Educational AI Series

The AI Activities Guide for Teachers

Hands-On Strategies and Tools for Your Classroom

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April 2026

Introduction

Of all the problems teachers face, and the list is long, the one I hear most often is resources. It comes up everywhere. At conferences, in workshops, during hallway conversations after sessions. Teachers approach me and the question is almost always the same: where can I find something I can actually use in my classroom?

And I get it. Completely. Teaching is already a full-contact profession. You're planning lessons, grading papers, managing 30 different personalities, responding to parents, attending meetings, filling out forms that someone somewhere decided were urgent. By the time the school day ends, the idea of going home to research new tools and build new materials from scratch is not realistic. It's not a matter of motivation or commitment. Teachers are among the hardest-working professionals I know. It's a matter of time and energy, both of which run out long before the to-do list does.
This is where guides like this one come in.

Over the past few years, I've reviewed hundreds of AI tools, shared practical resources across my blogs, and led workshops on how teachers can bring AI into their classrooms in ways that are ethical, intentional, and genuinely useful. I've talked to teachers who are excited about AI, teachers who are terrified of it, and teachers who fall somewhere in between, curious but unsure where to start. This guide is for all of them.

The goal here is simple: give teachers a helping hand as they figure out how AI fits into their specific subject, their specific classroom, their specific students. I'm not interested in hype. I'm not going to tell you AI will revolutionize education overnight or that it replaces good teaching. It won't and it doesn't. What AI can do, when used

with intention and professional judgment, is take some of the weight off. It can draft a case study you'd never have time to write yourself. It can generate vocabulary exercises in three proficiency levels for a multilingual classroom. It can produce a first version of a rubric that you then refine with your own expertise. It can give a student who struggles with writing a starting point that removes the blank-page paralysis without doing the thinking for them.

Each section in this guide focuses on a specific subject area: social studies, math, language learning, and science. For each one, I've pulled ideas from real teachers, published sources, and professional development sessions. You'll find activity descriptions you can adapt, tables of AI tools with honest notes on what they do and what they cost, and source lists so you can dig deeper on your own.

AI Activities for Social Studies Teachers

Social studies classrooms run on evidence, perspective, and argument. Students read primary sources, debate historical turning points, weigh competing narratives, and try to figure out how societies make decisions. AI fits naturally into that work because it can generate alternative viewpoints, simulate conversations with historical figures, and produce differentiated versions of complex texts on demand. The tools don't replace the analysis. They give students more material to analyze.

Image generated using Gemini Pro

What makes social studies particularly interesting as an AI testing ground is the bias question. Every AI model carries the biases baked into its training data, and social studies is the one subject where spotting bias is already part of the curriculum. Students who learn to prompt an AI for a description of World War I from four different national perspectives, then map where the narratives conflict, are building exactly the

kind of critical thinking that civic education has always aimed for. The AI makes the bias visible. The student does the thinking about what it means.

The activities in this section range from primary source analysis and historical role-play to deepfake detection and simulated civic processes. Some are quick classroom warm-ups. Others are multi-day projects. All of them follow the same principle: AI handles the research logistics, the content generation, and the differentiation. The teacher and the students handle the interpretation, the evaluation, and the argument.

1. First-Person Historical Narrative

Have students pick a historical figure and write a first-person diary entry or letter from that person's point of view. They use an AI chatbot to research biographical details, time-period language, and contextual information, then draft their own narrative using that material as a foundation.

Image generated using Gemini Pro

A class studying the American Revolution might write entries from the perspective of a soldier at Valley Forge, a Loyalist shopkeeper, or an enslaved person hearing rumors of British promises of freedom. The AI provides the factual scaffolding. The student provides the voice and interpretation.

> **Tools:** Any mainstream AI chatbot can do the job including ChatGPT, Gemini, Claude, Copilot, Perplexity AI.

