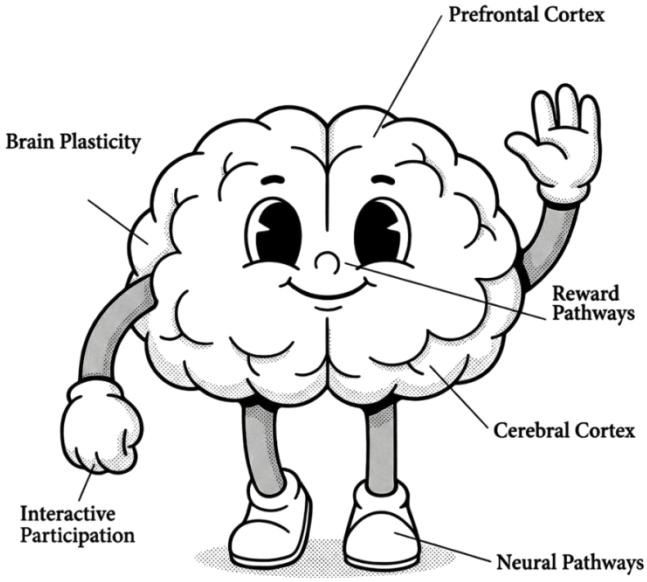



# THE BRENI PLAYBOOK

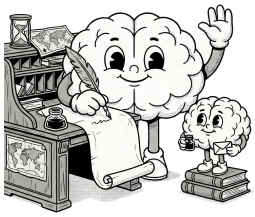
*The Science and Strategy Behind The Build*

***"Your Brain's New Playground"***

NON-CONFIDENTIAL — FOR INVESTORS, PARTNERS, TEAM MEMBERS, AND OUR LEARNERS

Version 1.0.0

# A Letter from the Co-Founders



***Education is the most powerful force for human uplift. We built Breni to make it available to everyone, everywhere, in every language.***

You are holding, or reading the foundational document of a company we believe will reshape how humanity learns. Not incrementally. Not at the margins. But fundamentally, scientifically, and at scale.

When we started Breni, we asked a simple question: Why is world-class education still inaccessible to billions of people? The answer wasn't a lack of content. The internet is awash with information. The answer was engagement, personalization, and the absence of a system that truly understands how the human brain learns best.

We built Breni to close that gap. We combined the neuroscience of memory with the motivational psychology of games. We designed AI systems that adapt to every individual learner. We created a platform where anyone can learn anything, from coding to chemistry, from business negotiation to a new language, using methods that are proven, not just popular.

This Playbook is our declaration. It explains what we believe, why we built what we built, and how we intend to change the world. It is written for investors who want to understand the thesis, for candidates who want to join a mission-driven team, for partners who want to build with us, and for learners who will benefit from everything we create.

We don't pretend to have all the answers. But we are deeply committed to finding them, rigorously, empirically, and with the learner at the center of every decision.

Welcome to Breni. Your brain's new playground.

**— Sadiq & — Bilal**

# Executive Summary

Breni is an AI-powered personalized learning app built on the science of how the brain learns best. Our mission is to democratize world-class education by enabling anyone to learn anything, in any language, using scientifically proven methods.

| | |
|---|---|
| **Category** | AI-Powered Adaptive Learning App |
| **Market** | Global EdTech — $7.3T addressable market |
| **Positioning** | Duolingo for everything — any subject, any language, any learner |
| **Core Technology** | Adaptive AI, spaced repetition, gamification engine |
| **Languages** | All major world languages |
| **Target Users** | Students, professionals, lifelong learners — anyone |
| **Mission** | Democratize world-class education for everyone |
| **Vision** | Become the universal learning layer for humanity |
| **Website** | https://breni.xyz |

## The Opportunity

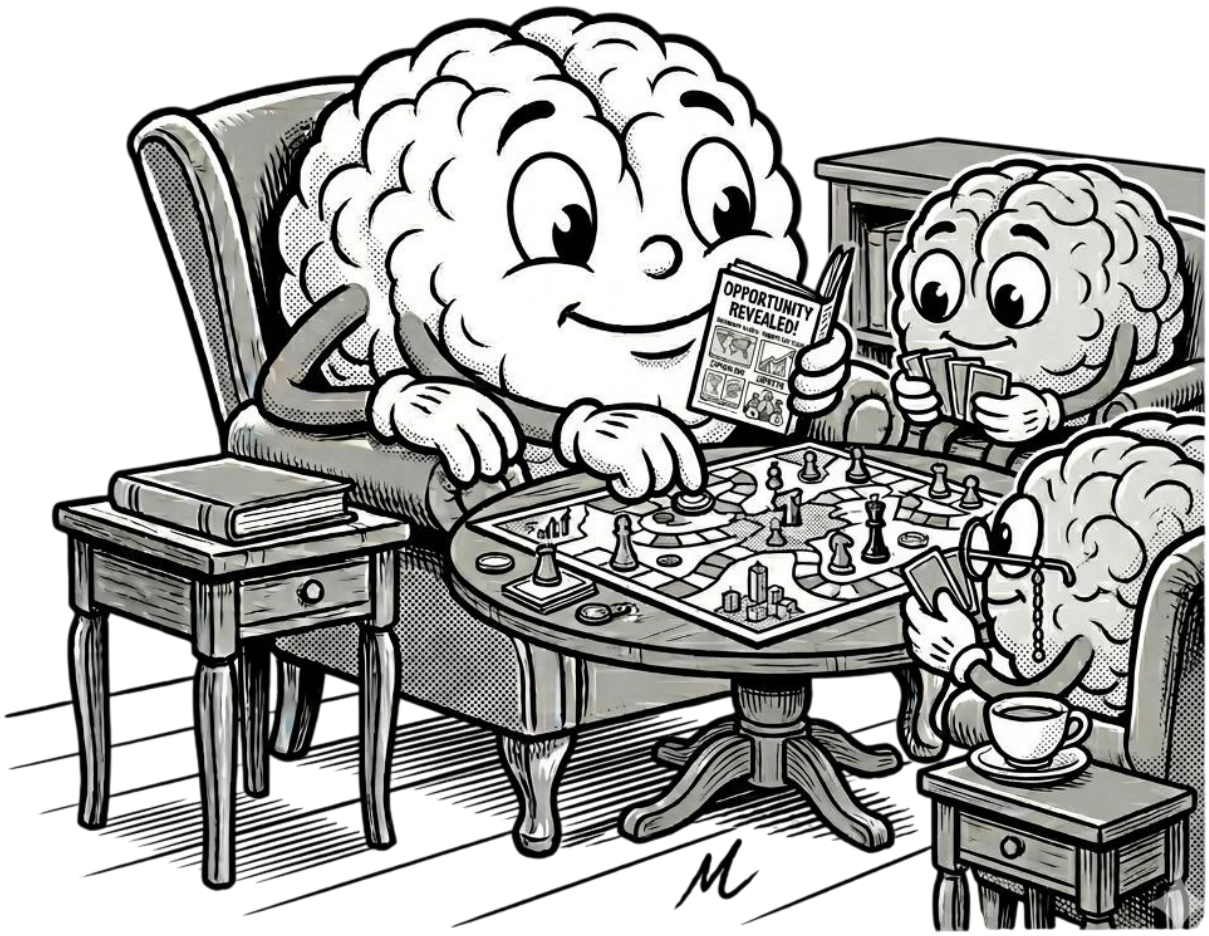
The global education market is the largest untapped market in history. Over 1 billion people lack access to quality education. Millions more are enrolled in education systems that fail to deliver measurable outcomes. Meanwhile, the science of learning has advanced enormously, yet most educational institutions have not adopted evidence-based methods at scale.

Breni is built at the intersection of cognitive science, artificial intelligence, and motivational psychology. We don't just deliver content, we engineer learning experiences that are scientifically optimized to maximize retention, engagement, and real-world skill transfer.

## Why Now

- Large Language Models now enable truly personalized, conversational AI tutors at scale
- Mobile penetration gives Breni access to billions of learners globally
- Decades of learning science research are now ready to be operationalized in software

– Remote work has created massive demand for upskilling and reskilling
– Gamification has proven its ability to drive daily engagement at consumer scale (Duolingo: 575M+ users)



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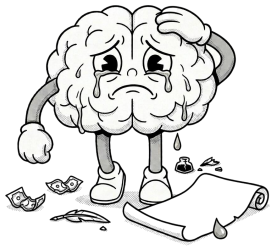
# Why Education Must Change



***The world spends $5 trillion on education annually. Most of it is ineffective.***

The crisis in global education is not a crisis of access alone, though access remains deeply unequal. It is a crisis of effectiveness. Billions of students sit in classrooms or stare at screens, following curricula designed for industrial-era uniformity, assessed on metrics that measure memorization rather than mastery, and motivated by fear of failure rather than joy of discovery.

