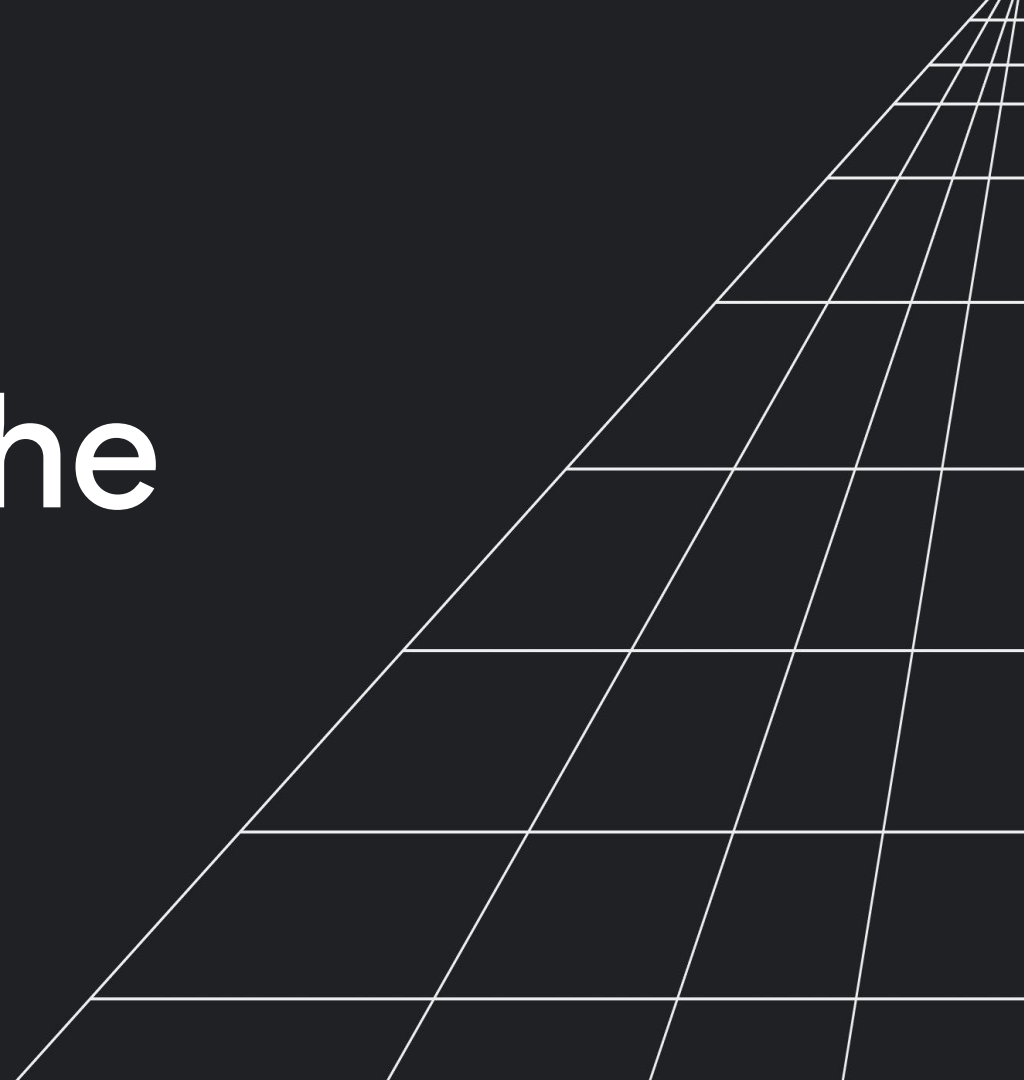
Google's Vision for the Future of Education



Google Cloud


The AI
Revolution
is here

In a climate of rapid policy shifts and mounting pressures, how do we adapt and lead effectively?

Three Mindsets to Master Ambiguity

01

Embrace a Curious Mindset:

Ask "What if...?" instead of "What is?"

02

Take Multiple Perspectives:

Center on the user—the student, the faculty, the researcher.

03

The Road to Success is Paved with Experimentation:

Move from theory to practice, quickly.

Harnessing AI to Navigate Ambiguity

Curiosity	Exploration at Scale
Empathy	Deep Personalization
Experimentation	Rapid Innovation

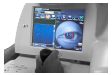
Our vision:

A tutor for every learner, and a TA for every teacher

Google is an industry pioneer in AI

2015

Google DeepMind AlphaGo defeats Go champion



2016

Google's DeepMind helps detect eye disease

2017

Google invents Transformer, kickstarting the LLM revolution

2018

Google's groundbreaking large language model, BERT

2019

Text-to-Text Transfer Transformer LLM 10B P Model Open Sourced

2020

Google LaMDA model trained to converse

2022

AlphaFold predicts structures of all known proteins

Gemini

NotebookLM

2023

A conversational AI Service powered by PaLM2

Gemini in Workspace

AI research assistant built with Gemini 2.0

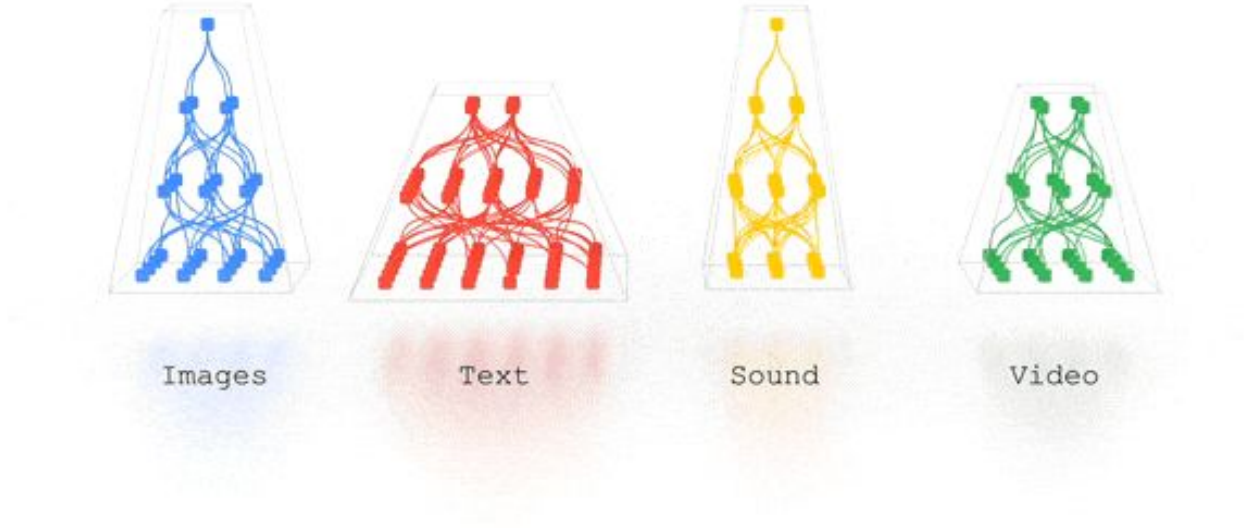
LearnLM

2024

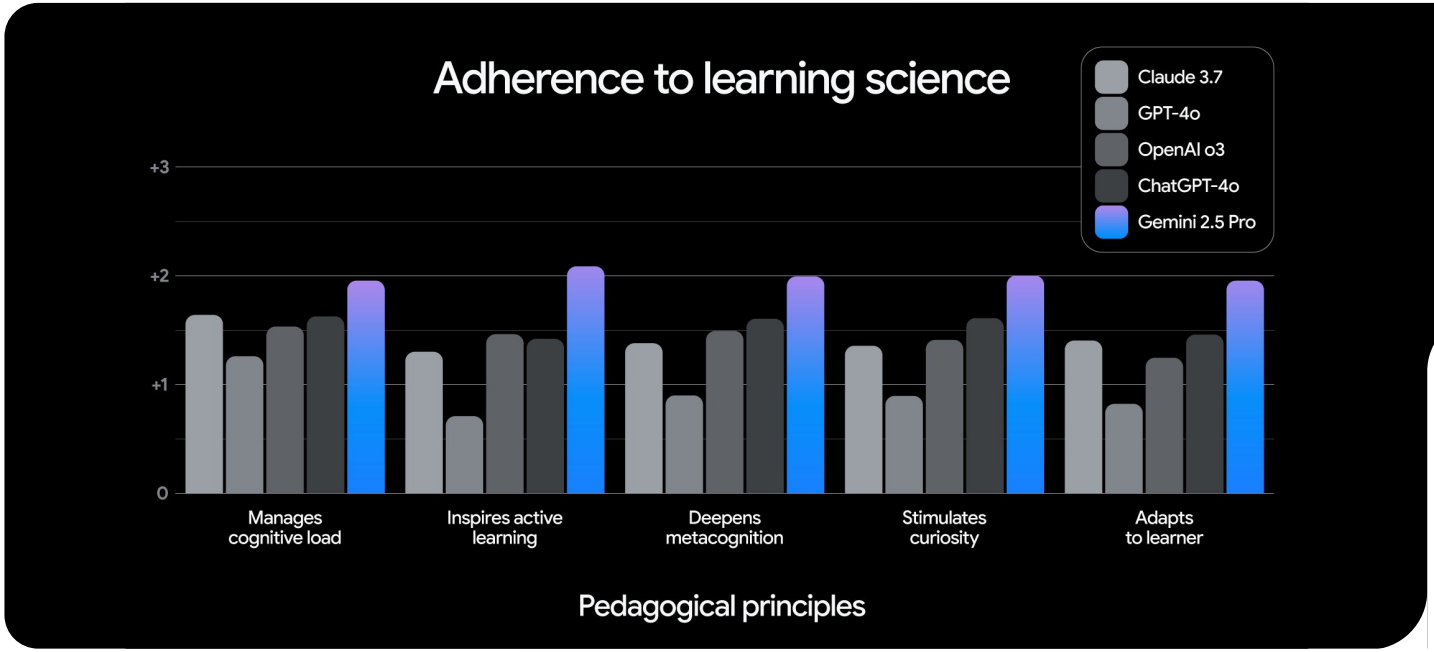
A family of AI models rooted in learning science principles and educational research

