GR4

Solution & Concept Video

T#8

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BrainBook

A Stimulating, Personalized Guide for the Modern Age

The Inspiration Behind the Name

For the Name...

After brainstorming numerous names (See Appendix #A), we settled on BrainBook:

- Mashup of “TextBook” & “Brain”
    - Emphasizes that the product is like a textbook or something neutral that the user reads like a book
    - Emphasizes that the user still needs to use their brain while using it
- Can emphasize the AI part of the product by highlighting the letters “AI” in “Brain”

For the Value Proposition...

We listed our product’s...

- **Unique Value:** stimulating, challenging
- **Improvement Over Others**: more personalized, neutral, guiding

We combined these values into our statement, and decided to call our product a “guide for the Modern Age.”

This references both the product’s goal and its context of modern, AI-powered learning.

Problem Domain

Previously...

We broadened our problem domain to explore educational AI usage for almost any user.

However, upon further analysis, we've realized that our product will best suit how students use AI to learn.

Now...

We've narrowed our problem domain to include just students.

We're exploring how students can use AI to help students while they learn or clarify topics in any subject.

How can AI assist Students in the Discovery or Clarification Process?

Our Revised Problem

Problem/Solution Overview

Our primary users are students in academia who are trying to understand a topic, not just get an answer. Current AI tutors often feel like answer machines: they don’t keep students engaged, rather they skip the student’s thinking process, and that reduces agency. We solve this with a neutral, adaptive AI textbook that gives small, digestible hints and then asks targeted follow-up questions so the student actively builds the explanation themselves.

Market Research

Market Research - Khanmingo

Similarities

- Doesn't do the work or dump an explanation
  - Asks questions to understand where you are
  - Tries to fill gaps for each individual
- Gives a short example/explanation & asks a question to build the conversation
- Student-Led Learning section

Differences

- Framed as an emotional, excited chatbot
- Different subjects are divided by tabs
- Only a single input line; little required context
- Provides suggested prompts
- Works across every article on Khan Academy
- Solely requires the user to come up with the best prompts
- Lets you "speak" to a historical figure (by pretending to be them)
- Has college admissions help page

Market Research - Khanmingo

What Worked for Them?

- Short responses and constant questioning encourages thinking and better learning
- Always being available make it reliable for learners
    - I.e., busy parents can't help, so Khanmingo steps in
- Doesn't do the assignment but instead provides advice or tips
- Practicing debate skills helps build critical thinking
- Student-led learning is effective

What Didn't Work?

- Not adaptable enough to user actions
    - Doesn't consider user inputs to the website
- Gives pre-defined, somewhat-generic responses often
- Doesn't collect enough context
- Sends messages on behalf of the user -> disassociative
- Always asks what the student did wrong instead of what they did right, and doesn't appreciate the learning in getting it wrong
- Starts the conversation for the user

Implications – Khanmingo

Have no assumptions about the user

- Khanmingo assumes that the user knows nothing
- Our product needs to take all collected context at face value

Have the user must start the conversation, not the AI

- Avoid a generic, frustrating starter prompt
- Minimize generic prompts in general

Encourage without Sucking Up

- Our app shouldn't try to be the user's friend or sycophantic
  - Users dislike this
- Still, our app should emphasize what the user did right while still correcting what they got wrong

Need to collect maximum context and extract it through design

- Khanmingo, like other LLMs, only has a single line of input
  - To get the best responses, the burden falls on the user to prompt engineer, which is frustrating
- Our product should force the user to provide lots of detail to better responses

Market Research – Google Gemini (Guided Learning)

Similarities

- Both prioritize understanding over answer dumping
- Both use chunked guidance + targeted questions
- Both adapt based on user performance/response quality.

Differences

- Framed as a general AI tutor/chat assistant
- Built around chat turns, not a persistent write-in textbook
- Starts from user prompts instead of prior-knowledge diagnosis
- Gives help quickly, but does not enforce think-then-write cycles
- Session context is shallow; weak cumulative reasoning history
- Tools are optional, not core to every step
- Optimized for instant help, not durable exam-transfer reasoning
- Assistant drives flow more than student-authored reasoning
- Less support for metacognitive tracking across attempts

Market Research – Google Gemini (Guided Learning)

What Worked for Them?