## The Evidence of Failure

The data is stark:

- More than 617 million children and adolescents are not achieving minimum proficiency in reading and mathematics (UNESCO, 2022)
- The average worker will need to reskill 3-4 times over their career, yet most platforms offer one-size-fits-all courses
- Traditional lecture-based learning yields average retention rates of just 5 - 10% after 24 hours (National Training Laboratories)
- Over 40% of college students in the US drop out before completing a degree (NCES, 2023)
- The $300B corporate training market delivers negligible measurable skill improvement for most participants

## The Industrial Model Is Broken

The modern education system was designed in the 19th century for a world that no longer exists. It was optimized for standardization, not personalization. For compliance, not curiosity. For rote memorization, not deep understanding. The textbook, the lecture, the standardized test, these are technologies of the industrial era, applied to a post-industrial world with catastrophic misalignment.

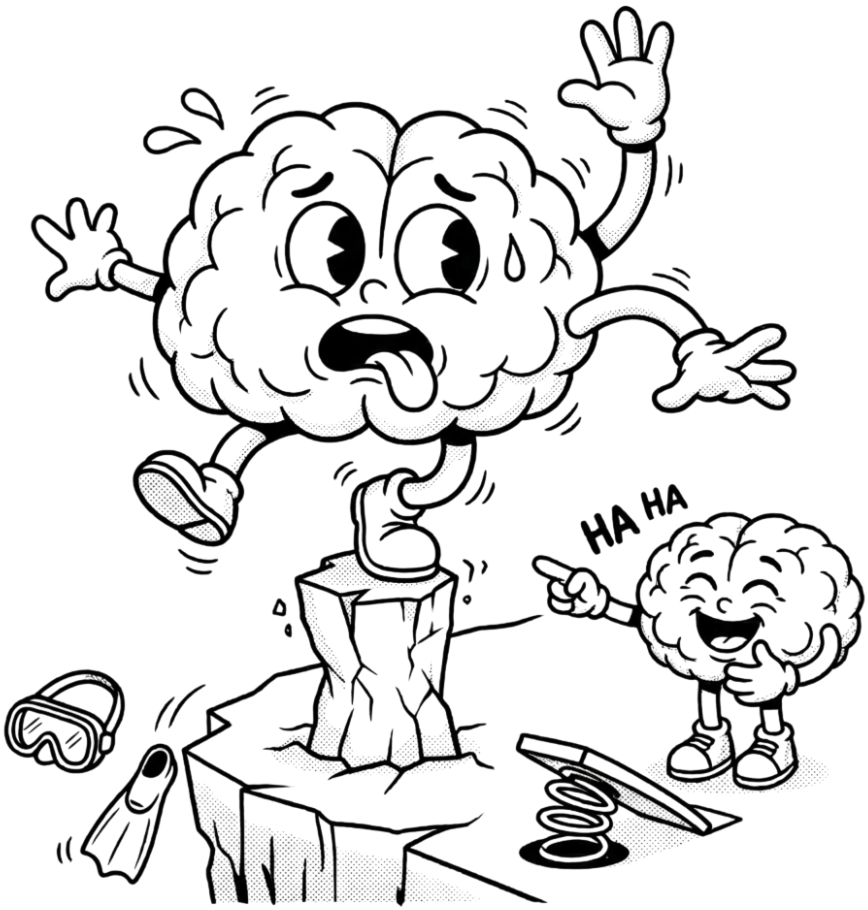
The irony is that we know exactly how humans learn best. Decades of cognitive science and educational psychology research have produced a rich, actionable body of knowledge. Spaced repetition. Retrieval practice. Interleaving. Deliberate practice. Mastery learning. These techniques

consistently outperform traditional instruction by 2x, 3x, even 5x in rigorous studies. Yet they remain absent from most classrooms and online courses.

## The Personalization Gap

| Traditional Learning | Breni Learning |
|---|---|
| One-size-fits-all | Adaptive & Personalized |
| Fixed pace | Learner-controlled pace |
| Passive consumption | Active retrieval practice |
| Periodic assessment | Continuous micro-assessment |
| Lecture → Test | Learn → Practice → Master |
| Extrinsic motivation | Intrinsic + extrinsic rewards |
| Single language | All languages |
| Classroom-bound | Anywhere, anytime |

Breni exists to close this gap. We are not building a better textbook. We are building a learning system that finally applies what science has known for decades, at global scale, in every language, for every learner.



# What is Breni?

Breni is an AI-powered personalized learning app that enables anyone to learn anything, in any language; using the most effective methods known to cognitive science. Think of Breni as Duolingo for everything: the same addictive, science-backed learning loops that made Duolingo the world's most popular language app, applied to every domain of human knowledge and skill.

> ***Anyone can learn anything. Breni makes it happen.***

## The Core Experience

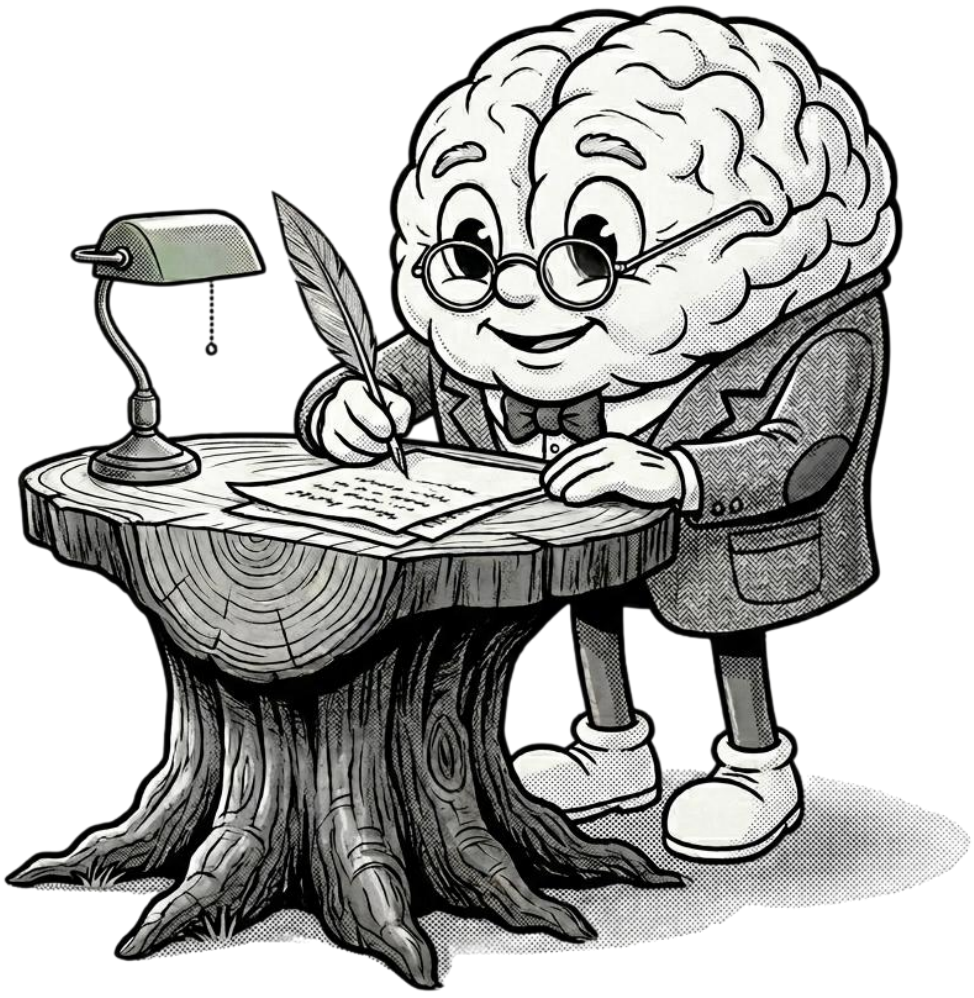
When a learner opens Breni, they encounter a learning journey uniquely calibrated to their current knowledge, their goals, their learning style, and their schedule. Breni's AI continuously analyzes what the learner knows, what they're likely to forget, what they find engaging, and what challenges them at the optimal level, then delivers the next learning moment accordingly.

## Key Platform Pillars

| | |
|---|---|
| **AI Personalization** | Adaptive learning engine that continuously models each learner and optimizes content delivery |
| **Spaced Repetition** | Scientifically proven scheduling algorithm that maximizes long-term retention |
| **Gamification** | XP, streaks, leagues, quests, and rewards that drive daily engagement |
| **Breni Labs** | Simulation-based practice engine for real-world skill application |
| **Source Agnostic** | Feed Breni anything; text, PDF, YouTube link, or article link |
| **Multilingual** | Full platform experience in 100+ languages |
| **Microlearning** | Bite-sized lessons optimized for modern attention spans and busy schedules |
| **Social Learning** | Leagues, leaderboards, and collaborative challenges |
| **Complementary AI** | Abacus of the AI Era |

## The Learning Stack

| BRENI LEARNING STACK | |
|---|---|
| ENGAGEMENT LAYER | Gamification · Streaks · XP |
| PERSONALIZATION | AI Engine · Adaptive Path |
| PRACTICE LAYER | Labs · Simulations · Quests |
| CONTENT LAYER | Curriculum · Microlessons |
| SCIENCE LAYER | Spaced Rep · Retrieval Prac |



# Our Mission and Vision

MISSION

> ***To democratize world-class education by enabling anyone to learn anything, in any language, using scientifically proven learning methods.***

VISION

> ***To become the universal learning layer for humanity.***

These are not marketing slogans. They are design constraints. Every feature we build, every hire we make, every dollar we spend is evaluated against a single question: Does this help us democratize world-class education? If the answer is no, we don't do it. If the answer is yes, we pursue it relentlessly.