Multimodality

The ability to reason across different types of input

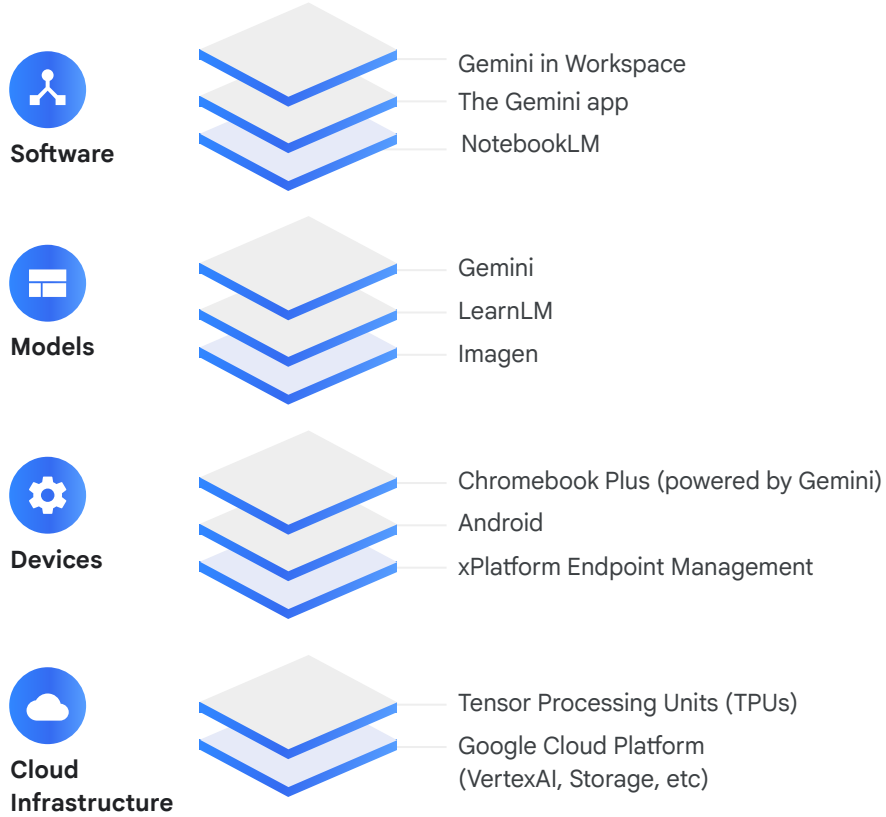


Infused with LearnLM, Gemini 2.5 Pro is now the world's leading model for learning



Gemini 2.5 Pro outperforms competitors on every category of the learning science principles

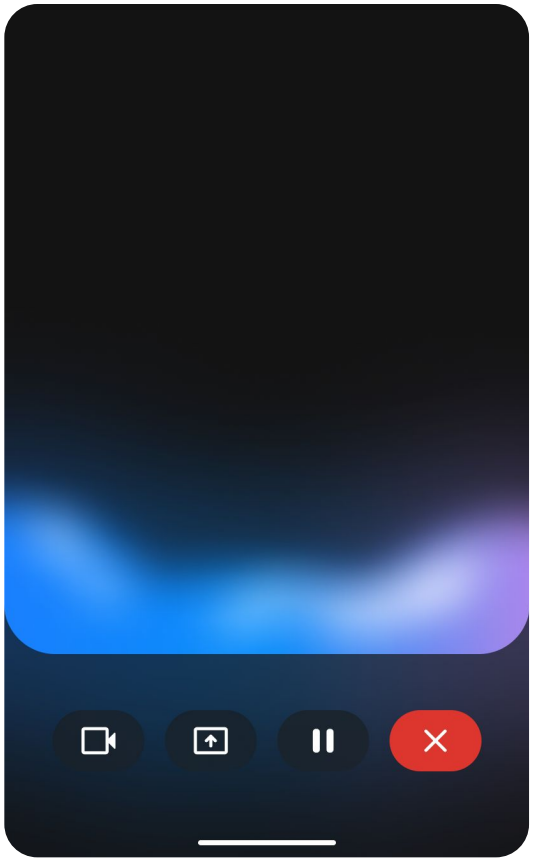
Google owns the entire AI tech stack



What is Generative AI?

A new kind of Collaborator

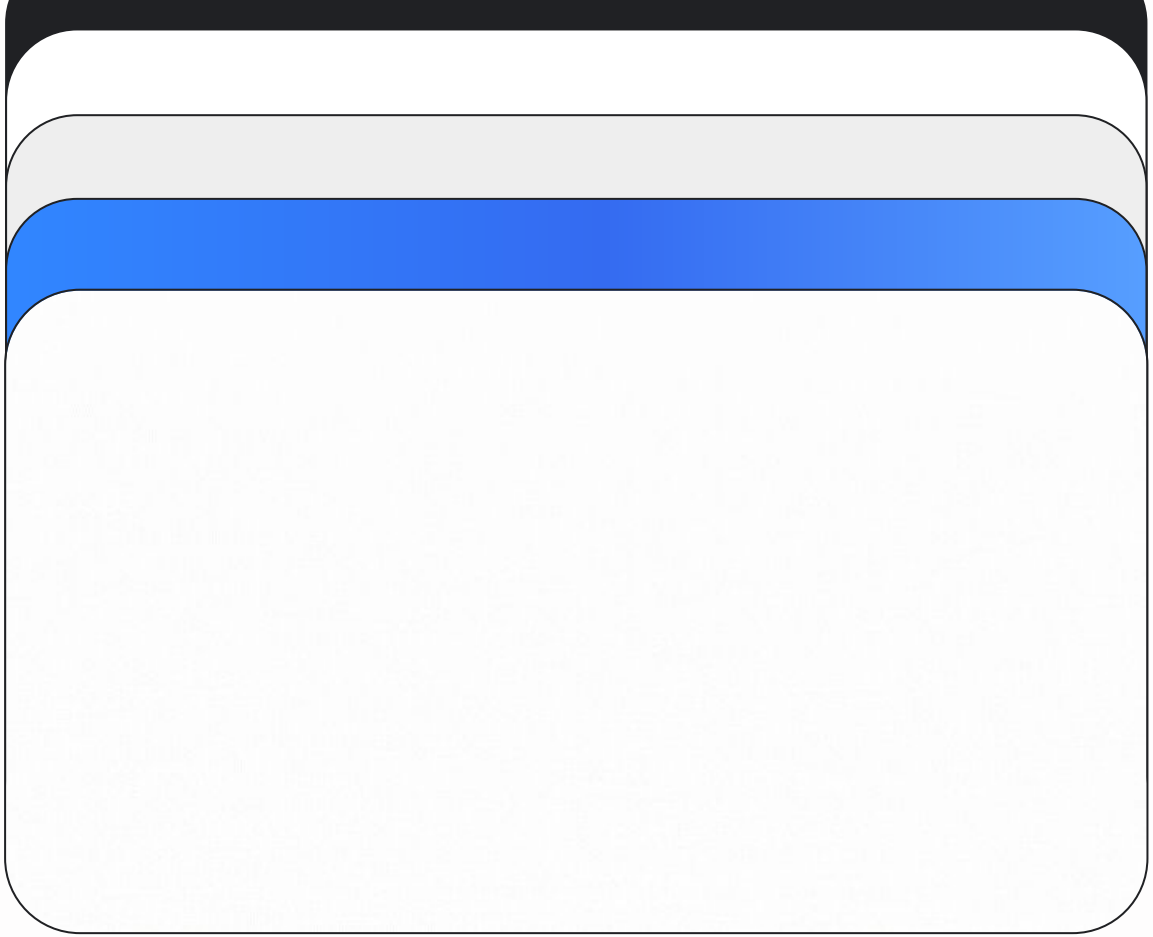
When you're starting a project, sometimes it's helpful to have a sounding board. With Gemini Live, you can brainstorm a topic and transform that conversation into a helpful outline
(or anything!).