2. Historical Figure Interview

Students research a historical figure, prepare interview questions, then use an AI chatbot to simulate a conversation with that person. The real learning comes after the interview: students compare the AI's answers to verified historical sources and flag anything the AI got wrong or oversimplified. A class studying the Civil Rights Movement could interview Rosa Parks, Medgar Evers, or Fannie Lou Hamer, then write a reflection identifying at least three claims they verified and one the AI fabricated.

> **Tools:** Same for this activity. Any mainstream AI chatbot can do the job including ChatGPT, Gemini, Claude, Copilot, Perplexity AI.

3. Interactive Story Map

Students use AI to research historical locations and generate descriptive text, then combine that research with a mapping platform to build layered, multimedia narratives tied to real geography. A unit on Westward Expansion could trace the Oregon Trail, with each stop including AI-researched context about terrain,

encounters with Indigenous nations, and supply logistics. Students add their own analysis at each point: why did travelers make the choices they did, and what did those choices cost the people already living there?

Image generated using Gemini Pro

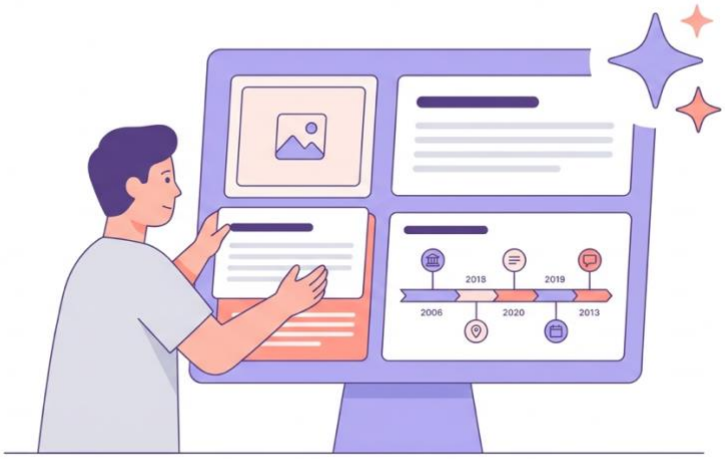
> **Tools:** ChatGPT, Claude or Gemini for research, StoryMapJS for mapping

4. AI-Powered Storytelling Presentation

Students use AI presentation tools to organize historical research into visual narratives. They generate slide structures, find relevant images, and organize biographical or thematic information, then customize the final product with their own argument and interpretation. A high school class studying the Harlem Renaissance could create presentations on key figures like Langston Hughes or Zora

Neale Hurston, with each student building a case for why that figure's contributions still matter today.

Tools: Canva, Google Slides, Claude, StoryMapJS , Gamma.



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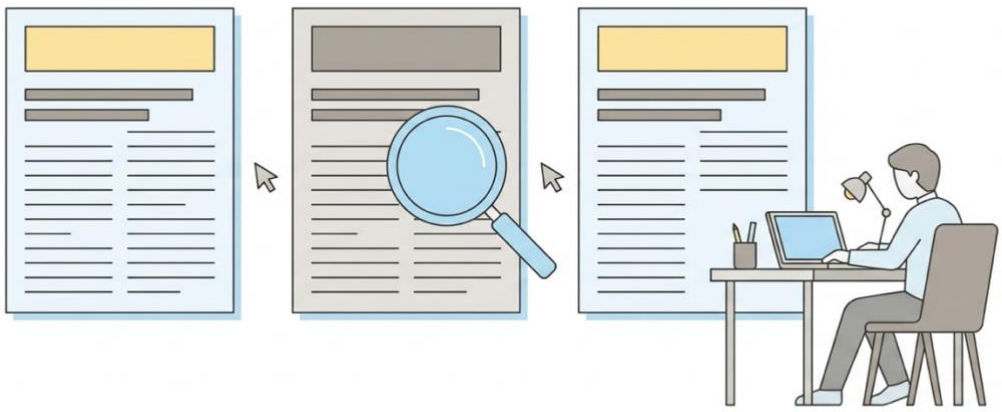
5. Current Events Analyzer

Students pick a current policy debate (immigration, climate legislation, trade policy) and use AI to pull summaries from three different news sources covering the same story. They then write a comparative analysis: where do the sources agree, where do they diverge, and what language choices reveal editorial slant. The AI generates the summaries. The student identifies the framing differences. This builds media literacy and analytical writing at the same time.