## What 'Universal Learning Layer' Means

The universal learning layer is the infrastructure through which humanity acquires new knowledge and skills. Today, that infrastructure is fragmented, inequitable, and inefficient. Breni aspires to be the single platform, like the internet is for information; through which any human being on earth can learn any skill, in any language, at any stage of their life.

- A student in Lagos learns to code using the same quality of instruction as a student at MIT
- A nurse in Jakarta upskills in emergency medicine through a simulation built on decades of medical research
- A retired teacher in Sao Paulo learns watercolour painting guided by an AI that adapts to her pace and style
- A teenager in Mumbai masters calculus through an adaptive system that identifies and fills every gap in their knowledge

This is not a distant dream. It is the company we are building, today.

# Core Product Philosophy

Breni is built on eight foundational product principles. These principles are not aspirational, they are embedded into every product decision, every design review, and every engineering trade-off.

## 01. The Learner Always Wins

Every product decision is evaluated through a single lens: Does this help the learner learn better, faster, and with greater joy? Engagement metrics matter only insofar as they correlate with learning outcomes. We never optimize for time-on-platform at the expense of genuine skill acquisition.

## 02. Science Before Opinion

Breni's product is built on peer-reviewed research, not intuition. When we implement a feature, it is because the evidence supports its efficacy. When evidence is conflicting, we run our own experiments. When we don't know, we say so, and then we find out.

## 03. Minimum Viable Friction

Learning requires challenge, but the right kind of challenge. Breni is designed to eliminate bad friction (confusing UI, unclear instructions, broken flows) while preserving desirable difficulty (problems that require effortful retrieval, interleaved practice, spaced review). The experience should feel like a well-designed game: hard enough to be satisfying, clear enough to never be confusing.

## 04. Personalization is Non-Negotiable

A platform that treats every learner the same is not a learning platform, it's a content repository. Breni's AI engine ensures that every learner receives a uniquely calibrated experience based on their knowledge state, learning pace, error patterns, and engagement signals.

## 05. Global First, Local Always

Breni is designed for the world, not for one market. Every feature is built with multilingual support, cultural sensitivity, and low-bandwidth accessibility in mind. We design for Lagos and London, for Mumbai and Minneapolis, simultaneously.

## 06. Engagement is a Feature, Not a Bug

Duolingo proved that gamification can make a previously onerous activity, language learning; genuinely enjoyable for hundreds of millions of people. Breni applies this insight to all learning. Motivation is not a problem to work around, it is a design challenge to be solved with science.

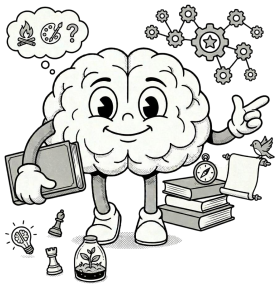
## 07. Mastery Over Completion

Course completion rates are the wrong metric. A learner who completes 100% of a course but retains 10% of the content has failed. Breni optimizes for mastery, the state in which a learner can reliably apply a skill in novel contexts. Our assessment systems are designed to measure and certify genuine competence.

## 08. Transparent by Default

Learners deserve to understand why they are being shown what they are being shown. Breni's AI recommendations are explainable. Progress metrics are clear and honest. We don't hide failure behind streaks and badges, we use them to motivate the learner to try again.

# How the Brain Learns Best



***Memory is not a filing cabinet. It is an active reconstruction process. Breni is designed to work with your brain's architecture, not against it.***

## Memory Formation and Consolidation

Learning begins with encoding, the process by which new information is transformed into a neural representation. Encoding is followed by consolidation (the stabilization of the memory trace) and retrieval (the process of accessing stored information). Each of these processes can be enhanced or impaired by the conditions under which learning occurs.

The hippocampus plays a central role in declarative memory, the memory of facts and events. The neocortex is the site of long-term storage. Transfer of information from hippocampus to neocortex occurs primarily during sleep, which is why sleep quality has a direct and measurable impact on learning outcomes.

## The Forgetting Curve and Spaced Repetition

```
Memory Retention Over Time (Ebbinghaus Forgetting Curve)
100% |*
     | *
 75% |   *
     |     *
 50% |       **
     |         ***
 25% |            *****
     |                 **********
  0% |_____________________________
       0h  1h  4h  1d  2d  4d  1wk  2wk

With Spaced Review: Memory maintained near 100%
```

Hermann Ebbinghaus's foundational 1885 research demonstrated that memories decay exponentially without review. A single learning session results in roughly 50% forgetting within an hour and over 80% within a week. Spaced repetition; reviewing material at strategically increasing intervals, counteracts this decay, dramatically improving long-term retention.

**Cepeda, N. J., Pashler, H., Vul, E., Wixted, J. T., & Rohrer, D. (2006).** *"Distributed practice in verbal recall tasks: A review and quantitative synthesis."* Psychological Bulletin, 132(3), 354–380.

**DOI:** https://doi.org/10.1037/0033-2909.132.3.354

*Evidence: A comprehensive meta-analysis of 254 studies finding that spaced practice consistently outperforms massed practice for long-term retention, with effect sizes of d=0.4 to d=1.1.*

## Retrieval Practice: The Testing Effect

Counter-intuitively, the act of retrieval; attempting to recall information from memory, is one of the most powerful learning interventions known to science. This 'testing effect' or 'retrieval practice effect' consistently outperforms re-reading, re-studying, and highlighting by substantial margins. When you try to remember something, you strengthen the memory trace far more than when you passively review it.

**Roediger, H. L., & Karpicke, J. D. (2006).** *"Test-enhanced learning: Taking memory tests improves long-term retention."* Psychological Science, 17(3), 249–255.

**DOI:** https://doi.org/10.1111/j.1467-9280.2006.01693.x

*Evidence: Students who took practice tests retained 80% of material after one week, versus 36% for those who only re-read material.*

## Desirable Difficulties

Research by Robert Bjork and colleagues introduced the concept of 'desirable difficulties', conditions that slow initial learning but produce superior long-term retention and transfer. These include interleaving (mixing different types of problems), spacing (spreading practice over time), and generation effects (requiring learners to generate answers rather than recognize them). Breni's curriculum is deliberately designed to incorporate these difficulties.

**Bjork, R. A., & Bjork, E. L. (2011).** *"Making things hard on yourself, but in a good way: Creating desirable difficulties to enhance learning."* In M. A. Gernsbacher et al. (Eds.), Psychology and the Real World (pp. 56–64).

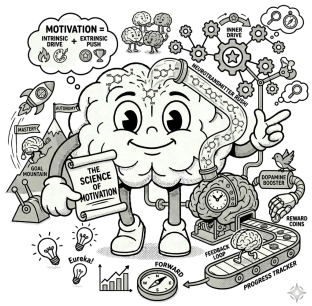
**DOI:** https://bjorklab.psych.ucla.edu/wp-content/uploads/sites/13/2016/04/EBjork_RBjork_2011.pdf

*Evidence: Comprehensive framework showing that conditions that slow acquisition (interleaving, spacing, reduced feedback) consistently produce better long-term outcomes.*

## Attention, Focus, and Cognitive Load

Working memory; the mental workspace in which we manipulate information is severely limited, holding roughly 4±1 chunks of information at a time. Breni's microlearning architecture is designed to respect these limits. Lessons are structured to introduce new information in digestible chunks, build on prior knowledge, and minimize extraneous cognitive load (the mental effort wasted on poorly designed instruction).

# The Science of Motivation




***Motivation is not a personality trait. It is an engineered outcome. Breni is a motivation machine.***

## Self-Determination Theory

Self-Determination Theory (SDT), developed by Deci and Ryan, proposes that humans have three fundamental psychological needs: autonomy (the need to feel in control of one's actions), competence (the need to feel effective), and relatedness (the need for social connection). When these needs are met, intrinsic motivation flourishes. When they are thwarted, motivation withers.

Breni's entire product design is an implementation of SDT:

- Autonomy: Learners choose their subjects, set their pace, and control their daily goals
- Competence: Adaptive difficulty ensures learners are always challenged at the optimal level
- Relatedness: Leagues, social challenges, and collaborative quests create community

**Deci, E. L., & Ryan, R. M. (2000).** *"The 'What' and 'Why' of Goal Pursuits: Human Needs and the Self-Determination of Behavior."* Psychological Inquiry, 11(4), 227–268.