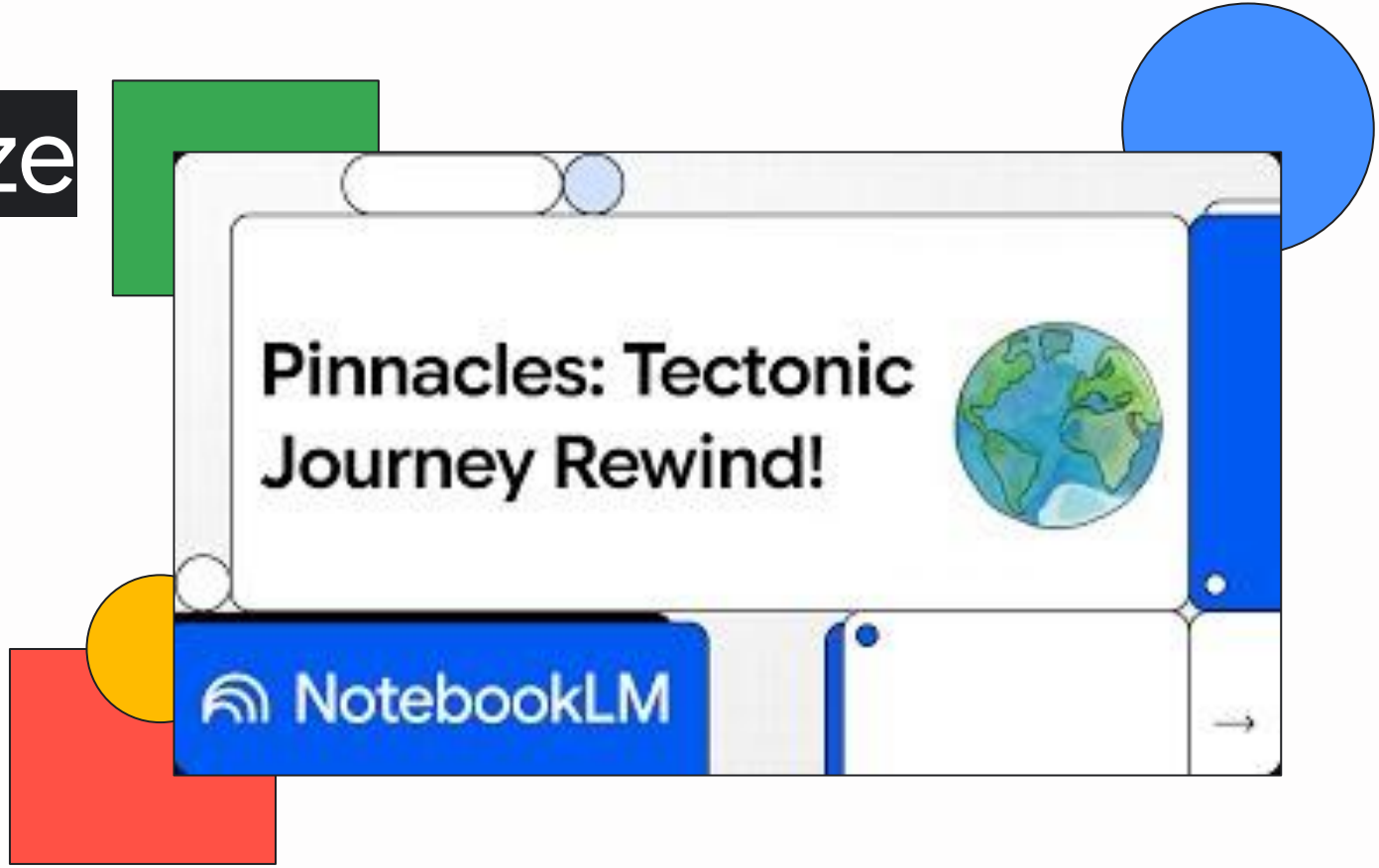
Summarize

Translate

Create



Summarize

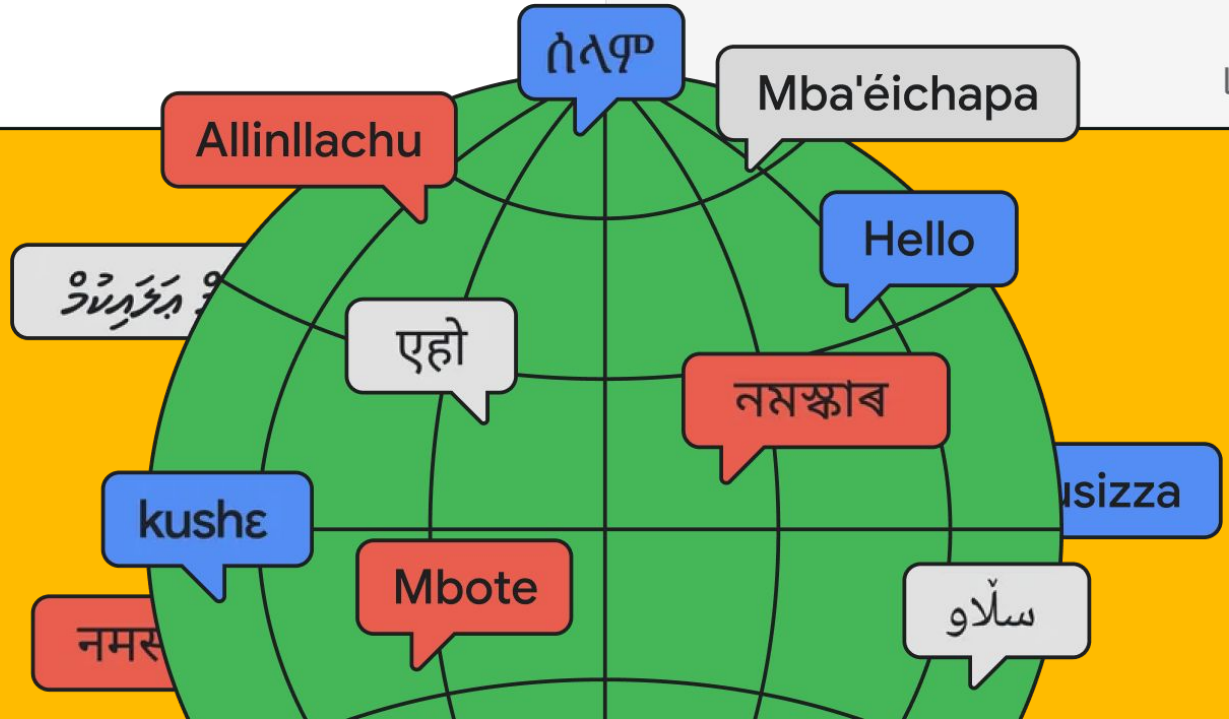


English - Detected | English | Spanish | French

Our mission: to enable everyone, everywhere to understand the world and express themselves across languages.

Twi | German | English

Yɛn botaeɛ: sɛdeɛ yɛbɛboa ama nnipa a wɔwɔ wiase nyinaa ate wiase ase na wɔatumi adi nkɔmmɔ



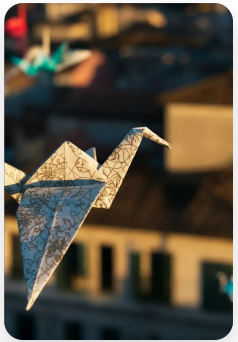
Google Cloud

Create

A melodic rock tune that is slow tempo. The drums continue to play a soft, gentle beat.

LOFI JAZZ FOR A QU
RAINY DAY, INFLUEN
FROM RNB WITH A C
MELODY, ATMOSPHI

Optimisic melody about the arrival of spring, full of joy and hope, tranquil flute in the background, upbeat with a gentle guitar riff

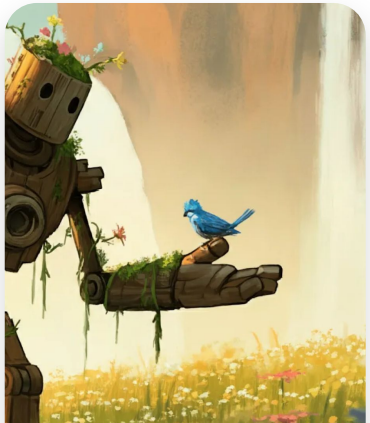


POV TEMP 0.7

succulents

Succulents are the hipster's pet rock.

Succulents are the gateway drug to houseplants.