- Breaks topics into smaller chunks instead of one giant explanation
- Uses follow-up checks to verify whether the learner actually understands
- Adjusts explanations when the learner gets something wrong, which supports iterative learning

What Didn't Work?

- It still lives in a chatbot flow, so students can drift into passive Q&A instead of deliberate "write-think-revise" studying
    - Inferred from product interaction model
- Sessions can misread user responses or wander, so the learner has to manually steer it back
- It is not framed as a persistent "academic workspace" where the student externalizes reasoning over time like they would in class or on homework

Implications – Google Gemini (Guided Learning)

Preserve student agency from the first interaction

- The user should initiate learning intent, not the system
- Avoid generic starter prompts that flatten context
- Make the first step diagnostic, not assumptive

Capture context through product structure, not prompt skill

- Keep tone neutral, calm, and non-sycophantic
- Acknowledge what the learner did correctly before correction
- Treat mistakes as signal for next scaffolding step

Encourage without being performative

- Do not rely on one free-text input line for everything
- Collect lightweight context continuously (goal, level, confusion point)
- Reduce prompt-engineering burden on students

Replace answer-first behavior with reasoning-first flow

- Give short hints, then require a student response
- Gate progression on visible reasoning, not just final answers
- Build an explicit think → write → reflect loop

Market Research Comparison

Features	BrainBook	Khanmingo	Gemini
Doesn’t Do The Work	X	X	X
Asks Questions with Short Explanations	X	X	X
Student Led Learning	X	X	X
Neutral, Not Sycophantic	X		
Data-Extraction-Driven Design	X		
Visual Solution Difference Highlighting	X		
Collects & Considers all Context	X		

Tasks

Task #1 (0:43)

<SIMPLE>

Why Simple:

- All users must do this first to begin the learning journey; it is the basic entry action before any real studying happens.
- The user only needs to respond to an initial few prompts to unlock the book, so the goal is straightforward

The user can open the textbook

Task #2 (0:52)
‹MODERATE›

Why Moderate:

- This is the core repeated learning loop: read a short explanation, think, respond, and keep refining understanding across multiple rounds.
- In order to use the product in any learning capacity, any user must complete this task
- Since most users are students who are looking to learn, most will complete this task

The user can continually write in the textbook based on the questions & explanation they receive

Task #3 (1:12)
‹COMPLEX›

Why Complex:

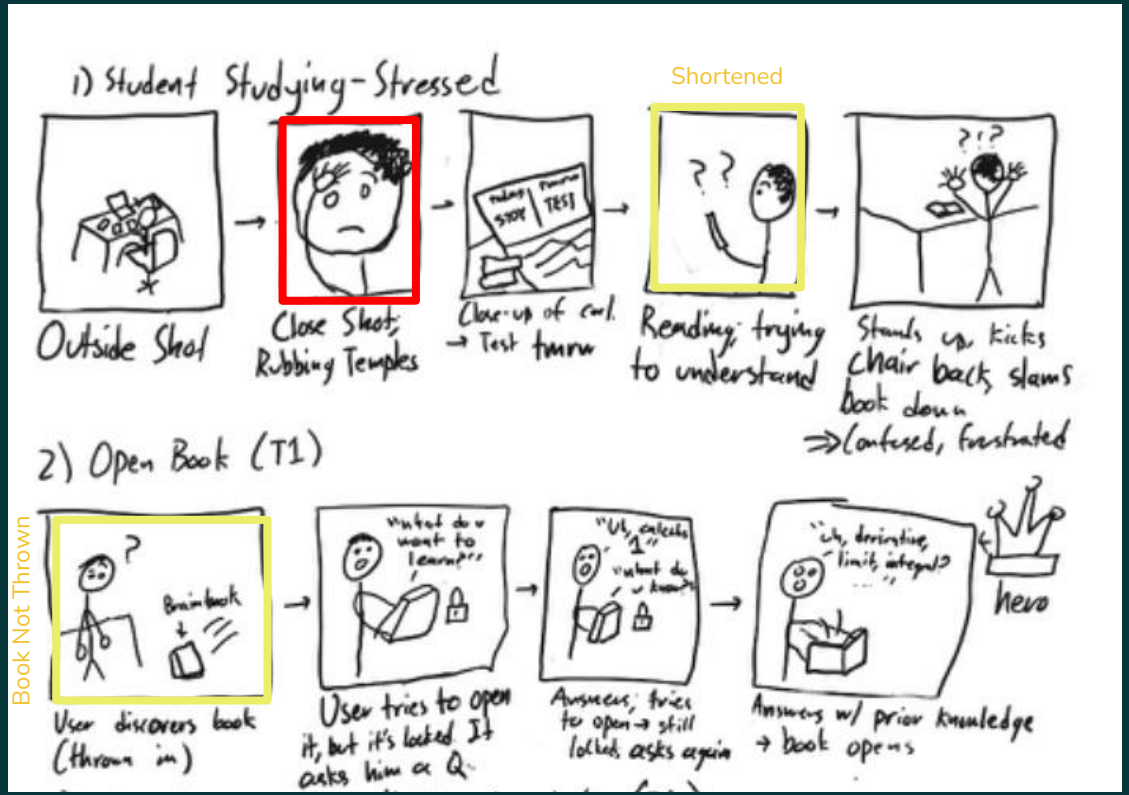
- Most users will be able to learn effectively without personalizing the textbook
- However, users who rely on the product often (power users) will likely want to make it work better for them, since they use it enough to warrant tweaking it for better performance
- Thus, mostly power users will complete this task in order to get the AI to work in the best way possible for them

The user can personalize how the AI responds to it by describing how they learn and what tools they like

Storyboard

Note: Not every frame ended up in the video exactly as was storyboarded due to quality or time. These frames are highlighted on the slides with colored borders.

