompted to discuss/reflect - WHY are we learning this? What is it connected to? Why is it worth learning? How will you know when you've learned it?

Once students are interested in and committed to learning (i.e., mentally prepared to learn), a new challenge emerges: helping their brains absorb new information as they focus on new learning. Our brains more readily absorb new information when it’s presented visually and verbally—for example, when we see images paired with words, connect abstract (verbal) concepts with concrete (visual) examples, or follow a model when first learning a new process. As teachers, we can help students absorb new learning by telling and showing them what we want them to learn and encouraging them to actively engage in learning by, for example, considering thought-provoking questions or taking notes, which encourages them to extract key ideas from their learning and translate them into visual reminders (text or pictures) in their notes.

Learning Phase	Guiding Questions →	Brain Science Design Principles →	How Teachers Guide Learning
Focus on New Knowledge <i>We focus on new knowledge and skills while they’re in our working memory</i>	<i>What do I want students to think about?</i>	Active engagement <i>The only way to keep knowledge in our working memory is to think about it - to actively engage with the new knowledge or skills.</i>	<i>Engage in thoughtful learning</i>
	<i>What will I show students? How will I help them visualize important concepts?</i>	Visual learning <i>Our brains process information more effectively when it’s presented verbally and visually.</i>	<i>Support visual learning</i>

The Classroom Toolkit

- **Thought-provoking questions with wait time:** Higher-order questions combined with wait-time before calling on students prompts students to think about their learning.
- **Guessing feedback:** Mentally searching for answers creates curiosity and supports retrieval.
- **Encourage active note-taking:** Writing things down and drawing pictures enhances memory. Filling in blanks (“discovery” techniques) are also effective.
- **Teach active learning and close reading:** Show students how to quiz themselves and engage in positive self-talk.
- **Nonlinguistic representations:** We’re all visual learners, so visual aids (photos, diagrams, models) support learning, especially when students create them.
- **Modeling:** Show, don’t tell. Show students the steps you want them to learn and what mastery learning looks like (the “I do” phase).

Learner Experience Look-Fors

- Students have an opportunity to engage with new information through modeling and connection to prior knowledge.**
- Students learn new vocabulary or concepts
 - Students collaborate to process visual and verbal knowledge about the topic of study
 - Students engage in asking and answering questions to spark curiosity

As we absorb new information, we bump up against some of our brains’ natural limitations—namely, that they can only juggle a few bits of information at a time and can only stay “powered up” for a brief periods (about 5-10 minutes). As teachers, this means we need to provide students with frequent opportunities to pause and make sense of learning—connecting new learning with prior learning, clustering ideas together into categories, themes, or mental models. As it turns out, cooperative learning is often a great way to help students make sense of learning—engaging them in small-group conversations to think through what they’re learning, summarize key ideas, and hear how others are processing what they’re learning.

Learning Phase	Guiding Questions →	Brain Science Design Principles →	How Teachers Guide Learning
Make Sense of Learning While new knowledge is in working memory, we begin to cluster it and link it to prior learning	<i>How will I chunk learning and support information processing?</i>	Pausing and processing Our working memories are limited in how much information they can hold at once (about 7 items) and how long they go before “timing out” (5-20 minutes) and needing to process learning.	Provide time to process
	<i>What themes, categories, sequences, or links to prior learning do students need to make with this learning?</i>	Categorizing and clustering Memories form in our brains as neural networks - as complex webs connecting ideas. In short, we learn by connecting new learning to prior learning.	Help students categorize knowledge

The Classroom Toolkit

- **Chunk learning into bite-size segments:** Periodically pause during learning to build neural connections.
- **Cooperative learning for processing:** Effective cooperative learning strategies (i.e. reciprocal teaching) support processing.
- **Guided practice:** Immediate experiential learning boosts processing (the “we do” phase).
- **Clarifying feedback:** Balance timeliness of feedback - allowing students to “play with” new ideas - yet provide real-time guidance with new skills.
- **Similarities and differences:** Because the heart of learning is connecting new ideas to old ones, sorting and categorizing knowledge is essential for deep learning.
- **Summarizing:** We’re more likely to retain learning when we identify salient ideas, principles, and structures (i.e. summarize learning).
- **Analyzing and synthesizing questions:** Higher-order questions help students apply and connect dots with new learning.