Create image with Gemin

a watercolor painting of hydrang
a water pitcher

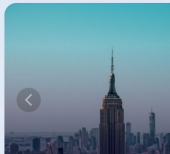
Watercolor

Create

Images are created based on your input a
represent the real world

Learn more

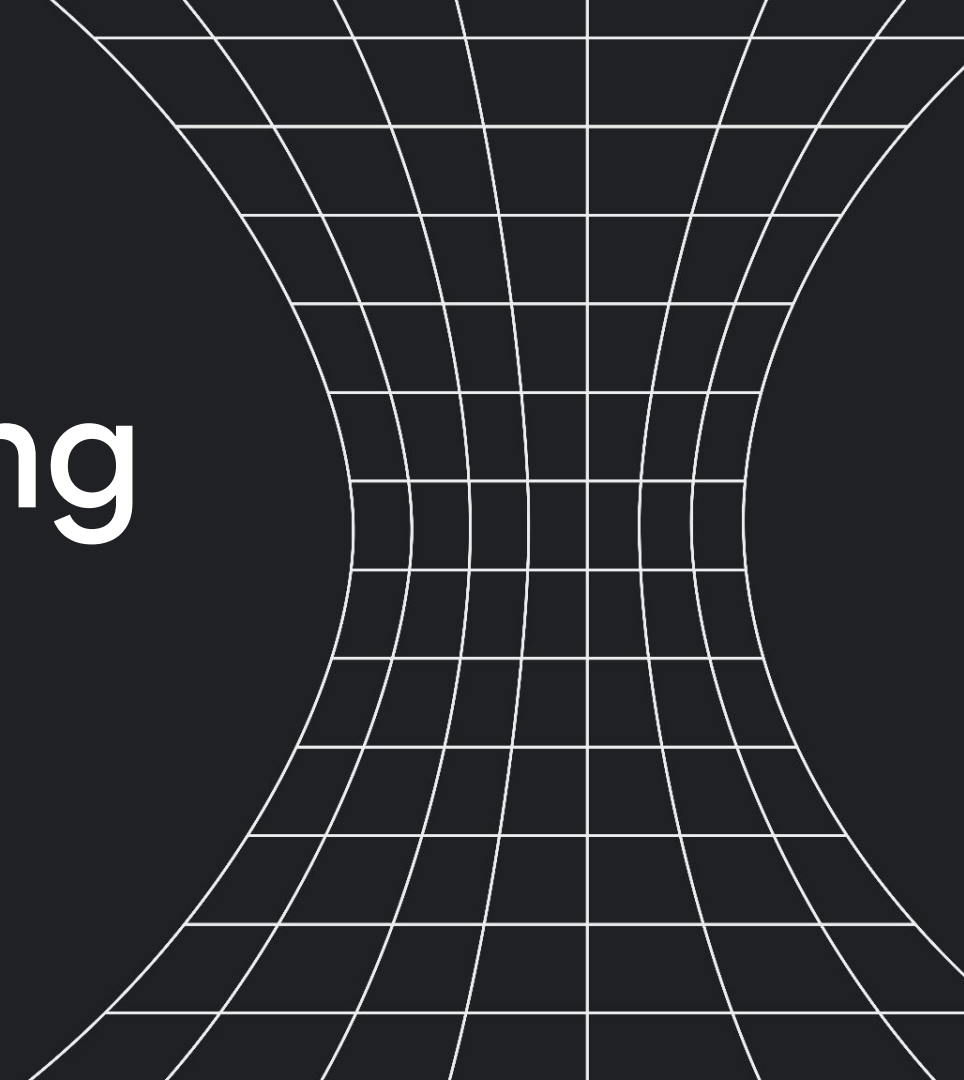
Inspiration example



Multimodal use cases are increasingly common

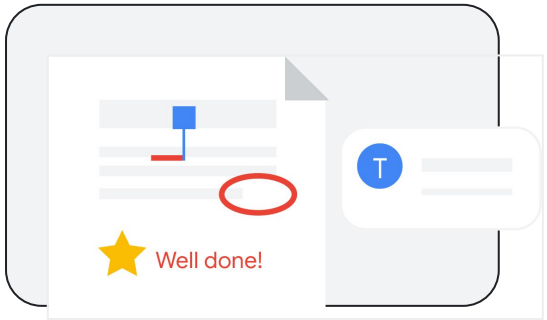
Translation	+	Image generation	=	✦	Content localization
Image recognition	+	Description/summarization	=	✦	Accessibility assistance
Content Creation	+	Text-to-speech	=	✦	Podcasting
Speech-to-text	+	Translation	=	✦	Live translation
OCR	+	Summarization	+	Text-to-speech	=	✦	Productivity assistance
Summarization	+	Text or video generation	=	✦	Creative assistance

AI in Teaching & Learning

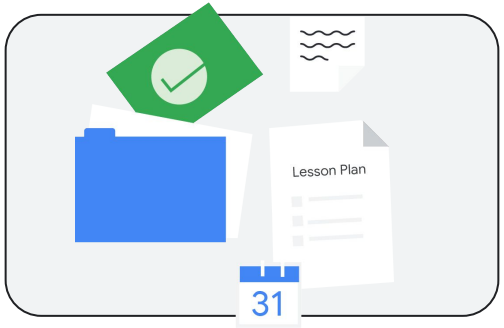


Google Cloud

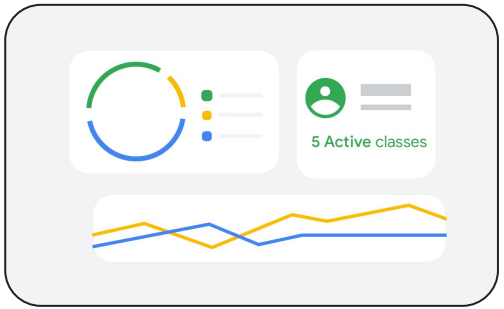
Imagine a world where



A tutor for
every learner



A TA for
every educator



An AI assistant for
every Edu leader

With LearnLM in our Gemini 2.5 models - we are able to build customized learning features for students

01

Visual Learning

Making it easier to learn complex topics with visuals.

02

Writing

Getting helpful writing feedback.

03

Quizzes

Personalized, grounded study guides.

04

Gemini Live

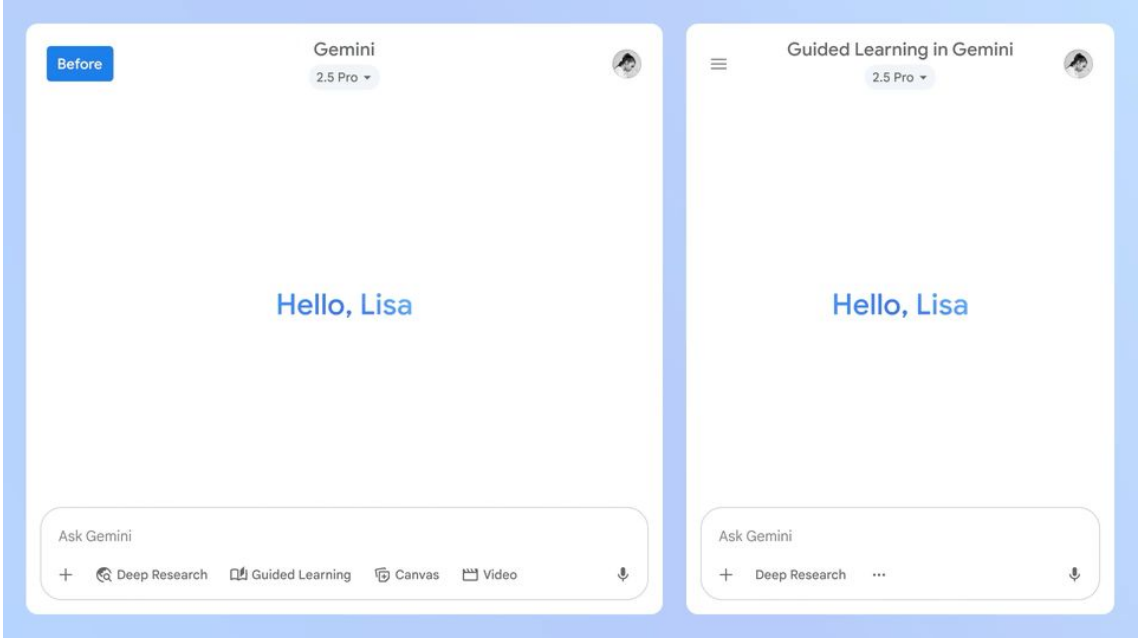
Learning with Gemini Live with voice, video, screenshare, and more.

Guided Learning:
Go beyond answers and build a deep understanding

Guided Learning is a new mode in Gemini that helps you study and learn by building a deep understanding instead of just getting answers.

It provides:

- **Step-by-step breakdowns:** To help you understand the “how” and “why” behind concepts
- **Probing questions:** To spark discussion and critical thought
- **Interactive quizzes:** To build and test your knowledge
- **Helpful visuals**: like images, interactive diagrams and YouTube videos



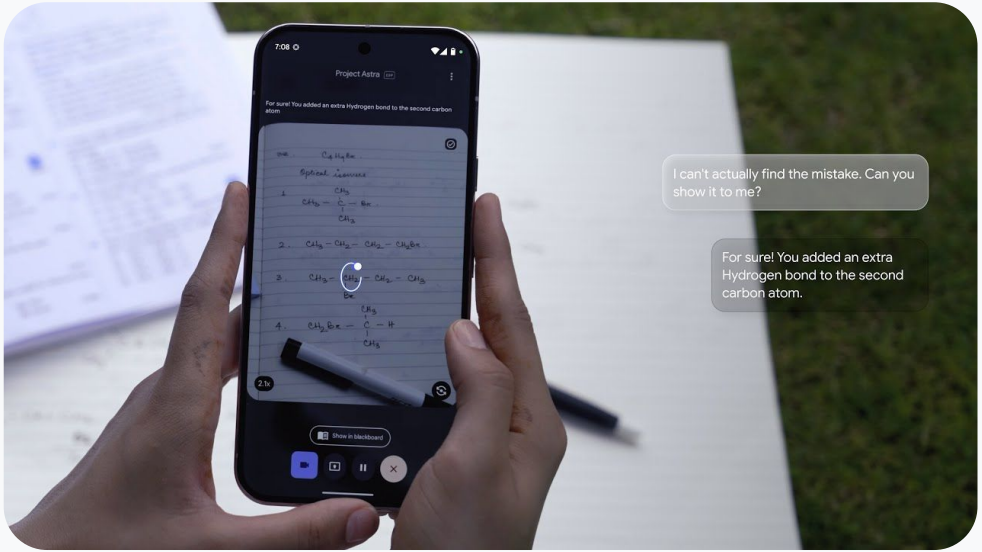
Research prototype

Project Astra

Live AI Tutor

Project Astra is our research prototype that explores the future

We decided to apply Astra's capabilities to create a conversational AI Tutor that could help with learning, in partnership with LearnLM.