Tools: Any mainstream AI chatbot can do the job including ChatGPT, Gemini, Claude, Copilot, Perplexity AI.



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6. Virtual Museum Tour and Response

Students explore a virtual museum exhibit, select an artifact that interests them, then use AI to research its historical context, origin, and cultural significance. They write a museum-style placard that goes beyond surface description and explains what the object tells us about the people who made it. A world history class could tour the British Museum's Mesopotamia collection online, with each student producing a placard for one artifact.

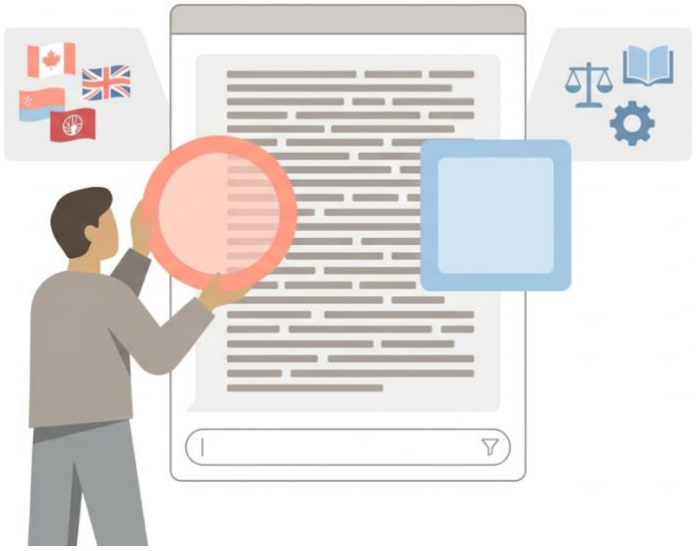
> Tools: Google Arts & Culture for virtual tours, ChatGPT/Claude/Gemini for research.

Image generated using Gemini Pro

7. Bias Detection in AI-Generated Content

Students prompt an AI to describe a historical event, then analyze the response for perspective gaps. Who gets centered in the narrative? Whose experience is missing? A class studying World War I could prompt AI to describe the war's causes from a British, German, Serbian, and Ottoman perspective, then map where the narratives conflict. The goal isn't to find the "right" answer but to understand that every historical narrative is constructed from a particular vantage point.

> **Tools:** Any mainstream AI chatbot can do the job including ChatGPT, Gemini, Claude, Copilot, Perplexity AI.



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8. Multiperspectivity Through AI Personas

Students interact with AI-generated historical personas, asking questions and critically evaluating the responses against primary sources. A unit on Reconstruction could have students interview AI personas representing a formerly enslaved person, a white Southern landowner, a Northern abolitionist, and a Freedmen's Bureau agent. Students prepare questions rooted in primary source research, conduct the AI interviews, then write an analytical essay comparing how each figure would have experienced the same policies.

> **Tools:** Any mainstream AI chatbot can do the job including ChatGPT, Gemini, Claude, Copilot, Perplexity AI.

Image generated using Gemini Pro

9. Deep Fake Literacy and Media Verification

Students examine AI-generated images, videos, and audio clips alongside authentic media and try to identify which is which. After scoring each clip on a credibility rubric and explaining their reasoning, they learn which ones were fabricated. A class studying elections or propaganda could analyze media clips related to a political event, then discuss what it means for democratic participation when voters can't distinguish real footage from fabricated content.

> Tools: deepfake.ai.org, ChatGPT or Gemini Nano Banana, AI detection tools.