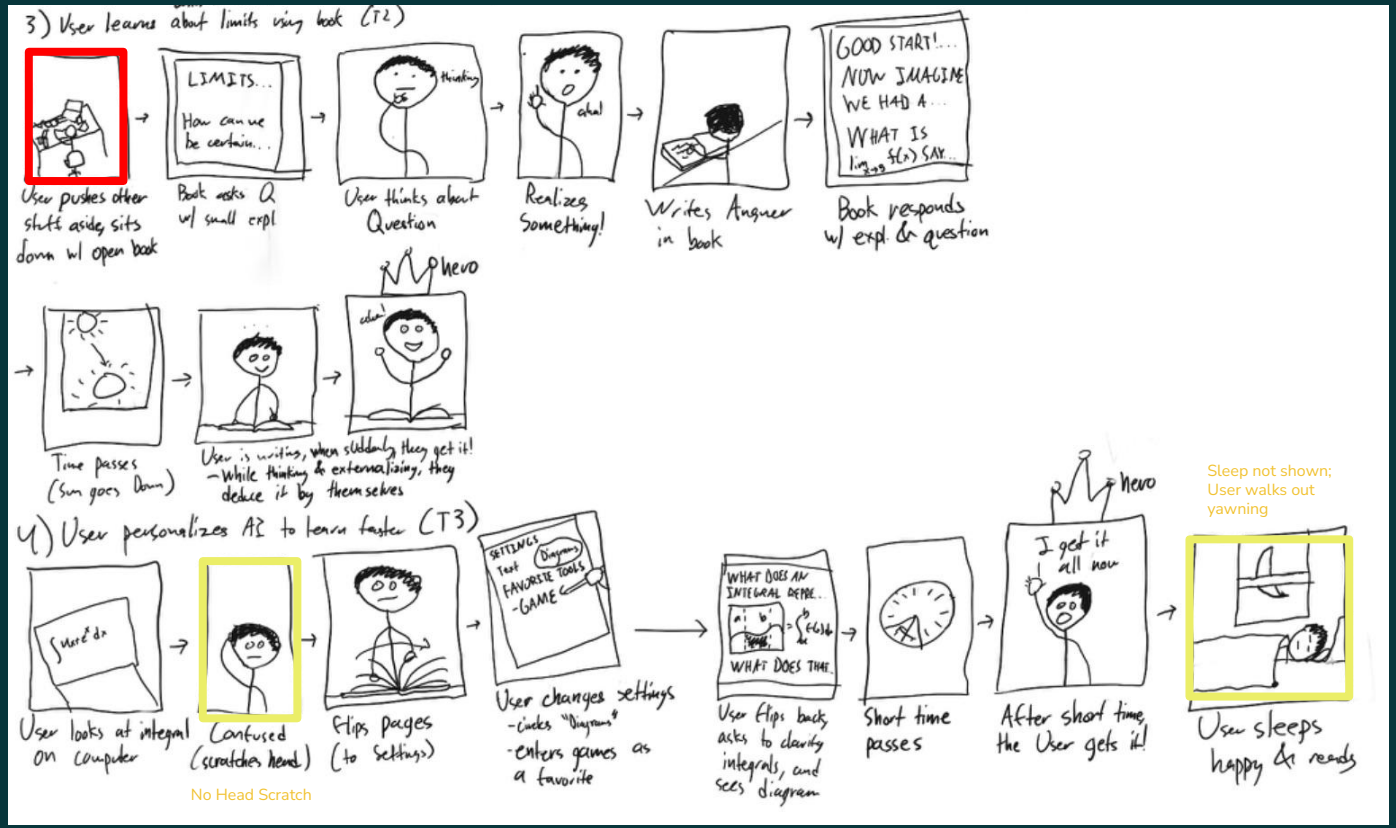
Scenes #1-2



Red Square: Frame was cut

Yellow Square: Frame was heavily modified

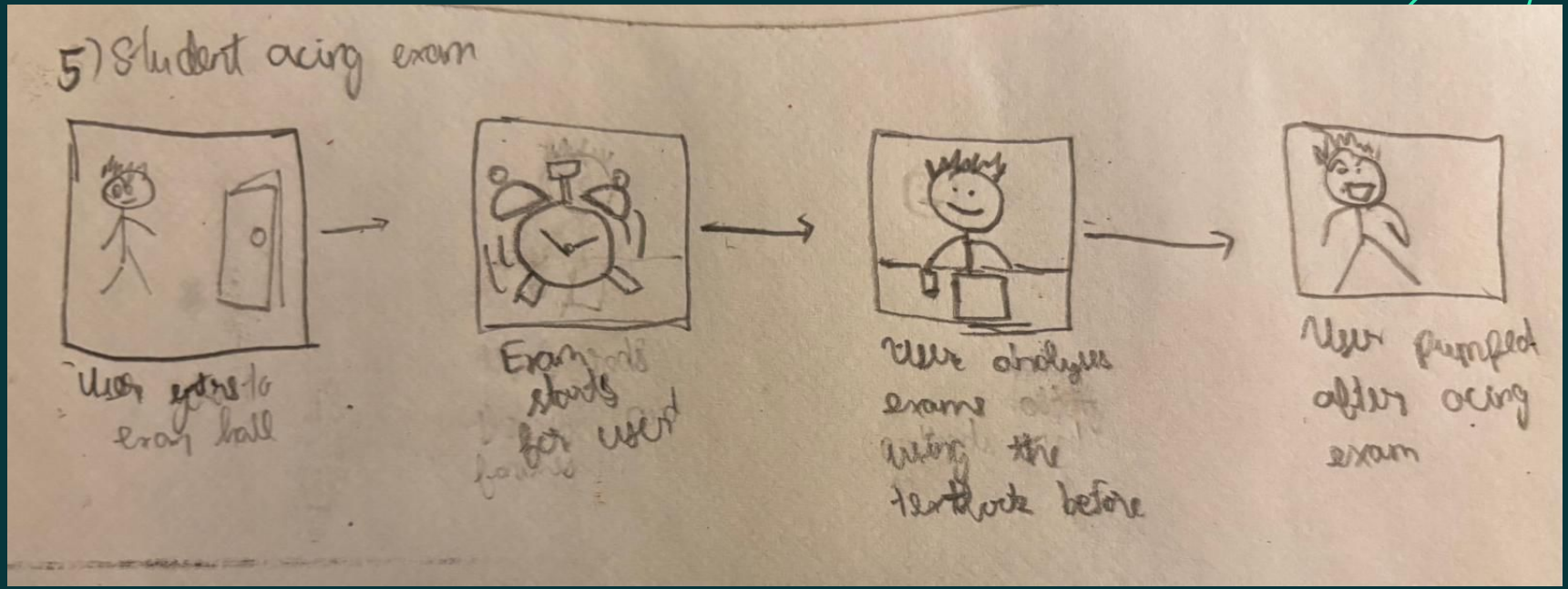
Scenes #3-4



Red Square: Frame was cut

Yellow Square: Frame was heavily modified