Learner Experience Look-Fors

- Students have opportunities to practice new skills in context and cluster ideas together into categories, themes, or mental models.
- Students work towards independent practice to refine skills
 - Students can summarize, compare and contrast, analyze, and synthesize new information
 - Students can collaborate with peers in hands-on learning
 - Students will use timely feedback to learn, relearn, and unlearn as needed (i.e. self, peer, or teacher)
 - Learning is experienced in ways that foster skill development in the elements of the D11 Graduate Profile

Even after focusing on and processing new learning, it remains in a fragile state and prone to being forgotten unless we engage in a simple, yet critical, next step: repetition. The best (and perhaps only) way to store new learning in long-term memory is to practice and reflect on it. Cramming or rehearsing the same bits of new learning in a single session (called massed practice), doesn't work; at best, it leads to fast learning and fast forgetting. Students are more apt to commit new learning to memory when they engage in distributed practice—sessions spread over many days or even weeks. As teachers, we can also help students commit learning to memory by quizzing them on new learning (called retrieval practice) and showing them how to identify and address gaps in their own learning.

Learning Phase	Guiding Questions →	Brain Science Design Principles →	How Teachers Guide Learning
Practice and Reflect <i>Repetition and retrieval help us store new learning in long-term memory</i>	<i>What knowledge and skills must students commit to memory or automate?</i>	Spacing and mixing up practice <i>Memories are more likely to be stored with multiple pathways for retrieval when practice is distributed or “interleaved.”</i>	<i>Design and guide deep practice</i>
	<i>What feedback will I provide to guide deep learning?</i>	Reflecting on learning <i>Neural networks get faster (insulated like electrical wiring) through repetition. During this process, it's essential to insulate the right pathways.</i>	<i>Help students reflect on their learning</i>

The Classroom Toolkit

- **Create opportunities for independent distributed practice:** Here, massed practice can create the illusion of fluency, so it's better to use distributed practice (sessions over time) and interleaving (practicing related, but different skills). This is the “you do” phase.
- **Create opportunities for retrieval practice:** Because straining to recall learning builds retrieval pathways, use ungraded pop quizzes and other assessments to support learning.
- **Teach deliberate practice:** Show students how to practice - targeting knowledge and skills they have not yet mastered, interleaving, and distributed practice. Help students self-assess their learning, gauging what they've mastered and what they have yet to master.
- **Provide formative feedback:** Provide students with coaching feedback as they learn, helping them to reflect on their learning and identify next steps toward mastery.

Learner Experience Look-Fors

- Students have an opportunity to reflect on relevancy of the learning and self-assess progress toward learning goals.**
- Students engage in guided questioning to retrieve and recall what they've learned
 - Students can articulate what they have not yet mastered and need more practice on, based on formative checks
 - Students are encouraged to revisit challenging content for distributed practice
 - Students reflect and self assess on the targeted skills they are developing from the D11 Graduate Profile

Storing and retrieving memories are two different processes, which explains why students can “know” something yet struggle to recall it—or forget it shortly after learning it. As it turns out, we’re more apt to store and retrieve new learning when we make multiple mental connections to it, including real-life and personal connections. As teachers, we can help students create richer mental connections to new learning by giving them opportunities to extend and apply their learning into real-life learning tasks, such as analyzing systems or social issues, generating and testing hypotheses, solving complex problems, writing persuasive essays or research reports, or sharing their learning in creative ways. While this may seem like a straightforward process, our brains are, by design, really good at two things: ignoring and forgetting. Most of what enters our brain gets ignored or discarded and never enters long-term memory. By following this six-phase model of learning, you can help your students—regardless of grade level, subject area, or content— help “hack” the process of learning to successfully engage in deep learning.

Learning Phase	Guiding Questions →	Brain Science Design Principles →	How Teachers Guide Learning
Extend and Apply <i>Applying new learning in novel, meaningful ways supports retrieval</i>	<i>What will I ask students to do with their knowledge?</i>	Extension and application <i>Because we store knowledge more easily than we retrieve it (i.e. events “jog” our memory), we’re more likely to retrieve learning when we apply it in new ways.</i>	<i>Help students apply learning to new challenges</i>
	<i>How will I (and students) know they’ve mastered learning?</i>	Personal meaning and mastery <i>Our brains naturally prune information we don’t use or find meaningful; thus, if we want students to retain learning, we must help them use it in ways that are personally meaningful.</i>	<i>Help students find meaning and demonstrate deep learning</i>

The Classroom Toolkit

- **Intellectual curiosity questions:** Help students transfer knowledge and embrace curiosity thinking (i.e. “I wonder what would happen if...”) to generate their own questions.
- **Guide applied learning (generating questions and finding solutions):** Give students opportunities to explore essential questions via investigations, analyses, and syntheses; without these opportunities, learning quickly fades.
- **Support dynamic group learning:** Social learning and group projects can be a powerful way to develop deep learning, but doing it well requires both positive interdependence and individual accountability.
- **Student choice:** Providing even a few (5-6) choices of how to demonstrate learning helps students develop their own interest in and personal connections to learning.
- **Performance assessments:** Classroom assessments often measure only declarative knowledge. Performance assessments require students to demonstrate both declarative and procedural knowledge while motivating learning with student choice.
- **Provide feedback that promotes mastery:** Evaluative feedback should encourage a growth mindset and show that learning never ends; help students see what they can do better next time.


