



# Five generative AI use cases for Education

A supplement to the  
Public Sector Guide to  
Getting Started with  
Generative AI



# Introduction

## Generative AI marks one of the most significant technological shifts in history.

Its impact on individual and organizational productivity can be transformational, with the potential to rival the advent of the internet or the mobile device. Indeed, among organizations considering or using AI, 82% believe it will either significantly change or transform their industry.<sup>1</sup>

As AI solutions advance so quickly, we see gen AI's impact on education in three big ways: deep personalization, accelerated productivity, and expanded access. Teachers can create personalized course content that is available 24/7 to meet the unique needs of learners in their own languages, at their own paces. EdTech companies, school districts, higher-ed institutions, and researchers can explore new ways to teach, learn, and discover. Organizations of any size can make learning more personal, secure, and accessible.

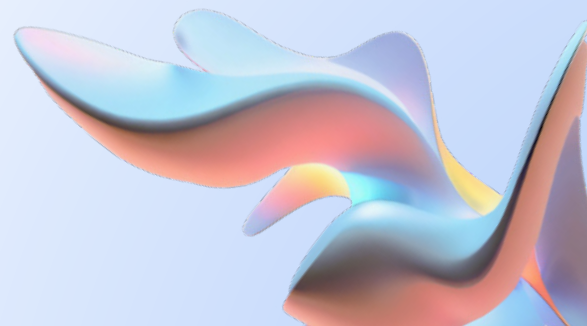
## About this eBook

This eBook is for educational leaders who want guidance on how to kickstart their institution's gen AI journey. It supplements the Public Sector Guide to Getting Started with Generative AI, which helps public sector leaders understand gen AI's core capabilities.

To find out how to launch a first use case within 30 days, download and read it here:

<https://inthecloud.withgoogle.com/exec-gen-ai-ebook-ps/dl-cd.html>

1. Google Cloud Gen AI Benchmarking Study, July 2023



# Education

## Use cases

**With the learning losses of the COVID pandemic and the skills gap in the global workforce, supporting staff, students, and educators is more important than ever.**

From teaching to research to administrative efficiencies, the potential for gen AI to improve education is enormous. It can help educators generate custom content 24/7, translating between text and audio in over 130 languages using our pre-trained or your custom models. It can help researchers run experiments faster and gain insights from vast datasets. It can help administrators unify student activity data across school ecosystems, allowing for vertical integration across systems, and longitudinal insights across the learner's entire educational journey. It can automate marketing strategies with real-time analytics to score leads and engage with the right learner, alumni, educator, school, or workforce. With so many capabilities at scale, gen AI is already transforming education by giving superpowers to everyone in the community.

### Insight

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**AI has the highest CAGR growth of 35% of all advanced technologies in education and its expected market size in 2025 will be \$6.1B.<sup>2</sup>**



# Education

## Priority use cases

Gen AI can help educational institutions support and engage with their communities across the long lifecycle from applicant to alum. Whether you run a traditional academic degree program or an online certificate course for retraining workers, gen AI makes it easier to communicate with students, staff, faculty, and graduates, as well as understand their diverse and changing needs. Gen AI's dynamic and interactive capabilities enable it to take an active role in responding to issues, anticipating concerns, and shaping solutions.

01

### Streamlined onboarding and retention for applicants

Prospective college students face a gamut of challenges, from getting in to applying for financial aid to staying in school. The National Student Research Clearinghouse Research Center reports that college completion rates have stalled, with only 62% of students earning a degree within six years.<sup>3</sup> From a first inquiry through to admission, natural language chatbots can guide applicants through the application process, increasing yield and speed to admission.

02

### Personalized learning and intuitive engagement for students

Using [Google Cloud Student Success Services](#) and [Google Cloud Vertex AI](#), educational institutions can develop dynamic, easily scalable online tutors to support students 24/7. Whether in traditional or non-traditional programs, students can master more material and strengthen their skills to prepare them for the workforce. With Natural Language Processing, chatbots can hold intuitive conversations with students as a "campus concierge" to answer common questions whenever they come up. From changing a major to finding mental health resources, chatbots can help students with everyday challenges and nudge them along a path to success.