Active Learning in Biology with Veo3

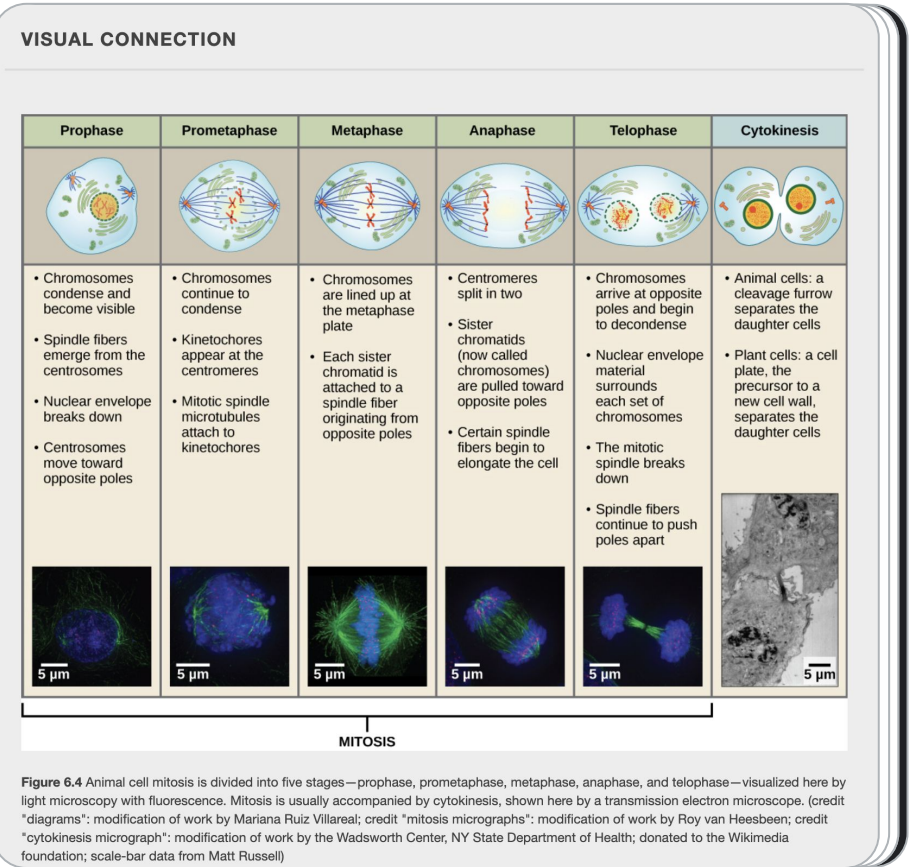
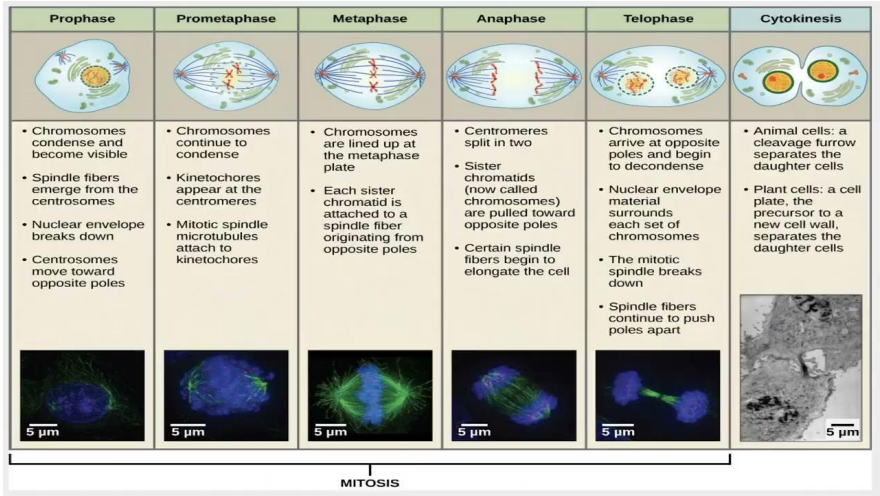


Figure 6.4 Animal cell mitosis is divided into five stages—prophase, prometaphase, metaphase, anaphase, and telophase—visualized here by light microscopy with fluorescence. Mitosis is usually accompanied by cytokinesis, shown here by a transmission electron microscope. (credit "diagrams": modification of work by Mariana Ruiz Villareal; credit "mitosis micrographs": modification of work by Roy van Heesbeen; credit "cytokinesis micrograph": modification of work by the Wadsworth Center, NY State Department of Health; donated to the Wikimedia foundation; scale-bar data from Matt Russell)

Illustrate the formation of the spindle fibers in Prophase, their attachment to the kinetochores in Prometaphase, their role in aligning chromosomes in Metaphase, and their contraction to pull sister chromatids apart in Anaphase. Show the breakdown of the spindle in Telophase.



Source image: openstax
Video: VideoFX w/ Veo 2

Google Cloud

Save hours of time with Deep Research

Get detailed reports with citations on any topic in minutes and ask follow up questions to sharpen your insights.

Educators: Lesson planning

Get up to speed faster with in depth reports about a subject you're planning to teach

Students: Research for papers and projects

Quickly grasp key aspects and use the report as a foundation for your own analysis and writing

Researchers: Literature reviews

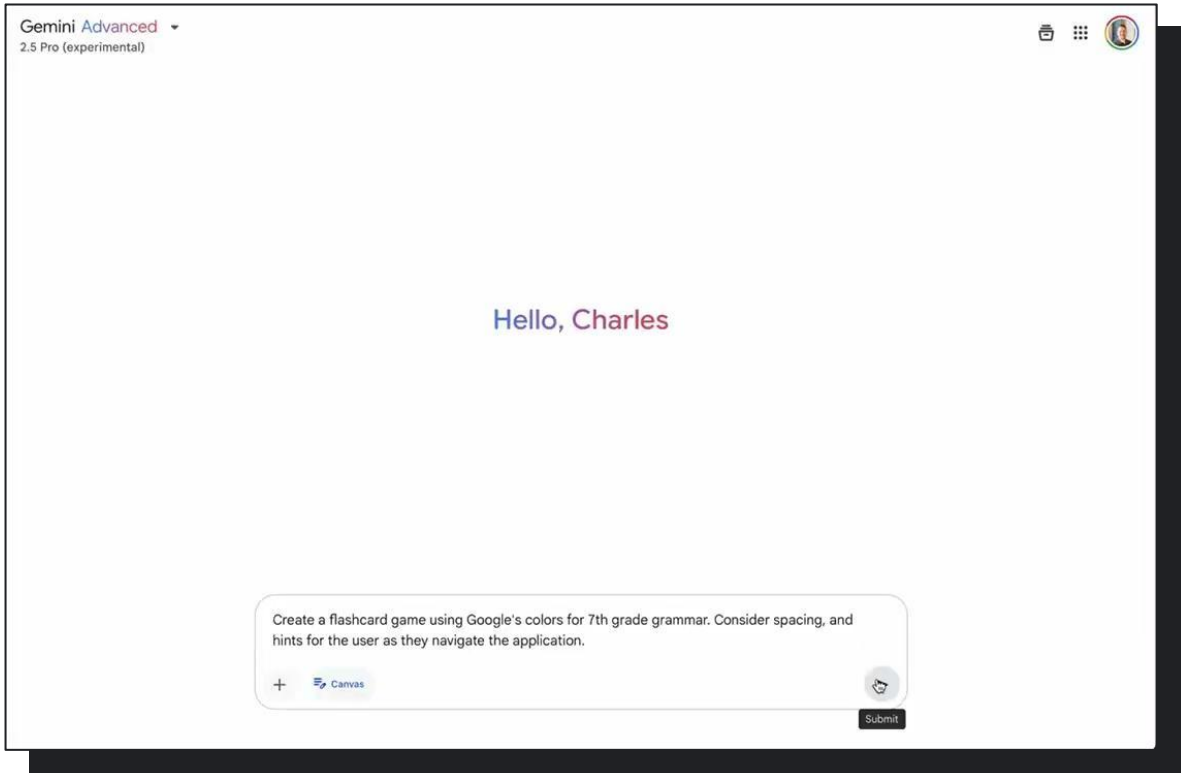
Quickly synthesize vast amounts of information from numerous sources, generate detailed reports, and identify key themes and gaps

Administrators: Policy Development

Analyze best practices for developing new policies or evaluating the effectiveness of existing ones

Deep Research is available to try in the Gemini app for all Workspace for Education users 18+ (10 uses per 30 day period)