**DOI:** https://doi.org/10.1207/S15327965PLI1104_01

*Evidence: Foundational paper establishing the three basic psychological needs and their role in intrinsic motivation and well-being.*

## Flow State

Mihaly Csikszentmihalyi's concept of flow, the state of optimal experience in which a person is fully immersed in an activity is central to Breni's design philosophy. Flow occurs at the intersection of high challenge and high skill. Too easy, and the learner is bored. Too hard, and they are anxious. Breni's adaptive engine continuously calibrates difficulty to keep learners in the flow channel.

```
Flow State Diagram (Csikszentmihalyi)
High  |          FLOW CHANNEL
Skill |       _________________
      |    __/    (Optimal)    \__
      |  / BOREDOM          ANXIETY \
Low   |/_____________________________
        Low     Challenge     High
```

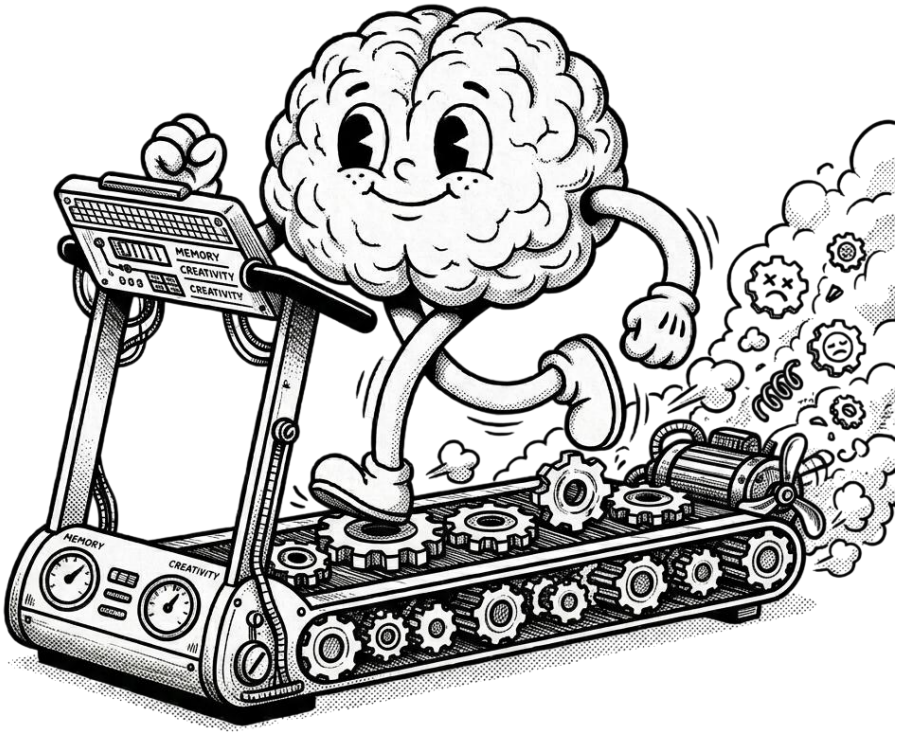
## The Goal Gradient Effect

Research by Kivetz, Urminsky, and Zheng (2006) demonstrated that motivation to reach a goal increases as the goal becomes closer. This is why loyalty programs add stamps faster near the end of a reward card, and why Breni's XP progress bars, streak counters, and league standings are carefully designed to make the next milestone always feel reachable.

## Variable Rewards and Habit Formation

B.F. Skinner's variable ratio reinforcement schedule; where rewards are delivered unpredictably, produces the highest and most persistent rates of behavior. This is the same mechanism underlying slot machines and social media. Breni applies this principle ethically: variable rewards drive engagement, but the behavior being reinforced is genuine learning, not compulsive usage.

**Duhigg, C. (2012).** *"The Power of Habit: Why We Do What We Do in Life and Business."* Random House.
**DOI:** https://charlesduhigg.com/the-power-of-habit/
*Evidence: Accessible synthesis of the cue-routine-reward habit loop, extensively used in Breni's streak and notification design.*



# Product Features and Scientific Foundations

Every feature in Breni is grounded in peer-reviewed research. The following section explains what each feature does, why it matters, and the science that justifies it.

## XP Points

XP (experience points) provide immediate, concrete feedback on learning progress. They serve as a proxy currency for effort and achievement, making abstract progress tangible and gamified.

– Science: Behavioral feedback loops, operant conditioning, progress visualization

**Landers, R. N. (2014).** *"Developing a Theory of Gamified Learning: Linking Serious Games and Gamification of Learning."* Simulation & Gaming, 45(6), 752–768.

**DOI:** https://doi.org/10.1177/1046878114563660

*Evidence: Provides a theoretical framework linking game mechanics like XP to learning motivation and engagement.*

## Streaks

Streaks track consecutive days of learning activity, creating a powerful commitment device. Loss aversion; the psychological tendency to weigh potential losses more heavily than equivalent gains, means that users are strongly motivated to protect an existing streak.

– Science: Loss aversion (Kahneman & Tversky), habit formation, commitment devices

**Kahneman, D., & Tversky, A. (1979).** *"Prospect Theory: An Analysis of Decision under Risk."* Econometrica, 47(2), 263–292.

**DOI:** https://doi.org/10.2307/1914185

*Evidence: Nobel Prize-winning paper establishing loss aversion; streak mechanics are a direct application of this principle.*

## Leagues & Social Competition

Leagues group learners of similar ability into weekly competitive cohorts. Social comparison theory suggests that comparing oneself to similar others is a powerful motivator. Leagues create healthy competition, increase daily engagement, and provide a sense of community.

**Festinger, L. (1954).** *"A Theory of Social Comparison Processes."* Human Relations, 7(2), 117–140.

**DOI:** https://doi.org/10.1177/001872675400700202

*Evidence: Foundational work on social comparison as a motivational driver.*

## Spaced Repetition

Breni's spaced repetition algorithm schedules reviews of previously learned material at intervals that expand as mastery increases. This mirrors the natural consolidation curve of memory, ensuring material is reviewed at precisely the moment it is most likely to be forgotten.

**Ebbinghaus, H. (1885).** *"Uber das Gedachtnis (Memory: A Contribution to Experimental Psychology)."* Duncker & Humblot.

**DOI:** https://psychclassics.yorku.ca/Ebbinghaus/

*Evidence: The original forgetting curve research that underpins all spaced repetition systems.*

## Retrieval Practice / Active Recall

Breni never lets learners passively re-read content. Every lesson concludes with retrieval exercises, flashcards, fill-in-the-blank, matching, and free recall, that force active memory reconstruction. This dramatically improves long-term retention compared to passive review.

**Karpicke, J. D., & Blunt, J. R. (2011).** *"Retrieval Practice Produces More Learning than Elaborative Studying with Concept Mapping."* Science, 331(6018), 772–775.

**DOI:** https://doi.org/10.1126/science.1199327

*Evidence: Landmark Science paper showing retrieval practice outperforms concept mapping and re-reading for complex material.*

## Adaptive Learning / AI Personalization

Breni's AI engine builds a continuous model of each learner's knowledge state; what they know, what they are likely to forget, and what they are ready to learn next. This model drives all content recommendations, difficulty adjustments, and review scheduling.

– Science: Item Response Theory, Knowledge Space Theory, Bayesian Knowledge Tracing

**Corbett, A. T., & Anderson, J. R. (1994).** *"Knowledge Tracing: Modeling the Acquisition of Procedural Knowledge."* User Modeling and User-Adapted Interaction, 4(4), 253–278.

**DOI:** https://doi.org/10.1007/BF01099821

*Evidence: Foundational paper on Bayesian Knowledge Tracing, the basis for adaptive learning systems.*

## Microlearning

Breni lessons are designed to be completed in 5 - 30 minutes. This respects cognitive load limits, fits modern schedules, and allows for more frequent, distributed practice, which the spacing effect shows is superior to massed study sessions.

**Shail, M. S. (2019).** *"Using Micro-learning on Mobile Applications to Increase Knowledge Retention and Work Performance."* Cureus, 11(3).

**DOI:** https://doi.org/10.7759/cureus.4239

*Evidence: Evidence that mobile microlearning improves retention and application of knowledge in professional contexts.*

## Quests and Daily Goals

Quests are structured multi-step learning challenges that provide narrative context and purpose to practice. Daily goals harness implementation intentions, specific plans for when and how one will act, which research shows significantly increase goal completion rates.

**Gollwitzer, P. M. (1999).** *"Implementation Intentions: Strong Effects of Simple Plans."* American Psychologist, 54(7), 493–503.

**DOI:** https://doi.org/10.1037/0003-066X.54.7.493

*Evidence: Seminal paper on implementation intentions, showing that specific plans (when, where, how) double goal attainment rates.*

## Hearts / Lives System (Upcoming)

The hearts system introduces meaningful consequences for errors, creating engagement and focus without excessive stress. Research on 'productive failure' (Kapur, 2016) shows that the experience of failure, when appropriately scaffolded, deepens understanding.