3. National Student Clearinghouse Research Center, November 2023. <https://nscresearchcenter.org/completing-college/>

# Education

## Priority use cases

03

### Efficient lesson planning and accelerated research for faculty

With gen AI tools, faculty can design lessons at scale, offload repetitive tasks, and respond to requests more efficiently. By building on Google Cloud, it is easy to maintain and update online tutors—and easy to customize content. Researchers can ask new questions, test hypotheses, and get to results faster as they leverage an ever-growing array of public and domain-specific datasets. This can help them earn grant funding and drive new discoveries.

04

### Improved and secure analytics for administrators

Between learning management systems (LMS), student information systems (SIS), and other departmental databases, education relies heavily on data in silos. Google Cloud AI tools can help make data easy to access and quick to analyze—so staff can validate decisions and drive mission outcomes. Gen AI finds, organizes, and analyzes relevant information so over-burdened administrators can save time and resources. By configuring, monitoring, and remediating potential security issues, gen AI automates crucial tasks for cybersecurity personnel.

05

### Targeted outreach to alumni

Gen AI chatbots can help educational organizations stay in touch with their far-flung graduates for campus events and fundraising. With gen AI-driven analytics, alumni groups can better understand their communities and how to reach them.



# Education

## Real-world example

### Varsity Tutors uses AI to enhance individualized learning.

Varsity Tutors is a Live Learning Platform designed by Nerdy Inc. to seamlessly connect learners to experts in more than 3,000 subjects. The platform uses AI to match students to tutors, factoring in over 100 variables affecting academic, social, and motivational outcomes. Tutors on the platform also use AI-driven adaptive assessments to quickly understand a student's grasp of a subject, identifying strengths and opportunities for growth at the concept level. Students can access personalized AI-generated quizzes, study guides, and assessments to practice and monitor progress. Varsity Tutors has developed over 100,000 practice problems, spanning

200 subjects across 4,000 skills, each with detailed answers and explanations. Additionally, students can enjoy continuous, 24/7, real-time support through an AI-based chat.

By building proprietary models on top of various foundational models on Vertex AI, Varsity Tutors makes learning even more personal and accessible. For example, Vertex AI makes it possible to combine text and AI image generation, which helps break down complex topics into powerful images to help students visualize a topic.



**The exciting prospect lies in AI's potential to revolutionize the learning landscape. By seamlessly integrating AI into every aspect of our platform, from crafting AI-generated lesson plans to intelligently matching experts with learners, we dramatically enhance our ability to customize the learning experience to an individual's unique needs, interests, and goals.”**

**Chuck Cohn**

Founder and CEO  
Nerdy Inc.

# Education

## Real-world example

### Merlyn Mind integrates AI into classrooms to improve teacher productivity and student engagement.

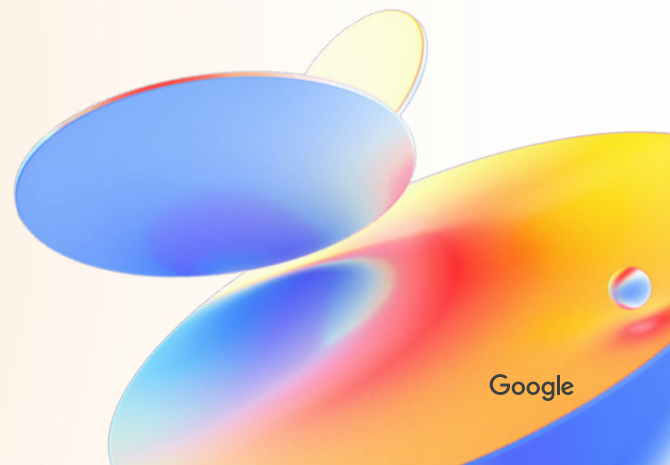
Merlyn Mind aims to transform the way AI enhances everyday work challenges, like optimizing workflows within different industries. They use Google Cloud's Graphical Processing Units, Tensor Processing Units, and AI infrastructure to build domain-specific AI platforms like Merlyn, a multimodal AI voice assistant for educators. Merlyn is an efficient, private, and safe gen AI solution built to improve

K-12 classroom productivity and student engagement. With Merlyn, teachers can operate their front-of-class display, internet applications, and Merlyn chat from anywhere in the room via their voice or remote control. They can generate lesson plans, grading rubrics, and assessments in a proprietary environment that is safe and secure.