Use Case: Explore + Build + Learn

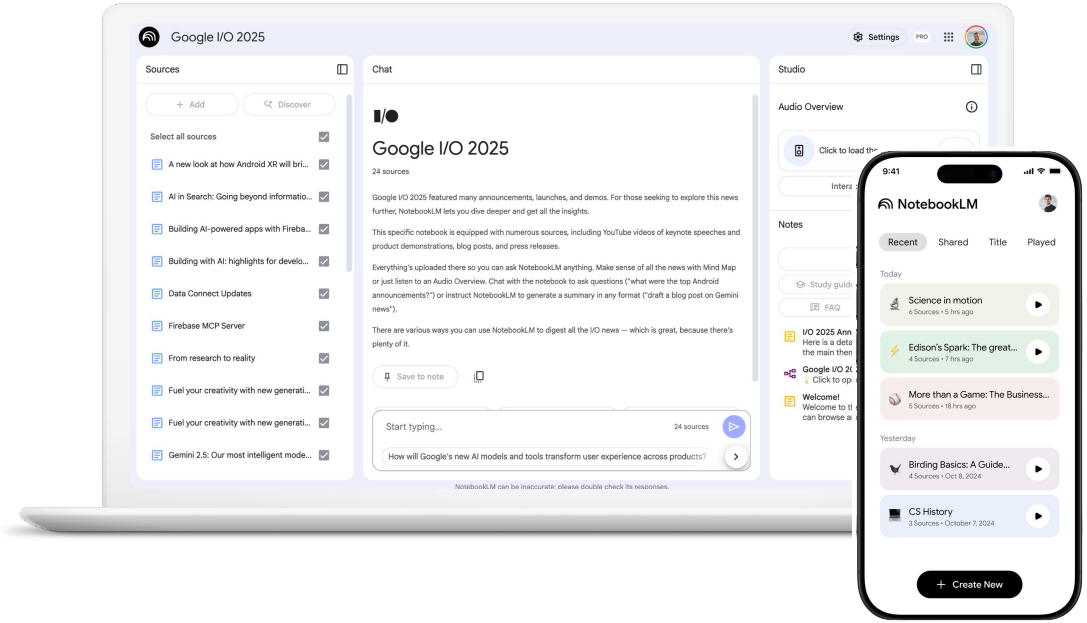


Practical Tools for Faculty: NotebookLM & Gemini

Google Cloud

NotebookLM

Your research and thinking partner, grounded in the information you trust



Powered by Gemini

Sources

Websites | Slides | Docs | PDFs | Text | YouTube URL | Audio | Markdown

Google Cloud

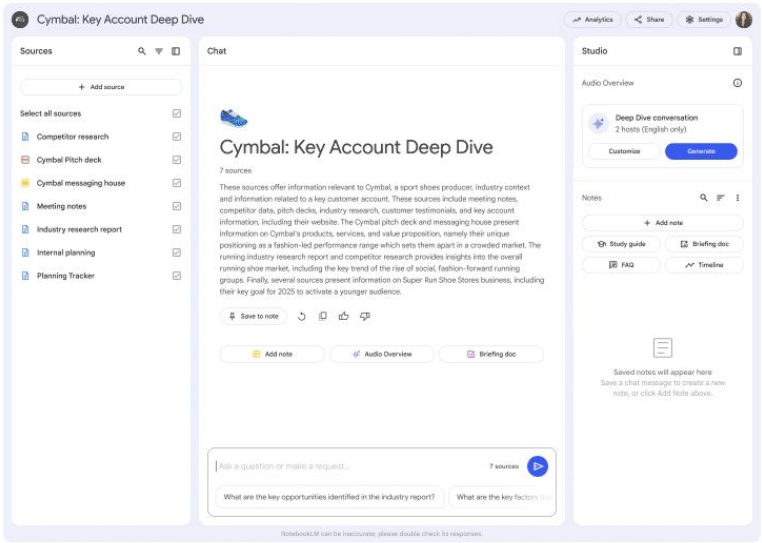
How it works

Upload sources

Websites, slides, docs, PDFs, text, audio, Youtube URL; or discover sources based on a topic of interest.

Chat with your sources

Create

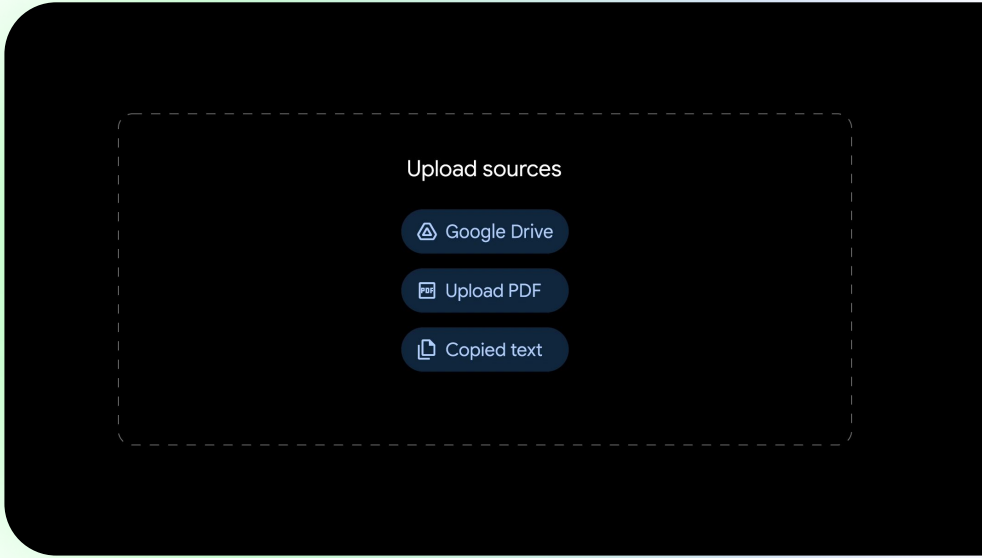


notebooklm.google

NotebookLM

Source Grounding

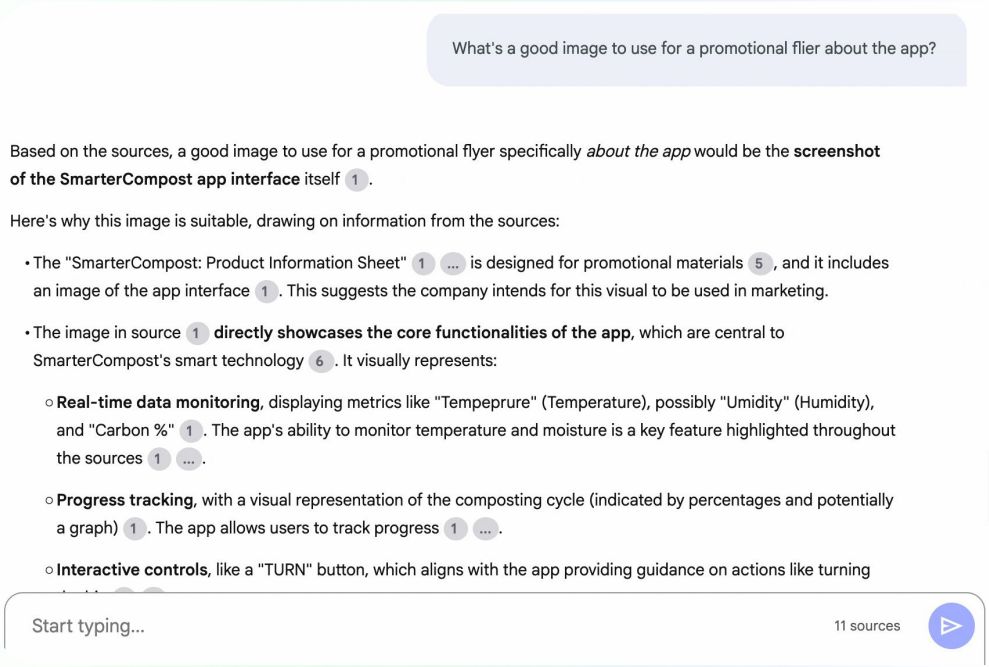
Upload the documents that are central to your projects, and NotebookLM instantly becomes an expert in the information that matters most to you, giving you an AI research partner grounded in sources you define.



NotebookLM

Inline Citations

In chat, Notebook responds to your questions with inline citations, showing you the most relevant quotes from your sources. One click takes you back to the original passage.



AI agents: The new software paradigm

Autonomous integration and action

Agents can perform complex **tasks** and workflows, integrations with other systems with minimal human intervention.

Reasoning and planning

Agents leverage advanced AI models to make informed decisions at users' directions and **adapt** to changing environments.

Continuous learning

Agents can **learn** from experience and improve their performance over time.

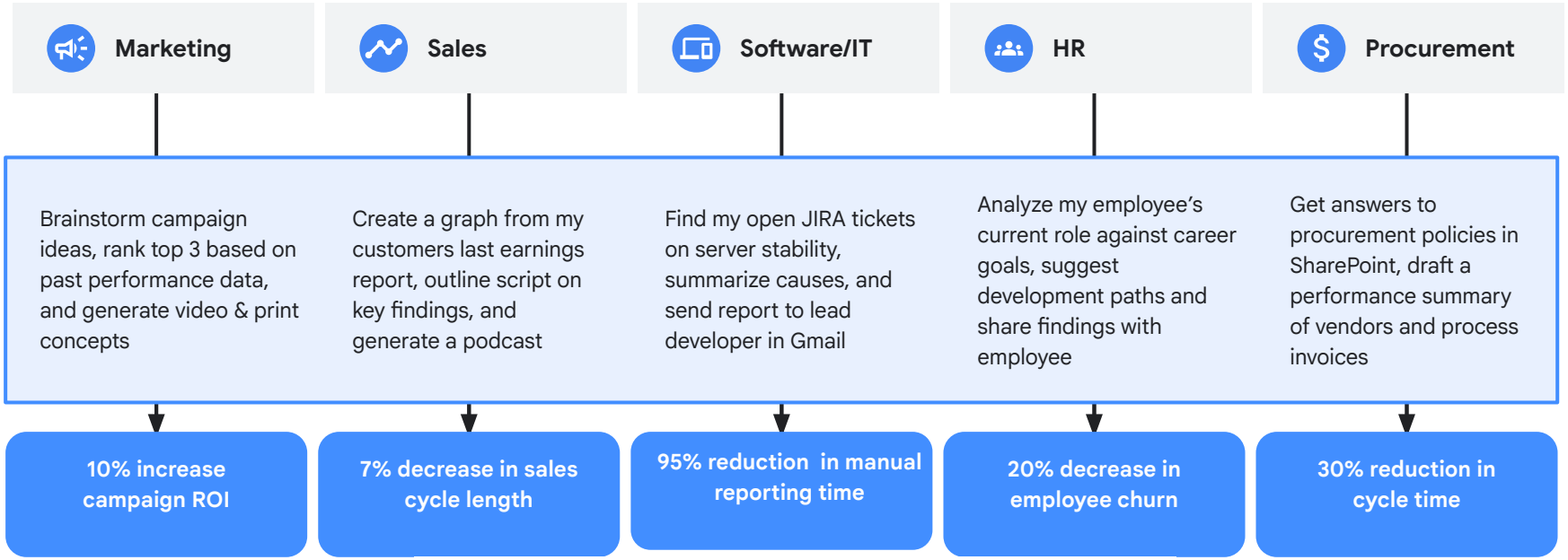
Multi-agent collaboration

Agents can work **together** to achieve shared goals, unlocking new levels of complexity and efficiency.