## Push Notifications

Breni uses contextually timed push notifications, personalized to each learner's schedule and streak status, to trigger the learning habit loop (cue → routine → reward). Notification timing is optimized by AI based on each user's historical engagement patterns.

## Achievement Badges

Badges mark significant milestones and signal social identity. Research on identity-based motivation shows that when learners adopt a 'learner identity', seeing themselves as 'the kind of person who learns', engagement and persistence improve substantially.

## Mastery Learning

Breni does not allow learners to advance past a topic until they demonstrate genuine mastery. This is based on Benjamin Bloom's foundational mastery learning research, which found that virtually all students can achieve mastery given sufficient time and appropriate instruction.

**Bloom, B. S. (1984).** *"The 2 Sigma Problem: The Search for Methods of Group Instruction as Effective as One-to-One Tutoring."* Educational Researcher, 13(6), 4–16.

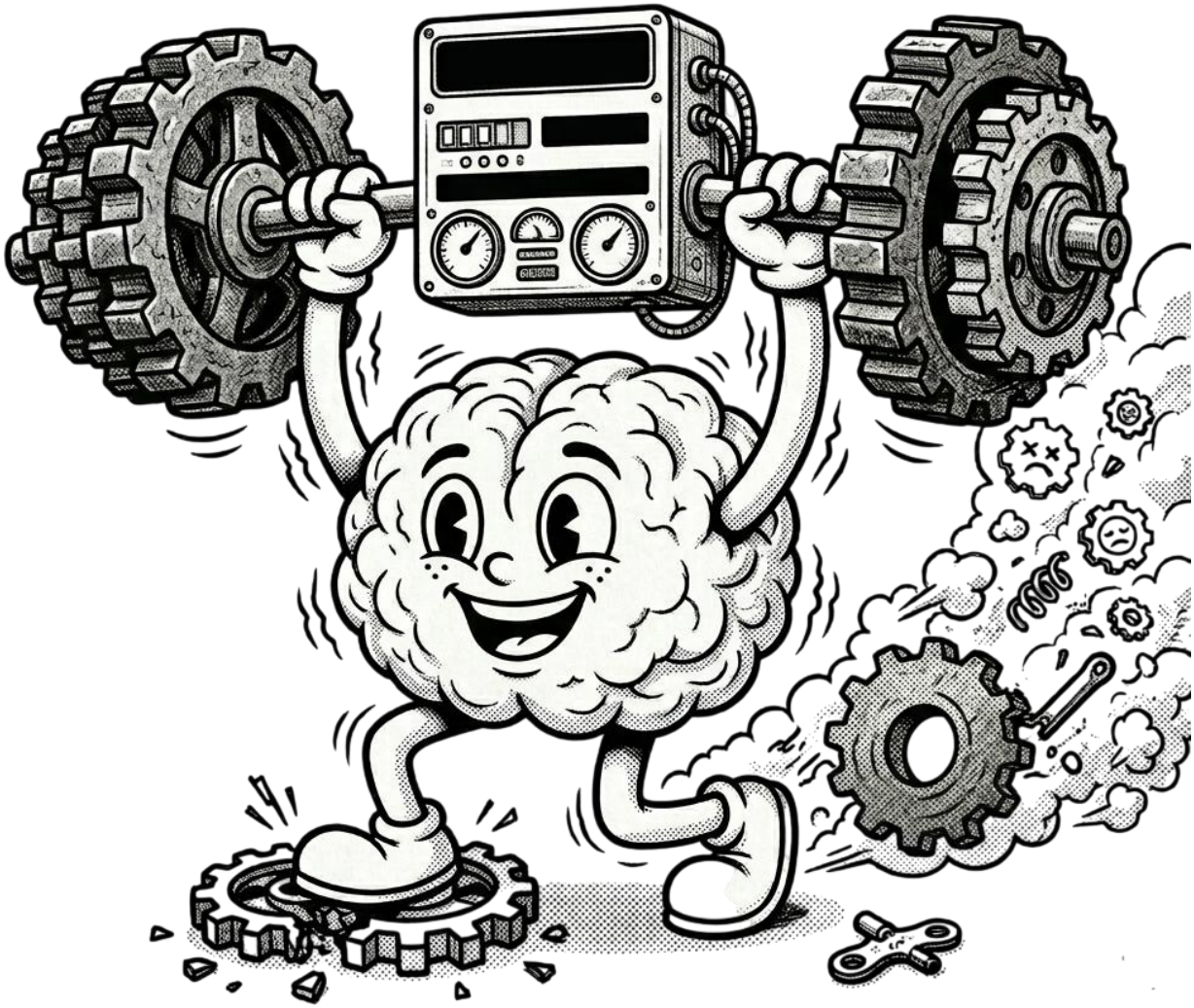
**DOI:** https://doi.org/10.3102/0013189X013006004

*Evidence: Landmark paper showing that mastery learning combined with one-on-one tutoring can produce 2-standard-deviation improvements in learning outcomes.*

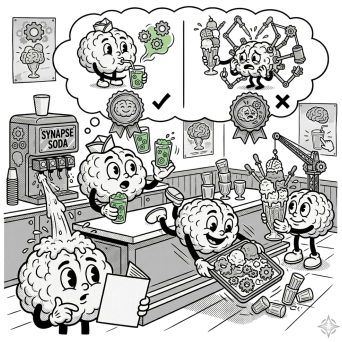
## Reflection Prompts (Upcoming)

Periodic reflection prompts encourage metacognitive processing, thinking about one's own learning. Research consistently shows that metacognitive awareness improves learning outcomes, self-regulation, and transfer of knowledge to new contexts.

**Hattie, J., & Timperley, H. (2007).** *"The Power of Feedback."* Review of Educational Research, 77(1), 81–112.
**DOI:** https://doi.org/10.3102/003465430298487
*Evidence: Comprehensive meta-analysis showing that feedback (including self-feedback through reflection) is one of the highest-impact interventions for learning.*



# Breni Labs: The Simulation Engine




***Practice doesn't make perfect. Perfect practice makes perfect. Breni Labs is where learners practice perfectly.***

Breni Labs is a simulation-based learning environment where learners practice real-world skills in realistic, consequence-free scenarios. It is Breni's most powerful differentiator, the feature that transforms passive knowledge acquisition into active skill development.

## What Breni Labs Does

Breni Labs provides immersive, AI-powered simulations across every domain. A medical student practices diagnosing a patient with ambiguous symptoms. A sales professional rehearses a negotiation with a difficult client. A software engineer debugs a complex codebase. A public speaker rehearses a keynote presentation. A language learner has a conversation with an AI native speaker.

- Business Negotiation Simulations: AI-powered counterparties that respond dynamically to learner decisions
- Coding Sandboxes: Full-featured development environments with AI debugging assistance
- Medical Case Simulations: Realistic patient scenarios with diagnostic decision trees
- Public Speaking Practice: AI analysis of delivery, structure, and persuasiveness
- Language Conversations: Immersive conversations with AI native speakers in 50+ languages
- Crisis Management Simulations: High-stakes decision-making scenarios for leaders
- Data Analysis Labs: Real datasets with guided analytical workflows

## The Science of Simulation-Based Learning

### Experiential Learning Theory

David Kolb's Experiential Learning Theory proposes that learning is a cyclical process involving concrete experience, reflective observation, abstract conceptualization, and active experimentation. Breni Labs completes this cycle by providing the concrete experience and immediate feedback that traditional instruction lacks.

**Kolb, D. A. (1984).** *"Experiential Learning: Experience as the Source of Learning and Development."* Prentice Hall.
**DOI:** https://www.researchgate.net/publication/235701029
*Evidence: Foundational text on experiential learning as a cycle of experience, reflection, conceptualization, and experimentation.*

### Situated Cognition

Situated cognition theory argues that knowledge and skills are inextricably linked to the contexts in which they are learned and used. Skills learned in realistic contexts transfer to real-world applications far more effectively than abstract, decontextualized instruction.

**Brown, J. S., Collins, A., & Duguid, P. (1989).** *"Situated Cognition and the Culture of Learning."* Educational Researcher, 18(1), 32–42.
**DOI:** https://doi.org/10.3102/0013189X018001032
*Evidence: Seminal paper arguing that cognition is situated in activity and culture; the basis for simulation-based and project-based learning.*

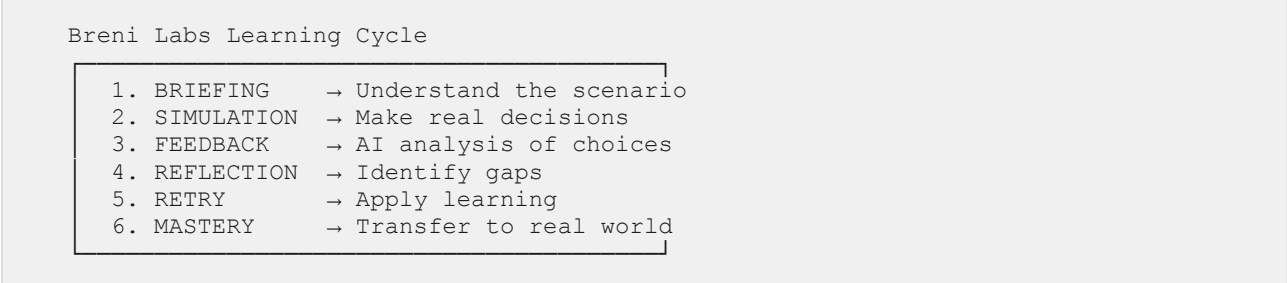
### Deliberate Practice

Anders Ericsson's research on expertise development shows that elite performance in any domain requires deliberate practice; effortful, targeted practice with immediate feedback on specific weaknesses. Breni Labs is a deliberate practice engine: every simulation provides immediate, specific feedback on learner decisions.

