DIGITAL FLUENCY @WestEd

Friction by Design

A FRAMEWORK FOR CENTERING LEARNING IN THE AGE OF AI

AI is designed to reduce effort. It accelerates, assists, organizes, and polishes, often making work feel easier. In many contexts, that's a benefit. But in learning, ease isn't always the goal. The messy, effortful parts of the learning process—struggling with ideas, revising work, grappling with confusion, engaging in dialogue—are not inefficiencies to eliminate; they are where growth happens. These forms of friction are not barriers to learning. They *are* the learning.

Of course, not all friction supports learning. Some kinds get in the way. Busywork, confusing instructions, dense language, rigid formatting, and unnecessary gatekeeping can stall momentum or shut students out entirely. These are design flaws, not developmental opportunities—and they often fall hardest on students who already face barriers to access.

AI has the power to reduce both kinds of friction. This is what makes its use in education so powerful, and also so risky. Without careful design, AI can just as easily remove the thinking as it can remove the noise. Using AI in learning contexts requires more than permission or enthusiasm, it demands intentionality.

Friction by Design is a framework for intentionality. It helps educators and leaders distinguish between the friction that fuels learning and the friction that obstructs it. It invites us to redesign learning experiences so that AI becomes a tool for deepening engagement, not bypassing it.

The goal is not to preserve *all* friction, but to **preserve the mental, social, and emotional efforts that make learning meaningful while reducing or eliminating obstacles that get in the way.**

> AI can scaffold or shortcut learning. The difference lies not in the tool, but in the way we design learning around it.

That kind of effort doesn't just come from challenge, it comes from care. Students persist not only when tasks are hard, but when they feel worth doing: when they spark curiosity, offer relevance, or invite exploration. Sometimes that's joy. Sometimes it's purpose. Good design doesn't just preserve friction. It helps students want to stay in it.

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Friction takes many forms in learning. It can arise in the thinking itself or in the structures around it. **Productive friction** drives learning forward. It emerges when students wrestle with complex ideas, revise their thinking, or engage in meaningful dialogue. **Unproductive friction** disrupts learning. It causes students to hesitate, struggle to access materials, or feel overwhelmed by irrelevant barriers. AI has the capacity to reduce both kinds of friction; its impact depends entirely on how and where it is used.

Friction by Design doesn't argue against using AI—it argues for using it well. The goal isn't frictionless learning; it's learning that's worth the effort.

Five Lenses for Designing with AI Intentionally

PRODUCTIVE FRICTION *drives learning*

Cognitive Ownership refers to the student's role as the thinker, the one generating ideas, making decisions, and constructing meaning. This is friction we must protect. When AI takes over this role, students may appear successful without actually learning. Designing with AI requires us to shift our focus from what is produced to who did the thinking and how.

Productive Struggle is the kind of challenge that pushes students just beyond their current understanding. It's the effortful engagement that makes learning stick. This is friction we want students to stay with; it's messy, uncomfortable, and essential to growth. AI can help students remain in the stretch zone, offering support without erasing the challenge itself.

Social Sense-Making happens when students build understanding through discourse, disagreement, and shared inquiry. This kind of friction is generative. The uncertainty and vulnerability of collaborative learning aren't flaws; they're essential. AI's ability to instantly deliver answers shouldn't replace these moments of shared sense-making.

UNPRODUCTIVE FRICTION *disrupts learning*

Activation Energy is friction that makes it hard to begin: a blank page, a vague prompt, the weight of uncertainty. Without a clear invitation, students may stall before learning takes shape. AI can help make the entry feel meaningful, spark curiosity, or nudge students to lean in. It can offer just enough structure to begin while keeping the thinking with students.

Access Barriers are structural obstacles that block students from participating fully: dense language, rigid formats, or unclear expectations. This is unproductive friction. It introduces struggle without supporting thinking. For many learners, especially those with diverse needs, AI can be a powerful tool for reducing these barriers.

The *Friction by Design Framework* is a product of the Digital Fluency project at WestEd. Connect with us online or by email to learn more about AI implementation in learning at **digitalfluency.wested.org** or **digitalfluency@wested.org**.

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