Chatbots

Indispensable tools for getting work done

What if you could easily apply AI, chat and agents across your enterprise from a single platform?



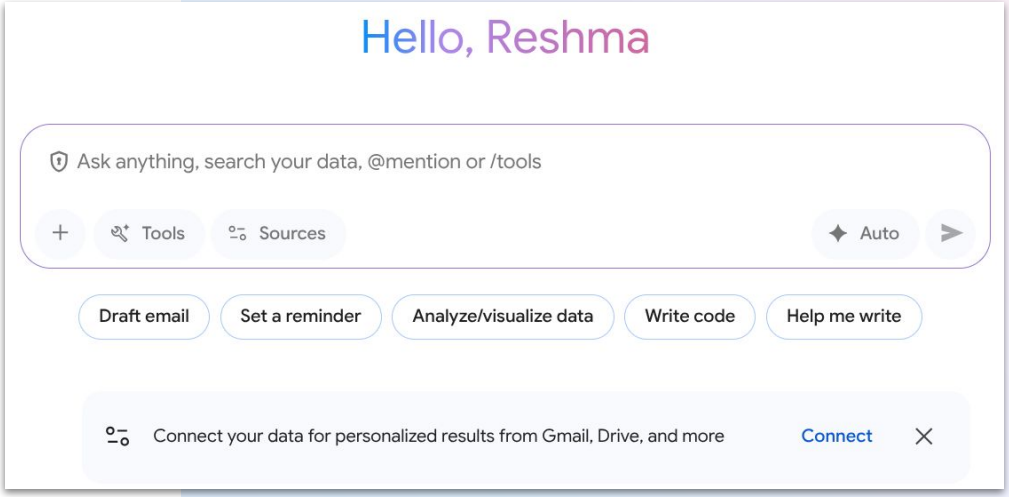
Demonstrative Business Outcomes*

*Please note that these figures are based on an AI value model and do not represent actual customer results.

Google Cloud

Introducing Google Agentspace

Google Agentspace **changes how work gets done** by seamlessly applying search, chat and agents across your data



Act

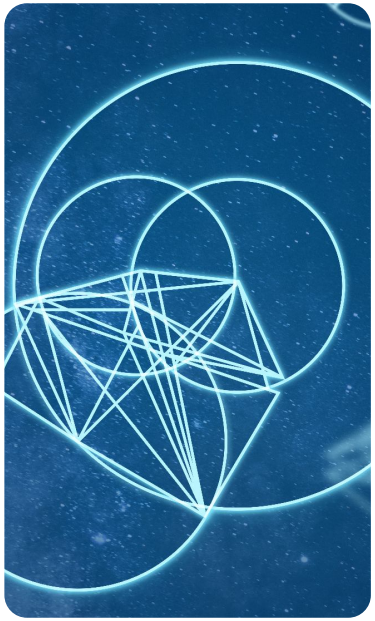
Access, build & govern agents in a single view to streamline workflows

- Easily access the right agent for the task with Agent Gallery
- Build custom AI agents without code using Agent Designer
- Leverage the latest Google-built agents, like Deep Research to synthesize business data or Idea Generation to drive novel strategies across domains
- Govern and manage agents for your enterprise

AI helps accelerate scientific discovery

SIMA

Navigating complex virtual 3D environments



AlphaGeometry

Solving Olympiad-level maths problems

Towards an AI co-scientist

Juraj Gottweis[*,1], Wei-Hung Weng[*,2], Alexander Daryin[*,1], Tao Tu[*,3],
Anil Palepu[2], Petar Sirkovic[1], Artiom Myaskovsky[1], Felix Weissenberger[1],
Keran Rong[3], Ryutaro Tanno[3], Khaled Saab[3], Dan Popovici[2], Jacob Blum[7], Fan Zhang[2],
Katherine Chou[2], Avinatan Hassidim[2], Burak Gokturk[1],
Amin Vahdat[1], Pushmeet Kohli[3], Yossi Matias[2],
Andrew Carroll[2], Kavita Kulkarni[2], Nenad Tomasev[3],
Vikram Dhillon[4], Eeshit Dhaval Vaishnav[5], Byron Lee[5],
Tiago R D Costa[6], José R Penadés[6], Gary Peltz[7],
Yunhan Xu[3], Annalisa Pawlosky[1], Alan Karthikesalingam[2] and Vivek Natarajan[2]

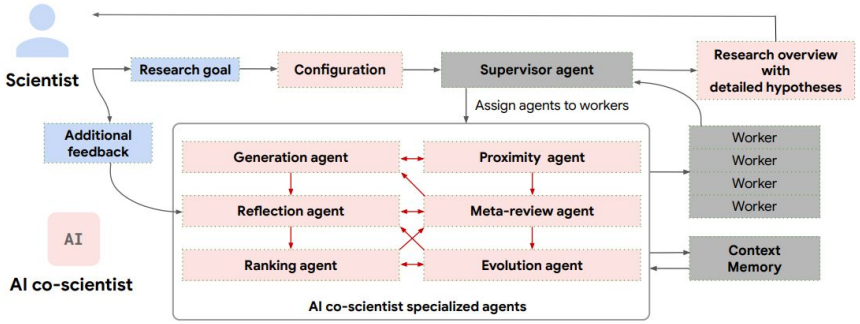
[1]Google Cloud AI Research, [2]Google Research, [3]Google DeepMind,
[4]Houston Methodist, [5]Sequome,
[6]Fleming Initiative and Imperial College London, [7]Stanford University

Imperial College London ✓
@imperialcollege

Follow ···

An unreleased AI system by @Google designed to assist researchers has the potential to "supercharge science."

Imperial researchers were among the first to test it and say it replicated ten years of work in just two days...



Health AI Developer Foundations

goo.gle/hai-def

Our Commitment to Responsible AI

Google AI Principles

AI should:

1. be socially beneficial
2. avoid creating or reinforcing unfair bias
3. be built and tested for safety
4. be accountable to people
5. incorporate privacy design principles
6. uphold high standards of scientific excellence
7. be made available for uses that accord with these principles

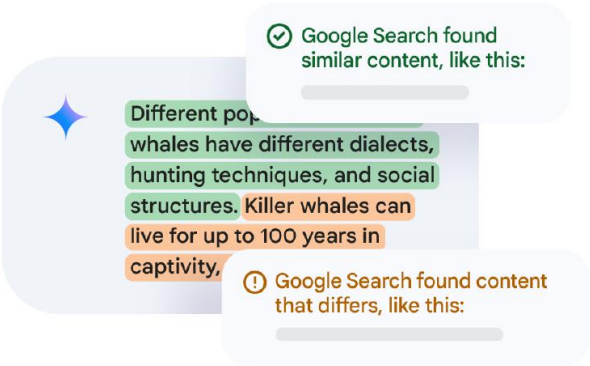
Applications we will not pursue:

1. likely to cause overall harm
2. principal purpose to direct injury
3. surveillance violating internationally accepted norms
4. purpose contravenes international law and human rights

Responsible AI requires an understanding of the **possible issues**, **limitations**, or **unintended consequences**.

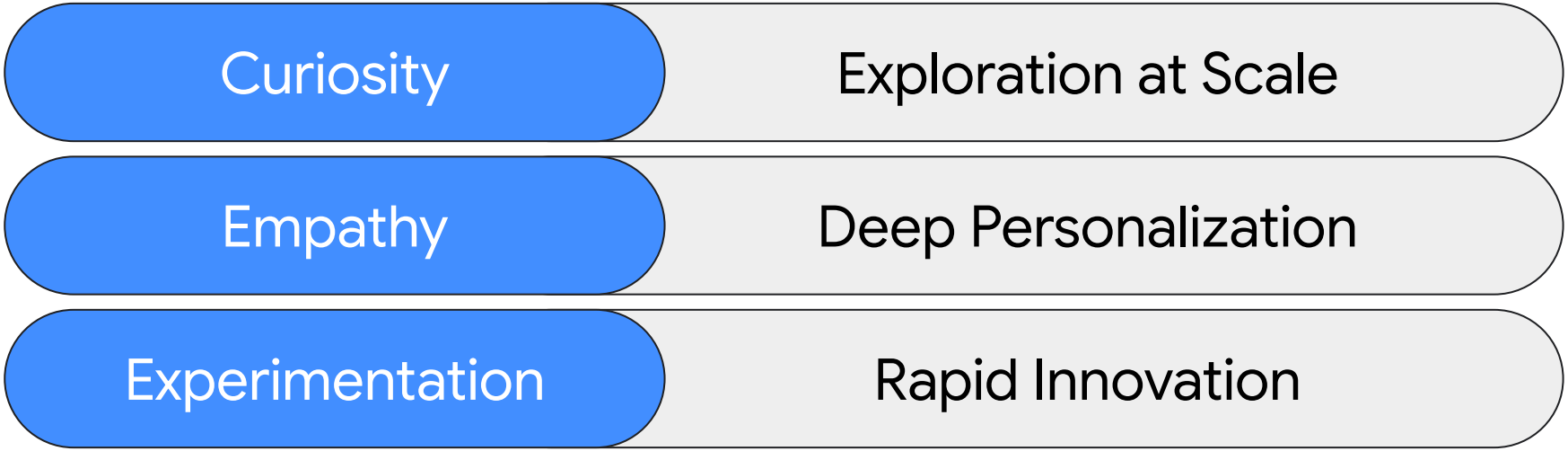
Check responses or explore sources on the web with Gemini