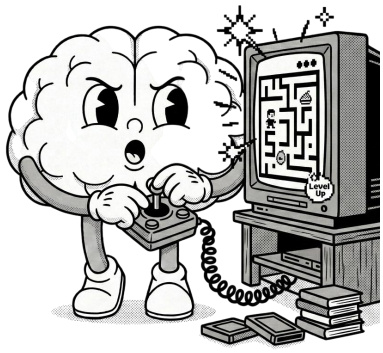
**Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993).** *"The Role of Deliberate Practice in the Acquisition of Expert Performance."* Psychological Review, 100(3), 363–406.
**DOI:** https://doi.org/10.1037/0033-295X.100.3.363
*Evidence: The definitive paper on deliberate practice, showing that 10,000 hours of targeted practice — not just experience — distinguishes experts from novices.*

### Transfer of Learning

Transfer; the application of learned skills to new contexts is the ultimate goal of education. Research consistently shows that simulation-based learning produces superior transfer compared to traditional instruction, because simulations provide the contextual cues that activate knowledge during real-world application.



# The Gamification System




***The best learning feels like play. Breni makes every learner want to come back tomorrow.***

Gamification is the application of game design elements to non-game contexts. In education, it harnesses the same psychological mechanisms that make great games compelling; challenge, progress, reward, social competition, and mastery, to drive sustained engagement with learning content.

## Breni's Gamification Architecture

| | |
|---|---|
| **XP Points** | Immediate reward for every learning action; accumulate to unlock milestones |
| **Streaks** | Daily learning chains that activate loss aversion and build habits |
| **Leagues** | Weekly competitive groups of 30 learners; ranked by XP earned |
| **Quests** | Narrative-driven multi-step challenges with special rewards |
| **Achievement Badges** | Milestone markers for significant learning accomplishments |
| **Hearts / Lives (Upcoming)** | Consequence system that increases focus and reduces careless errors |
| **Daily Goals** | Personalized daily XP targets that create implementation intentions |
| **Leaderboards** | Real-time social comparison within league and friend groups |
| **Streak Freeze** | Mechanisms for recovering from missed days (reduces abandonment) |

## Why Gamification Works in Learning

A common misconception is that gamification trivializes learning. The opposite is true when gamification is designed around learning outcomes rather than engagement metrics alone.

Research by Hamari, Koivisto, and Sarsa (2014) found that well-designed gamification consistently improves motivation, engagement, and task performance.

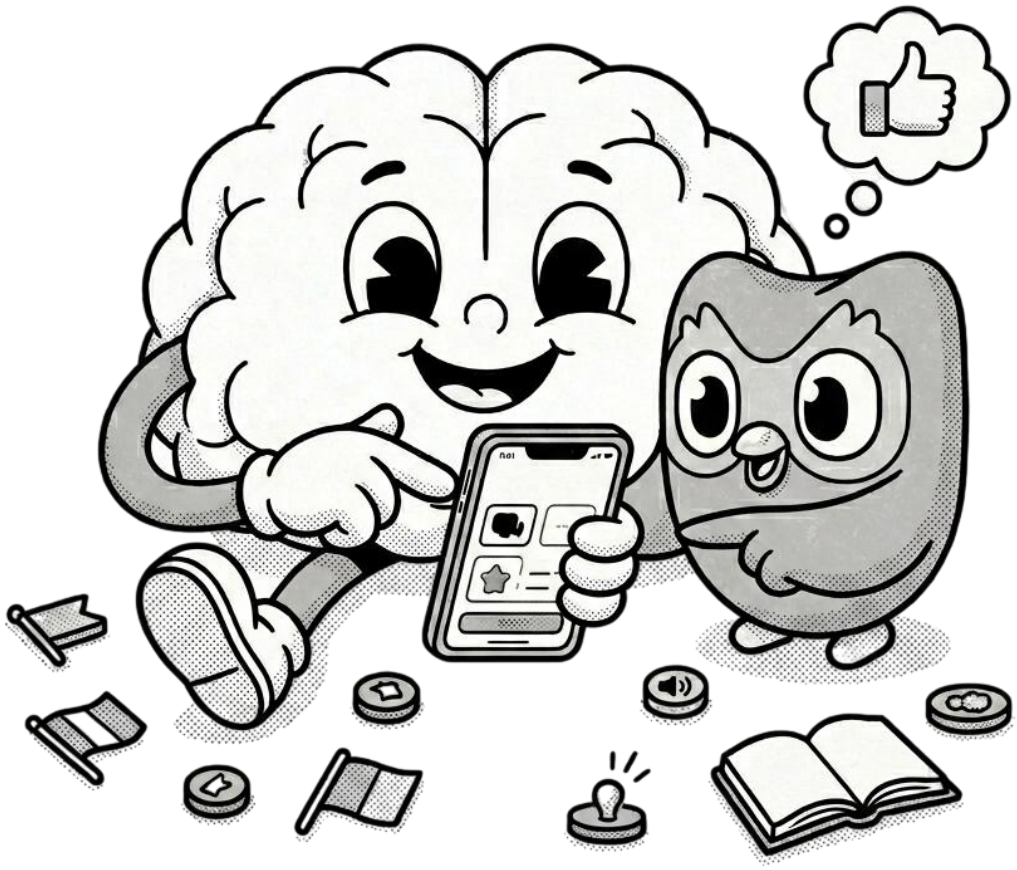
**Hamari, J., Koivisto, J., & Sarsa, H. (2014).** *"Does Gamification Work? A Literature Review of Empirical Studies on Gamification."* 2014 47th Hawaii International Conference on System Sciences.

**DOI:** https://doi.org/10.1109/HICSS.2014.377

*Evidence: Meta-analysis of 24 empirical gamification studies finding positive effects on motivation and engagement in the majority of cases.*

## The Duolingo Precedent

Duolingo demonstrated at scale that gamification can drive extraordinary learning engagement. With 575 million registered users and 37 million daily active learners, Duolingo's gamified system has produced measurable language learning outcomes comparable to college-level instruction. Breni applies and extends this model to all domains of learning.



# AI Personalization Engine

***Every learner is unique. Breni's AI ensures that every learning experience is too.***

Breni's AI Personalization Engine is the intelligence layer that transforms raw educational content into individualized learning journeys. It operates across four dimensions: knowledge modeling, difficulty adaptation, content recommendation, and engagement optimization.

## Knowledge Modeling

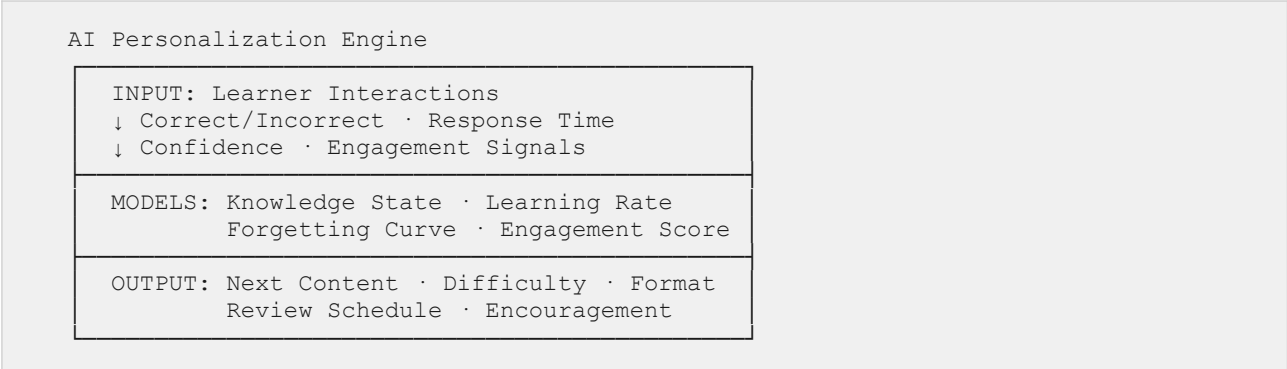
Breni builds a dynamic model of each learner's knowledge state using Bayesian Knowledge Tracing (BKT) enhanced with deep learning. For every skill in the curriculum, the model maintains a probability estimate of whether the learner has mastered it. This model is updated with every interaction; correct answers, errors, response times, and confidence ratings all feed the model.

