

Cognitive Load Is Not About How Much Is On Screen

Some of the load belongs to the task. The rest you added. Only one of them is yours to cut.

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Cognitive load = the mental work a person has to do to get something done.

The problem: most teams read it as screen density. Strip buttons, add white space, call it solved. Then the hard tasks get harder and nobody can say why.

Cognitive load theory splits it in two. Intrinsic load is the task's own complexity, and a 2025 review in Health Education and Behavior says to tune that load to the audience, not strip it out. Extraneous load is what your presentation added, and that is the part to cut. Both draw on one budget. Memory spent on your layout is memory not spent on the job.

White space is not a measure of load. A nearly empty screen can still be exhausting, and a dense one can be effortless.



Every sticky note on that monitor is a step the screen made somebody remember.

1. Counting elements instead of counting what is held at once

What teams ship: a density audit. Remove fields, hide controls, count what is left.

Why it fails: load comes from elements that interact, not elements that sit there. Twelve read-only labels cost almost nothing. Three fields whose answers depend on each other cost a lot.

Ship instead: count what a user must hold in their head for one decision. Cut that. Leave the rest.

2. Hiding necessary complexity behind extra steps

What teams ship: a wizard. The same work, sliced into five calm screens.

Why it fails: slicing does not remove intrinsic load. It turns it into memory work. Step four now depends on something the user saw on step two and cannot see.

Ship instead: split by independence, not by tidiness. If two choices constrain each other, they belong on one screen.

3. Trusting a click budget

What teams ship: the three-click rule.

Why it fails: Nielsen Norman Group calls it false and says no published study backs it. Joshua Porter's test found dropoff did not rise past three clicks, and satisfaction did not fall. NN/g's own example: a government site where the target is three clicks away and the third click is the 133rd link in a list. The rule passed. The user did not.

Ship instead: time the real task and watch where people stall. Three slow clicks are worse than five fast ones.

4. Treating capacity as a fixed number

What teams ship: seven items per menu, because of Miller.

Why it fails: the number moves. A 2024 paper in the Journal of Cognition put adult capacity near four units in one task and nearer six or seven in another. The gap came from how long items were shown and how much attention the task's own procedure ate. That is not a budget you can design against. NN/g adds the sharper point: two unsupported rules, three clicks and seven items, contradict each other.

Ship instead: group by meaning. Twenty items in four labelled groups beat seven unrelated ones.

5. Designing for the first day, forever

What teams ship: tooltips, inline explanations, a tour.

Why it fails: the expertise reversal effect. Support that helps a beginner becomes extra load for someone who already knows, because they must read it to learn they did not need it.

Ship instead: let guidance fade. Dismissible help, earned shortcuts, density that rises with use.

Which load is it

WHAT YOU SEE	WHICH LOAD	WHAT TO DO
A label that shifts meaning between screens	Extraneous	Delete it
Step four needs a number from step two	Extraneous	Delete it
Help an expert reads only to skip it	Extraneous	Delete it
Three fields that constrain each other	Intrinsic	Show them together
A trade-off with no correct answer	Intrinsic	Support the choice
Rules the user has to satisfy	Intrinsic	Keep them visible

The audit

Open your hardest screen. Four questions.

1. What must the user hold in their head to decide? Write the list. That is your floor.
2. What else is on the screen? Everything off that list is yours. You added it.
3. Where did a split turn visible information into memory?
4. Does this work on day fifty, or only on day one?

If the list in question two runs long, you do not have a busy screen. You have a screen charging the user for your decisions.

Checked against

Read on 7 October 2026.

- Health Education and Behavior: cognitive load theory applied to program design, on intrinsic load being tuned to the audience rather than removed, and extraneous load competing for the same working memory
- Nielsen Norman Group: the 3-click rule for navigation is false, with the Porter study and the 133rd-link example
- Journal of Cognition: working memory capacity estimates land near four units or nearer seven depending on presentation time and attention to the task procedure
- Chartered College of Teaching: the expertise reversal effect, where support that helps novices becomes extraneous load for people who already know