Double-check your responses using Google-It Feature

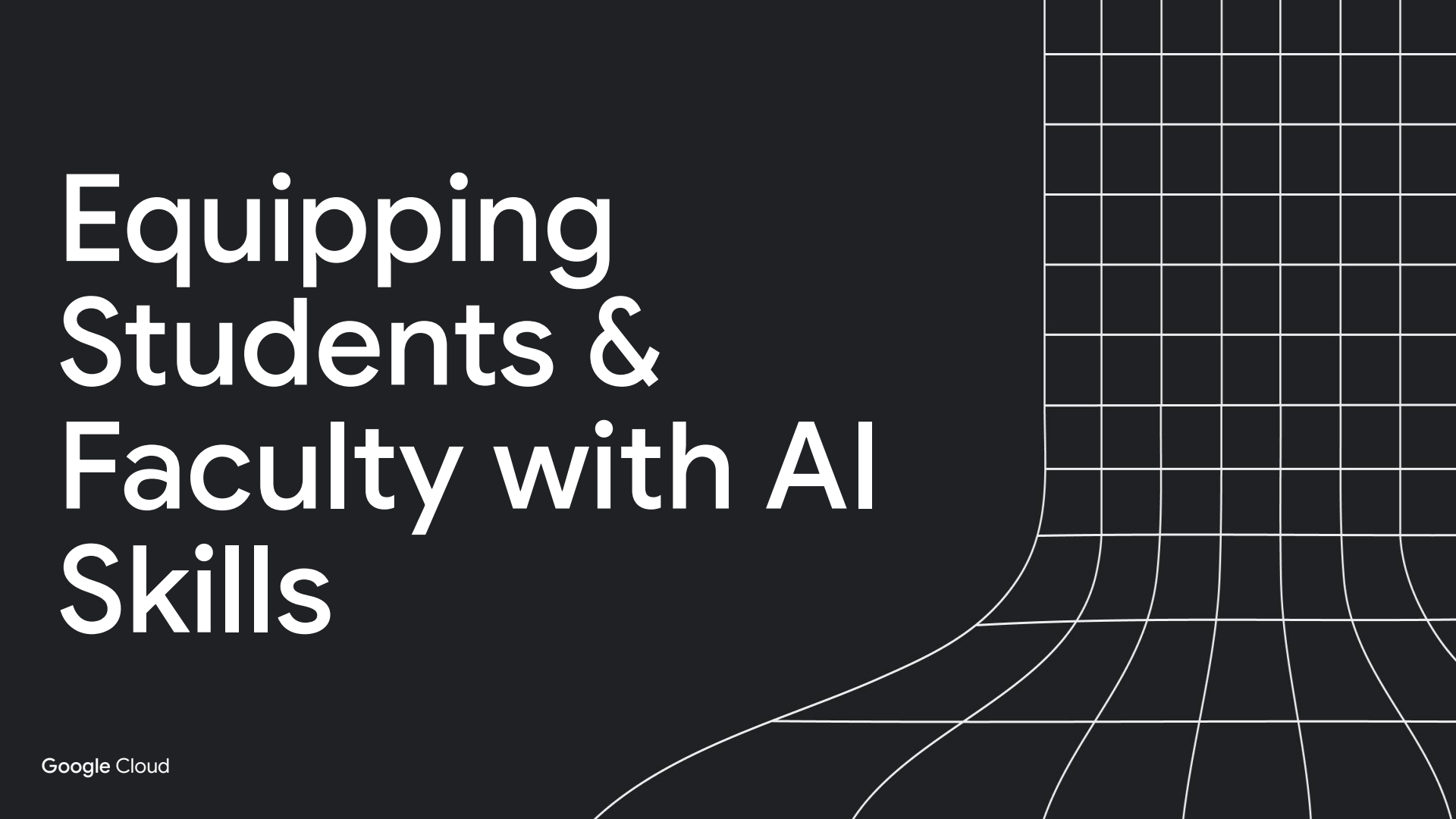


See related content within Gemini's responses for fact-checking prompts

Harnessing AI in Education



Equipping Students & Faculty with AI Skills



Google Cloud

AI skills also give students a competitive advantage

There is an opportunity for higher education to meet student and employer demand in AI skilling

Students want to develop AI skills before they enter the workforce

70% of graduates think generative AI should be incorporated into courses[1]

More than 60% of GenZ college students feel unprepared to use GenAI[1]

And **employers want talent with AI Skills**

71% say they'd rather hire a less experienced candidate with AI skills than a more experienced candidate without them[2]

62% believe job candidates and employees should have foundational knowledge of GenAI tools[1]

But there is a **gap in AI offerings and preparation**

69% of college graduates say they need more training on how to work alongside new technologies in their current role[1]

Less than one in four higher education faculty and administrators feel prepared for AI related changes[3]

Google

[1]Cengage Group. 2024 Graduate Employability Survey
[2]Microsoft. 2024 Worktrends Index Report
[3]Deloitte. 2024 Higher Education Trends

Training for in-demand job skills, including AI

Google Career Certificates

Includes AI Content

- Cybersecurity
- Data Analytics
- UX Design
- Digital Marketing
- Project Management
- IT Support

Google Courses

- AI Essentials
- Prompting Essentials
- Agile Essentials

Created by Google experts

Developed experts with decades of experience.

AI-First Training

Build AI skills through AI lessons within the foundational Google Career Certificates and Google Courses.

Flexible & On-Demand

Flexible training taught by Google experts. Google Career certificates can be completed part-time in under 3-6 months

Rigorous and relevant

Hands-on learning with built-in assessments, real-world projects, and skill-building labs.

Vetted by employers

Informed by insight from experts and recruiters at top employers hiring in these fields.

150+ national employers are using Google Career Certificates and Google Courses to upskill their employees or hire talent

AT&T, Dell Technologies, Deloitte., Ford, Google, Lowe's, Marriott International, Nationwide, Rocket Central, shutterstock, Southwest, Target, T-Mobile, verizon, SIEMENS, Wells Fargo

Google

Equip faculty & students with essential AI skills

About the course

Google AI Essentials is a self-paced course designed to help people across roles and industries get essential AI skills to boost their productivity, zero experience required.

When learners finish the course, they'll be able to:

- Integrate AI into their workstreams (everyday tasks at work)
- Use AI to boost productivity
- Use AI to elevate their work

The course is taught by AI experts at Google who are working to make the technology helpful for everyone. Learners gain hands-on experience in the following skills.

CLICK FOR DETAILED COURSE CURRICULUM

Top skills learners will gain:

- Use generative AI tools to help:
  - Develop ideas and content
  - Make more informed decisions
  - Speed up daily work tasks
- Write effective prompts to help:
  - Summarize information
  - Create taglines, and more.
- Use AI responsibly
- AI literacy
- Critical thinking
- Problem solving
- Iterative thinking

Google

Equip students with prompting skills

About the course

Google Prompting Essentials teaches you how to give clear and specific instructions to generative AI - known as prompting - helping you to unlock more of AI's benefits. In 5 easy steps, you'll learn how to prompt effectively and make AI work for you.

- **Save time on daily tasks:** Craft tailored emails, brainstorm creative content with ease, build tables and trackers effortlessly, and quickly summarize lengthy documents.
- **Uncover and share powerful insights:** Identify patterns in data, create compelling visuals, and even rehearse presentations.
- **Tackle complex projects:** Transform abstract ideas into actionable steps, using AI to role-play conversations, and get expert feedback.

The course is taught by AI experts at Google who are working to make the technology helpful for everyone. Learners gain hands-on experience in the following skills.

CLICK FOR DETAILED COURSE CURRICULUM

Top skills learners will gain:

- **Learn advanced prompting techniques**:
  - Solve complex problems with prompt chaining
  - Explore prompting techniques such as meta-prompting, chain-of-thought prompting, and tree-of-thought prompting
  - Create an AI agent for simulations and expert feedback
- Generative AI
- Prompt design
- Prompt evaluation and iteration
- Multimodal prompting
- Responsible AI

Google

Bold and responsible, together

Google Cloud Generative AI GitHub

	Description
gemini/	Discover Gemini through starter notebooks, use cases, function calling, sample apps, and more.
search/	Use this folder if you're interested in using Vertex AI Search, a Google-managed solution to help you rapidly build search engines for websites and across enterprise data. (Formerly known as Enterprise Search on Generative AI App Builder)
rag-grounding/	Use this folder for information on Retrieval Augmented Generation (RAG) and Grounding with Vertex AI. This is an index of notebooks and samples across other directories focused on this topic.
conversation/	Use this folder if you're interested in using Vertex AI Conversation, a Google-managed solution to help you rapidly build chat bots for websites and across enterprise data. (Formerly known as Chat Apps on Generative AI App Builder)
language/	Use this folder if you're interested in building your own solutions from scratch using Google's language foundation models (Vertex AI PaLM API).
vision/	Use this folder if you're interested in building your own solutions from scratch using features from Imagen on Vertex AI (Vertex AI Imagen API). These are the features that Imagen on Vertex AI offers: • Image generation • Image editing • Visual captioning • Visual question answering
audio/	Use this folder if you're interested in building your own solutions from scratch using features from Chirp, a version of Google's Universal Speech Model (USM) on Vertex AI (Vertex AI Chirp API).

goo.gle/gen-ai-github