

Brain-Based Learning System Design Guide

A practical diagnostic for mapping whether brain-based learning principles are built into your program - or merely gestured at.

For each principle, work through the diagnostic questions with your design team. If you cannot point to a specific place in the program where the principle lives, you have found a design gap. Use the design move as a concrete first step.

HOW TO USE THIS GUIDE

Use the first page to diagnose each principle. Use the system map to locate where those principles appear across the learner journey. The goal is not to fill every cell. The goal is to identify the gaps most likely to weaken attention, transfer, reflection, performance, or evidence-based decision-making.

FIVE-PRINCIPLE DESIGN DIAGNOSTIC

PRINCIPLE	DIAGNOSTIC QUESTIONS	DESIGN MOVE
01 Cognitive Load & Learning Fatigue	<p>Cognitive load is finite. Your program either manages it deliberately or accumulates it accidentally.</p> <ol style="list-style-type: none"> 1. Where in your program does cognitive load spike - and is that spike visible in your design, or hidden inside the content? 2. When a session runs long, what gets cut first: practice, reflection, or content delivery? 3. Are learners working through one new thing at a time, or multiple new things at once? 	<p>DESIGN MOVE Identify the highest-load moment. Add a chunking break, retrieval prompt, spacing move, or worked example before it.</p>
02 Motivation	<p>Motivation that drives transfer comes from authentic context. Compliance and completion produce attendance, not behavior change.</p> <ol style="list-style-type: none"> 1. Where does motivation come from - authentic context and transfer to the job, or compliance and completion? 2. Can a learner explain why this content matters to their actual work? 3. Does the program use real workplace artifacts and decisions, or generic case studies built for a different audience? 	<p>DESIGN MOVE Replace one generic example with a real artifact from the learner's work environment - a real document, decision, or customer interaction.</p>
03 Reflection	<p>Reflection only transfers when it is structured, timed, and tied to real work. Generic end-of-session prompts produce generic answers.</p> <ol style="list-style-type: none"> 1. Where is reflection sequenced into your program - and is it tied to real work? 2. Are reflection questions specific to what the learner just practiced, or interchangeable across any topic? 3. Does anyone read or respond to what learners write, or does reflection disappear into a void? 	<p>DESIGN MOVE Rewrite one reflection prompt so it depends on the activity learners just completed. A generic answer should no longer work.</p>
04 Metacognition	<p>Metacognitive checkpoints have to be designed in. Unscaffolded "think about your learning" prompts produce shallow self-reports.</p> <ol style="list-style-type: none"> 1. Where do learners check their own thinking - and is that checkpoint designed in, or left to chance? 2. Are learners predicting before they are tested, or only assessed after the fact? 3. Do learners compare their self-assessment against actual performance? 	<p>DESIGN MOVE Add a prediction prompt before a practice activity. Ask learners to estimate confidence before the task, then surface the gap afterward.</p>
05 Neuromyths	<p>Brain-based design choices need a citation, not a vibe. Plausible misconceptions are how good intentions become bad design.</p> <ol style="list-style-type: none"> 1. Which design choices are justified by brain-based reasoning that you could not defend with a citation? 2. Are you matching content to learning styles, left-brain/right-brain claims, or the 10% brain myth? 3. Where did your team's beliefs about how learners learn come from - research, training programs, or general absorption? 	<p>DESIGN MOVE Pick one brain-based justification. Try to find a citation that supports it. If you cannot, it is a vibe, not evidence.</p>

Where Do These Live in Your Design?

A brain-based learning system is not five principles applied separately. It is a single design that holds all five - making decisions visible enough to evaluate and durable enough that the next designer does not have to rebuild them from scratch.

SYSTEM MAP

For each phase, mark: Built in Implicit Missing Not applicable

Program Phase	Cognitive Load & Fatigue	Motivation	Reflection	Metacognition	Evidence Check
Before the program starts (intake, pre-work, framing)	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A
Opening / kickoff	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A
Core content delivery	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A
Practice and application	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A
Feedback and assessment	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A
Closing / transition to work	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A
After the program (reinforcement, spacing, transfer support)	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A	<input type="checkbox"/> Built in <input type="checkbox"/> Implicit <input type="checkbox"/> Missing <input type="checkbox"/> N/A

Reading Your Map

- Lots of "Implicit" marks: principles are present but invisible. They depend on the current designer remembering them.
- Clusters of "Missing" in the same row: whole phases are operating without brain-based intent.
- Clusters of "Missing" in the same column: one principle has been forgotten across the program.
- Lots of "Built in" marks but weak results: the principles may be present but not coordinated.

Three Questions for the Design Team

1. Which gaps matter most? Which missing principle is most likely to undermine outcomes?
2. Who is currently carrying this in their head? If they leave, what happens to that principle?
3. What would it take to move one implicit mark to built in before the next iteration?

When to Bring in a Design Partner

If the map has more implicit than built-in marks, the issue usually is not a knowledge problem - it is a capacity problem.

LX Studio helps organizations make design decisions visible, documented, and durable so the system does not depend on one person carrying the whole model in their head.

Contact LX Studio to start the conversation ->