## Difficulty Adaptation

Content difficulty is continuously adjusted to maintain optimal challenge. The AI targets the zone of proximal development (Vygotsky, 1978), the range of difficulty just beyond current mastery, where learning is most efficient. Problems that are too easy produce boredom and no learning. Problems that are too hard produce frustration and no learning. Breni's AI navigates this balance in real time.

## Content Recommendation

Beyond scheduling, Breni's AI selects the optimal format, modality, and context for each learning item. A visual learner working on statistics might receive more chart-based examples. A learner who has struggled with a concept from a particular angle might receive an alternative explanation using a different approach.



**Corbett, A. T., & Anderson, J. R. (1994).** *"Knowledge Tracing: Modeling the Acquisition of Procedural Knowledge."* User Modeling and User-Adapted Interaction, 4(4), 253–278.

**DOI:** https://doi.org/10.1007/BF01099821

*Evidence: Bayesian Knowledge Tracing: the foundational algorithm behind adaptive learning systems, modeling learner knowledge as a probability updated by each interaction.*

# Multilingual Learning Infrastructure

Language should never be a barrier to learning. Breni is designed from the ground up as a multilingual-first platform. Every feature, every piece of content, and every AI interaction is available in 100+ languages, with a roadmap to cover all major world languages.

## Technical Architecture

- Neural machine translation powered by state-of-the-art multilingual models
- AI Tutor trained on multilingual educational corpora
- Culturally adapted examples, illustrations, and contexts for each region
- Right-to-left (RTL) interface support for Arabic, Hebrew, Persian, and other RTL languages
- Low-bandwidth mode for learners with limited connectivity

## Language Science

Breni's multilingual infrastructure is informed by research on language acquisition, bilingual cognition, and translation quality. The AI Translation system does not merely translate words, it adapts cultural context, idiomatic expressions, and pedagogical approaches to be genuinely effective in each language.

**Cummins, J. (1979).** *"Linguistic Interdependence and the Educational Development of Bilingual Children."* Review of Educational Research, 49(2), 222–251.

**DOI:** https://doi.org/10.3102/00346543049002222

*Evidence: Establishes the cognitive interdependence of languages; the basis for Breni's cross-lingual knowledge transfer features.*

**100+ Languages Supported**

Breni supports English, Spanish, French, Arabic, Mandarin, Hindi, Portuguese, Russian, Japanese, Korean, German, Italian, Turkish, and 87+ additional languages.

# Curriculum Design Principles

Breni's curriculum is not content dumped into a platform. It is scientifically architected learning experiences, designed according to evidence-based principles that maximize the probability of learner success.

## Core Principles

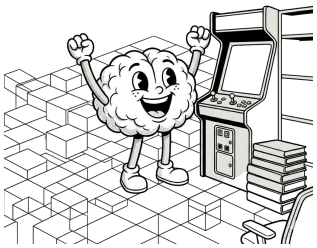
1. Mastery-gating: Learners cannot advance without demonstrating competence
2. Spiral curriculum: Concepts are revisited at increasing depth over time
3. Prior knowledge activation: Every new concept is connected to existing knowledge
4. Interleaving: Different concept types are mixed to improve discrimination learning
5. Worked examples → Guided practice → Independent practice → Transfer
6. Multiple representations: Every concept is illustrated visually, verbally, and procedurally
7. Error analysis: Mistakes are learning opportunities with targeted remediation
8. Metacognitive scaffolding: Learners are taught how to learn, not just what to learn

## Content Creation Framework

All content on Breni is created or curated according to a rigorous quality framework:

| | |
|---|---|
| **Learning Objective** | Every lesson has a specific, measurable, attainable, relevant, time-bound (SMART) objective |
| **Pre-Assessment** | Learners' prior knowledge is assessed before instruction begins |
| **Instruction** | Content is delivered in the learner's optimal format and modality |
| **Guided Practice** | Worked examples with decreasing scaffolding |
| **Independent Practice** | Retrieval-based exercises with immediate corrective feedback |
| **Mastery Check** | Criterion-referenced assessment before progression |
| **Review** | Spaced repetition scheduling for long-term retention |

# Company Values



***Culture is not what you say. It is what you do when no one is watching.***

## 01. Learner Obsession

Everything we do is in service of the learner. Not the employer. Not the partner. Not the investor. The learner. When we face a difficult trade-off, we ask: what is best for the person trying to learn? That answer guides us. Learner obsession does not mean learner indulgence, we design for what learners need to achieve, not necessarily what they want in the moment.

## 02. Scientific Rigor

We respect evidence. We cite our sources. We run experiments. We update our beliefs when the data contradicts our assumptions. We do not fall in love with our ideas, we fall in love with what works. Scientific rigor is not a constraint on creativity; it is the constraint that makes creativity meaningful.

## 03. Speed of Execution

The world's learners cannot wait. We move fast. We ship, test, and learn. We prefer a good decision made quickly over a perfect decision made slowly. Speed is a form of respect for the urgency of our mission.

## 04. Global Mindset

Breni is not a UK product with international distribution. It is a global product built for the world. Every team member thinks about learners in Nairobi as naturally as learners in New York. Global mindset is not an aspiration, it is a baseline expectation.

## 05. Ownership

At Breni, ownership means taking responsibility for outcomes, not just activities. Every team member is expected to identify problems, propose solutions, and drive them to completion, regardless of job title or organizational boundaries. We do not have a culture of 'that's not my job.'

## 06. Intellectual Humility

We do not know everything. The science of learning is rapidly evolving. The markets we operate in are complex and dynamic. Intellectual humility means being confident in our mission while remaining genuinely curious, open, and willing to be wrong.

## 07. Continuous Improvement

Breni is a learning company. We apply to ourselves the same principles we apply to our learners: deliberate practice, honest feedback, spaced review, and relentless effort to improve. Every team member is expected to be demonstrably better at their job in six months than they are today.

# Competitive Landscape

The EdTech market is large but fragmented. Existing players have proven that digital education can scale, but none have combined AI personalization, cognitive science, gamification, and universal subject coverage at the level Breni is building.

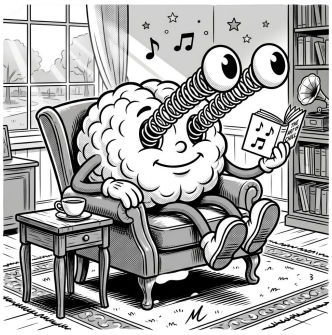
| Platform | Subjects | Personalization | Gamification | Science-Based | AI Type | Languages |
|---|---|---|---|---|---|---|
| Breni | Everything | Deep AI | Full System | Core Design | Complimentary | 100+ |
| Duolingo | Languages Only | Moderate | Full System | Partial | Non Complimentary | 40+ |
| Coursera | University Courses | Low | None | None | No AI | 5-10 |
| Udemy | Skills/Courses | None | None | None | No AI | Limited |
| Khan Academy | K-12 Subjects | Moderate | Limited | Partial | Partial | Limited |
| MasterClass | Creative Skills | None | None | None | No AI | English Only |

## Why Breni Wins

- Breni is the only platform that applies cognitive science systematically across all features and subjects
- AI personalization at the level Breni is building has never been applied to general education at scale
- Breni's multilingual-first architecture opens markets inaccessible to English-centric competitors
- Breni Labs simulations provide skill practice that no other platform offers at this scale
- The gamification system is the most sophisticated in the industry, built on proven behavioral science
- Breni's learner-first philosophy means every product decision is optimized for outcomes, not time-on-platform

> ***Duolingo proved the model for languages. Breni proves it for everything.***

# Long-Term Vision



***We are building the operating system for human learning. Not a product. An infrastructure.***

In ten years, Breni will be the default answer to the question: 'How do I learn that?' For any topic, in any language, at any level of expertise, a learner anywhere in the world will open Breni and be confident that they will master it.

This is not an extrapolation of current product features. It requires a series of technical and organizational breakthroughs that we are actively working toward:

## The AI Learning Companion

A persistent AI companion that knows everything about a learner's knowledge history, learning style, interests, and goals, and proactively surfaces learning opportunities at the optimal moment. Not just reactive, but predictive.

## Verifiable Credentials

Breni Mastery Certificates that are recognized by employers and institutions worldwide as evidence of genuine competence, verified not by seat time or course completion, but by demonstrated performance in simulations and assessments.

## The Learning Graph

A global, interconnected map of all human knowledge, with every concept linked to every other related concept, every prerequisite clearly defined, and every learner's position in the graph continuously updated. The ultimate personalized curriculum.

## Offline and Accessible Education

Breni experiences that work without a stable internet connection, on low-end devices, in any language, ensuring that the billion-plus learners without reliable connectivity are not excluded from the learning revolution.

# Talent Philosophy

Breni is built by people who are obsessed with learning. We hire exceptional individuals who combine deep expertise with intellectual humility and a genuine passion for democratizing education.