**We founded Merlyn Mind to push the boundaries of how people can be more productive at work using AI and natural language understanding to improve human-computer interactions. Education is a great example of this approach because our platform can offer a lot of benefits given the unique workflows, privacy needs, and use of technology in education globally.”**

**Dr. Satya Nitta**  
CEO and cofounder  
Merlyn Mind



# Our commitment

**Successful implementation of AI in education requires careful planning, ongoing auditing for quality, and training for human staff.**

When done right, AI can be a powerful tool for improving student outcomes, mitigating administrative burdens, and making education more accessible for everyone.

Google is committed to helping our customers navigate this new terrain while keeping you safe and protected. Google Cloud incorporates digital watermarking so you can identify AI-based images and we offer indemnity for copyright infringement. If you are challenged on copyright grounds, we will assume responsibility for the potential legal risks involved.

Alongside our [responsible AI practices](#), our approach is designed to give you peace of mind in using our gen AI products.





# Helpful resources

## To explore courses and training programs:

Gen AI on Google Cloud, <https://cloud.google.com/blog/topics/training-certifications/new-generative-ai-trainings-from-google-cloud>

Skills Boost: Introduction to Gen AI Learning Path, <https://www.cloudskillsboost.google/paths/118>

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## To learn more about our Responsible AI practices and principles:

Google Responsible AI Practices, <https://ai.google/responsibility/responsible-ai-practices/>

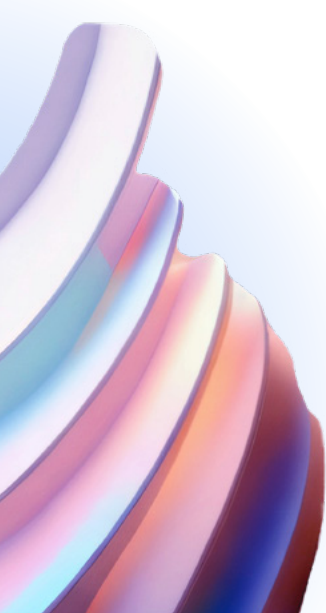
Google AI Principles, <https://ai.google/responsibility/principles/>

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## To read more about Gemini:

<https://deepmind.google/technologies/gemini/>

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# About Google Cloud

**We help organizations innovate faster with enterprise-ready gen AI.**

With decades of enterprise AI experience behind us, we are proud to be the AI partner of choice for many leading organizations. Already, many public sector organizations are using our AI platform to deliver on their missions. We look forward to helping you hit the ground running with gen AI, too. To learn more about our suite of gen AI tools, visit <https://goo.gle/cloud-gen-ai>

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## About Google Public Sector

**Google has been working with government and education since 2006.**

That year, we expanded our offerings beyond consumers, launching solutions purpose-built for enterprises. In 2022, we officially launched Google Public Sector, a separate subsidiary that focuses on helping U.S. public sector institutions accelerate their digital transformations to advance their mission.

We help federal civilian agencies, defense and intelligence organizations, state and local governments, and educational institutions serve their publics, modernize their infrastructure, improve operations, enhance cybersecurity, and meet compliance requirements. We continue to make significant investments and grow our team to meet the increasingly complex needs of government and education.

To learn more about Google Public Sector, visit <https://goo.gle/about-ps>

This eBook was written with the help of [Gemini](#), a gen AI app developed by Google. Gemini offers conversational AI in over 40 languages and more than 230 countries and territories. It was trained from the ground up to be multi-modal, seamlessly integrating text, audio, images, and video to generate and analyze content for a wide range of use cases.