Learner Experience Look-Fors





- Students have an opportunity to connect back to the learning goal and demonstrate their current level of mastery and understanding.**
- Students can speak on the “why” of the learning and “what” success looks like
 - Students can continue to ask questions to sustain curiosity about future learning
 - Students can speak to the skills they developed both academically and within the D11 Graduate Profile elements

6-Phase Blueprint (Unit Planner)

Unit/Lesson Title*	
Big Concepts*	→ Inquiry Questions <i>Use the Big Concepts to craft 3-5 inquiry questions for your unit/lesson</i>
Learning Objective*	→ Student "I Can" Statements - Success Indicators <i>Use the Learning Objective to "chunk" instruction into 5-8 success indicators for your unit/lesson</i>

*See [Quarterly Overview](#) to copy and paste the information into these cells. Additional tools for PLC available [HERE](#)

Phase of Learning	Guiding Question	Content-Specific Planning 2020 Standards Inquiry and Essential Questions Graduate Profile Outcomes: ES MS HS	
		Students will...	Teacher will...
 Phase 1	PRIME EMOTION <i>Why should students care?</i>	Learning Objective,* Focus Standards* Hook	Learning Objective,* Focus Standards* Hook
	SPARK CURIOSITY <i>What will spark student interest?</i>		
	GIVE A WHY <i>What meaning will students find? What Graduate Profile</i>	Focus Standards,* Graduate Profile Connection* <i>Personal Connection/Goal</i>	Focus Standards,* Graduate Profile Connection* <i>Personal Connection/Goal</i>

 <p>Commit to Learning</p> <p>Phase 2</p>	<p>outcomes are connected to our "why"?</p>		
 <p>Focus on New Knowledge</p> <p>Phase 3</p>	<p>ENGAGE IN THOUGHTFUL LEARNING What do I want students to think about?</p>	<p>Focus/Supporting Standards* <i>Formative Assessments, Visual/Verbal Practice, Modeling</i></p>	<p>Focus/Supporting Standards* <i>Formative Assessments, Visual/Verbal Practice, Modeling</i></p>
 <p>Make Sense of Learning</p> <p>Phase 4</p>	<p>PROVIDE TIME TO PROCESS How will I chunk learning and support information processing?</p>	<p>Focus/Supporting Standards* <i>Formative Assessments, Mini-Lessons, Checks for Understanding, Rubrics</i></p>	<p>Focus/Supporting Standards* <i>Formative Assessments, Mini-Lessons, Checks for Understanding, Rubrics</i></p>
 <p>Practice and Reflect</p>	<p>HELP STUDENTS CATEGORIZE KNOWLEDGE What themes, categories, sequences, or links to prior learning do students need to make with this learning?</p>	<p>Graduate Profile Connection* <i>Formative Feedback, Targeted Practice</i></p>	<p>Graduate Profile Connection* <i>Formative Feedback, Targeted Practice</i></p>
<p>SET GOALS What will connect them to the learning?</p>			
<p>SUPPORT VISUAL LEARNING How will I help them visualize important concepts?</p>			

<p><u>Phase 5</u></p>	<p>HELP STUDENTS REFLECT ON THEIR LEARNING <i>What feedback will I provide to guide deep learning? What Graduate Profile connections are evident in students' reflections?</i></p>		
<div data-bbox="113 412 302 591" data-label="Image"> <p>Extend and Apply</p> </div> <p><u>Phase 6</u></p>	<p>HELP STUDENTS APPLY LEARNING TO NEW CHALLENGES <i>What will I ask students to do with their knowledge?</i></p> <p>HELP STUDENTS FIND MEANING AND DEMONSTRATE DEEP LEARNING <i>How will I (and students) know they've mastered learning? What did students learn about self and content?</i></p>	<p>Performance Assessment* <i>Independent Mastery, Application, REPA Guide</i></p>	<p>Performance Assessment* <i>Independent Mastery, Application, REPA Guide</i></p>

*See [Quarterly Overview](#) to copy and paste the information into these cells. Additional tools for PLC available [HERE](#)