Scene #5



Red Square: Frame was cut

Yellow Square: Frame was heavily modified

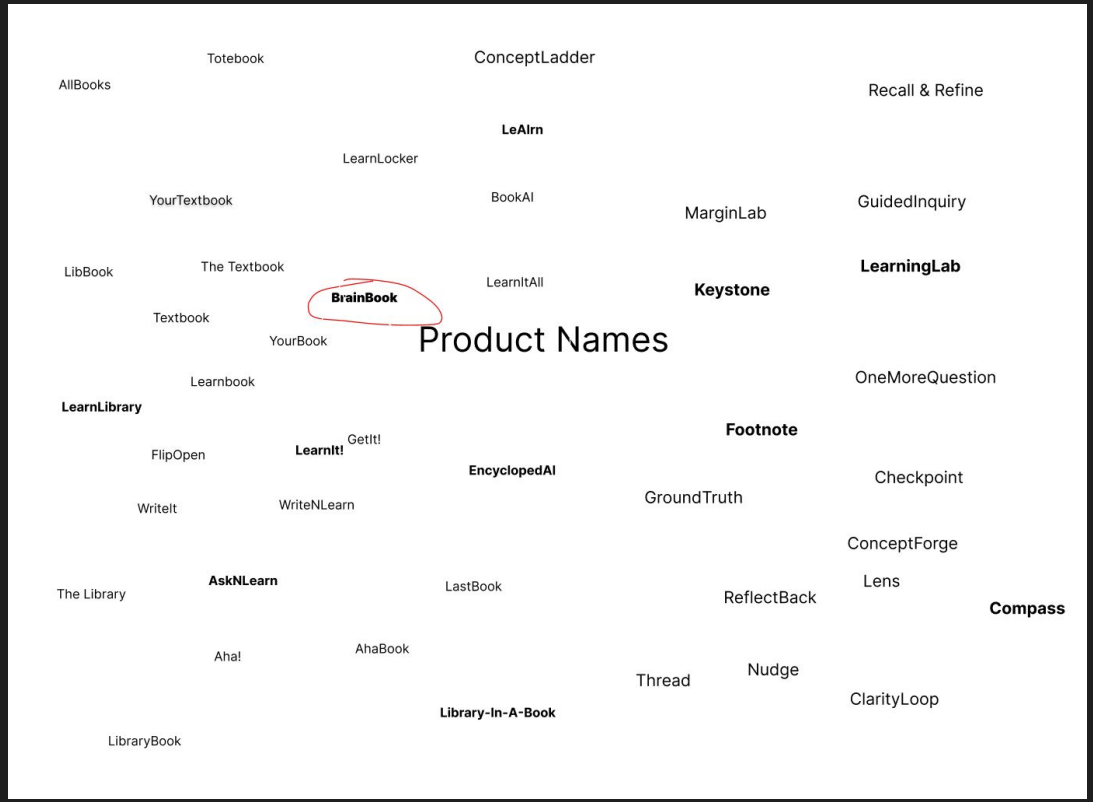
(Click Below for the Youtube)

The Video!

Thank you for watching!

Appendix

A. Brainstorming the Name



Thank you!

Team 8