## What We Look For

- Mission alignment: You genuinely believe in the power of education to transform lives
- Evidence-based thinking: You form opinions from data, update beliefs when wrong
- Builder mentality: You make things happen, not just plans
- Global perspective: You think about learners in all geographies, not just your own
- High standards: You are never satisfied with good when excellent is achievable
- Collaborative: You make the team smarter, not just yourself

## Current Focus Areas

| | |
|---|---|
| **AI/ML Engineering** | Adaptive learning systems, LLM fine-tuning, recommendation engines |
| **Curriculum Science** | Learning design, cognitive science, assessment engineering |
| **Product Management** | Learning experience design, growth, B2B partnerships |
| **Mobile Engineering** | iOS, Android, cross-platform performance |
| **Content Operations** | Multilingual content creation, quality assurance, localization |
| **Data Science** | Learning analytics, A/B testing, outcome measurement |
| **GTM / Growth** | Market expansion, partnerships, user acquisition |

# Closing Manifesto

***Learning is the most human thing we do. It is how we transcend our biology, our geography, and our circumstance. Breni exists to make that transcendence available to everyone.***

We believe that every human being is born curious. That curiosity is not a gift reserved for the privileged, it is the universal endowment of our species. What varies is not curiosity, but access. Access to great teachers. Access to engaging content. Access to systems that know how to help you learn.

We believe that the gap between what a learner is and what they could become is not a function of intelligence or effort, it is a function of the quality of the learning system they have access to. A child in a village with one underfunded school is not less capable than a child at an elite private academy. They are simply less equipped.

We believe that technology, used wisely, can close that gap. Not completely. Not immediately. But meaningfully, measurably, and at a scale that no previous generation of educators has been able to achieve.

We believe in the science of learning, not as abstract research, but as a set of practical tools that, when faithfully implemented in software, can change a learner's trajectory in weeks.

We believe that learning should feel like play. That engagement is not a concession to distraction but a prerequisite for lasting change. That a learner who enjoys the process will outlast any learner who doesn't.

We believe that the world is better when more people know more things. When a nurse in rural Kenya can access the same medical education as a doctor at Johns Hopkins. When a programmer

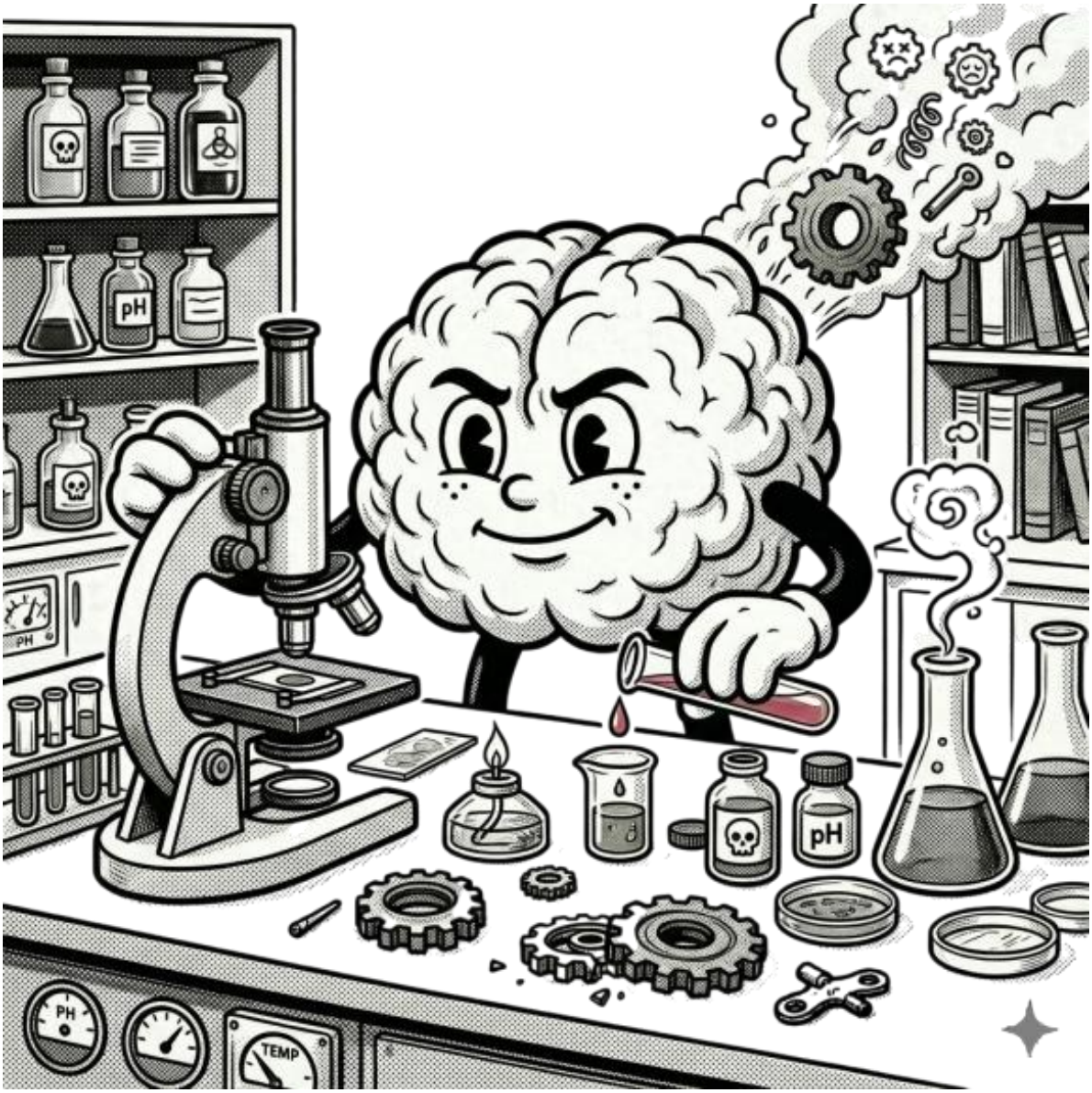
in Jakarta can learn from the same curriculum as an engineer at Google. When a grandmother in Mexico City can finally learn the English that her grandchildren speak.

This is why we built Breni. This is what drives us every day.

Your brain's new playground is open. Come learn.

**Cheers,**

**The Breni Team**



# References and Citations

The following references underpin the scientific claims made in this Playbook. All citations are peer-reviewed or published in established academic venues.

## Cognitive Science & Memory

**Ebbinghaus, H. (1885).** *"Uber das Gedachtnis."* Duncker & Humblot.
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*Evidence: The original forgetting curve research.*

**Cepeda, N. J. et al. (2006).** *"Distributed practice in verbal recall tasks."* Psychological Bulletin, 132(3).
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*Evidence: Meta-analysis confirming superiority of spaced over massed practice.*

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*Evidence: Desirable difficulties framework.*

## Motivation & Behavioral Science

**Deci, E. L., & Ryan, R. M. (2000).** *"The 'What' and 'Why' of Goal Pursuits."* Psychological Inquiry, 11(4).
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*Evidence: Flow state theory.*

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**DOI:** https://doi.org/10.2307/1914185
*Evidence: Loss aversion — foundational for streak mechanics.*

**Gollwitzer, P. M. (1999).** *"Implementation Intentions."* American Psychologist, 54(7).
**DOI:** https://doi.org/10.1037/0003-066X.54.7.493
*Evidence: Implementation intentions double goal attainment.*

## Gamification & Engagement

**Hamari, J., Koivisto, J., & Sarsa, H. (2014).** *"Does Gamification Work?."* HICSS 2014.
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**Landers, R. N. (2014).** *"Developing a Theory of Gamified Learning."* Simulation & Gaming, 45(6).
**DOI:** https://doi.org/10.1177/1046878114563660
*Evidence: Theory of gamified learning.*

## Simulation & Experiential Learning

**Kolb, D. A. (1984).** *"Experiential Learning."* Prentice Hall.
**DOI:** https://www.researchgate.net/publication/235701029
*Evidence: Foundational experiential learning cycle.*

**Brown, J. S., Collins, A., & Duguid, P. (1989).** *"Situated Cognition."* Educational Researcher, 18(1).
**DOI:** https://doi.org/10.3102/0013189X018001032
*Evidence: Situativity theory.*

**Ericsson, K. A. et al. (1993).** *"The Role of Deliberate Practice."* Psychological Review, 100(3).
**DOI:** https://doi.org/10.1037/0033-295X.100.3.363
*Evidence: Deliberate practice and expertise.*

## Adaptive Learning & AI

**Corbett, A. T., & Anderson, J. R. (1994).** *"Knowledge Tracing."* UMUAI, 4(4).
**DOI:** https://doi.org/10.1007/BF01099821
*Evidence: Bayesian Knowledge Tracing.*

**Bloom, B. S. (1984).** *"The 2 Sigma Problem."* Educational Researcher, 13(6).
**DOI:** https://doi.org/10.3102/0013189X013006004
*Evidence: Mastery learning and tutoring effectiveness.*

## Additional Resources

**Breni Website:** breni.xyz
**Breni For Schools Website:** schools.breni.xyz
**Manifesto:** breni.xyz/manifesto