Image generated using Gemini Pro

10. AI-Enhanced Debate Prep and Socratic Seminar

Students use AI to gather background information and identify key arguments on both sides of a question, then bring that preparation into structured classroom discussion. A government class debating the Electoral College could use AI to compile arguments for and against the system, including historical context and recent election data. Each student takes a position, prepares a two-minute opening statement using evidence they've verified, and participates in a structured debate.

> **Tools:** Any mainstream AI chatbot can do the job including ChatGPT, Gemini, Claude, Copilot, Perplexity AI.

Image generated using Gemini Pro

11. Simulating Civic Processes

Students take on roles in a simulated civic process like a town hall, legislative session, or court proceeding. AI generates stakeholder position papers, background briefings, and procedural frameworks. A class studying local government could simulate a city council meeting on a zoning dispute, with AI-generated materials for each stakeholder group (council member, citizen advocate, business owner, environmental group representative). Students argue positions, negotiate compromises, and vote.

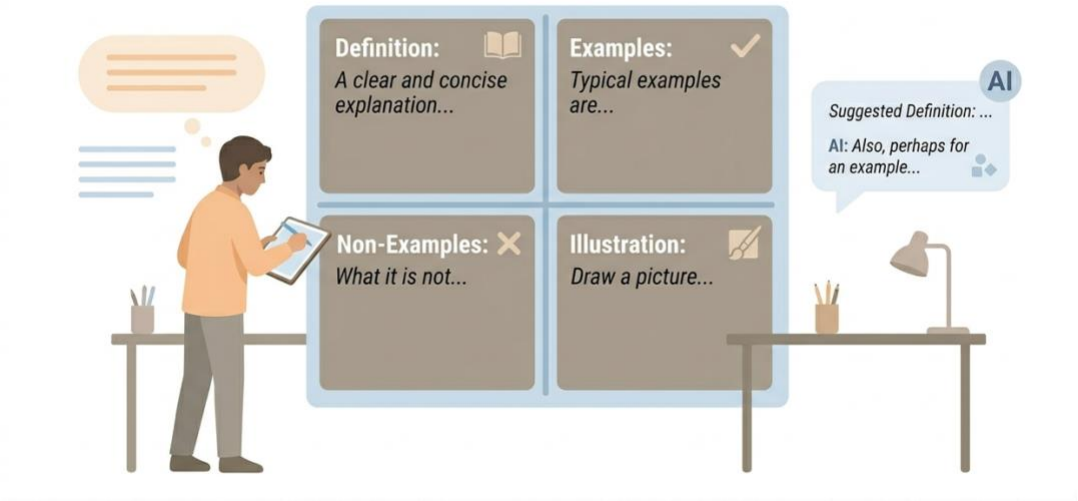
> Tools: Any mainstream AI chatbot can do the job including ChatGPT, Gemini, Claude, Copilot, Perplexity AI.

12. Vocabulary Building with the Frayer Model

Students use AI chatbots to complete Frayer Model graphic organizers for challenging social studies terms. They prompt the AI for a definition, then generate

examples, non-examples, and their own illustration or analogy. A class studying the Constitution could use this for terms like federalism, due process, judicial review, and popular sovereignty. Students fill in their templates, then compare with a partner to catch misunderstandings early.

> **Tools:** Any mainstream AI chatbot can do the job including ChatGPT, Gemini, Claude, Copilot, Perplexity AI.



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Here are more tools to try in your social studies classes:

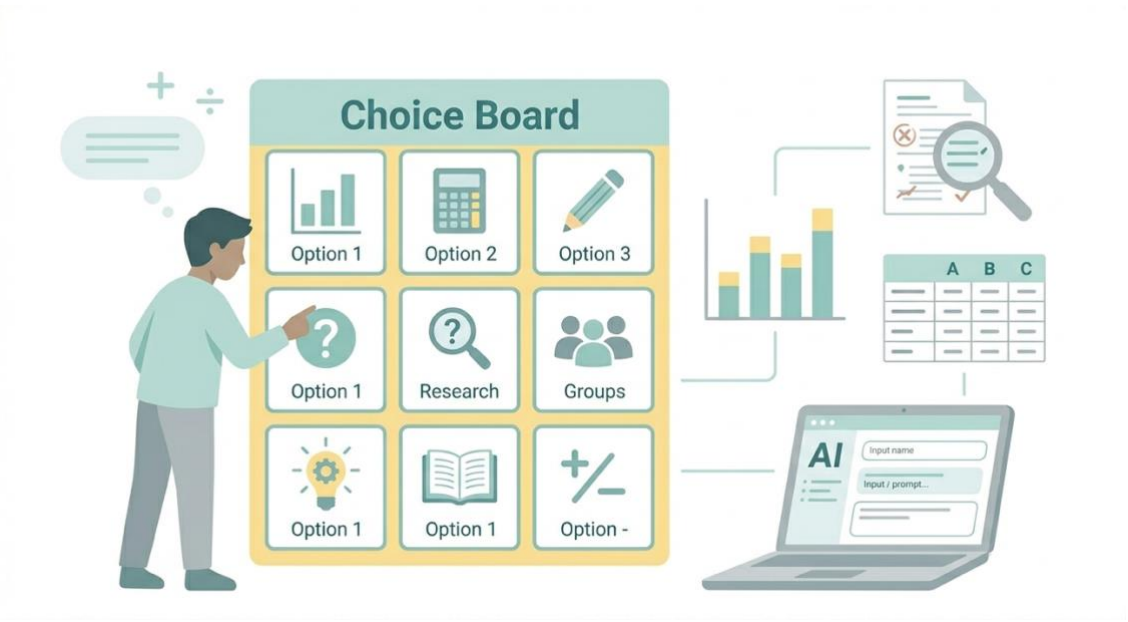
AI Tool	What It Offers for Social Studies
Humy.ai	AI-powered historical figure chatbot built for social studies classrooms. Students conduct structured interviews, debates, and role-play simulations with historical figures. Includes ready-made lesson plans, AI-graded assignments, and LMS integration.
Hello History	Conversations with 400+ historical figures, from Cleopatra to Martin Luther King Jr. Students explore ideas in a conversational format.

	Available on iOS and Android. Good for quick dialogues that spark curiosity before deeper research.
SchoolAI	Build personalized AI tutoring spaces for any social studies topic. Teachers set boundaries for the AI conversation, and the Mission Control dashboard shows every student interaction in real time. FERPA and COPPA compliant.
MyLens.ai	Free AI timeline generator that creates interactive timelines from text, PDFs, videos, or URLs. Also produces flowcharts and mind maps. Chrome extension included. Helps students visualize how events across regions connect and overlap.
Genially	42+ free interactive timeline templates for history and social studies. Embed videos, audio, and pop-up information windows. Also supports interactive maps and multimedia presentations for both teacher-created and student-created projects.
CoGrader	Grades AP History DBQs, LEQs, and SAQs against official AP rubrics with detailed feedback and justification reports. Imports from Google Classroom, Canvas, and Schoology. Free for up to 100 essays per month.
Conker AI	Creates quizzes with multiple choice, drag-and-drop, and open-ended questions aligned to state standards like TEKS. Integrates with Google Forms and Canvas. Includes read-aloud support for accessibility.
Curipod	Interactive lesson and slide platform with AI-generated content, polls, word clouds, drawing activities, and AI feedback on student responses. Converts existing materials into interactive lessons with the Curify My Slides feature.
Acely	AI-powered AP exam prep for AP US History, AP World History, and other subjects. Personalized tutoring, practice questions, and detailed essay feedback on SAQs, LEQs, and DBQs.
DeAP Learning Labs	AI-driven practice and tutoring for AP history exams, developed with popular history educators including the Heimler's History team. Content aligned to specific AP skills and question formats.
iCivics	Game-based civics platform founded by Justice Sandra Day O'Connor. 20+ web and mobile games covering federal, state, and local government. Winner of the 2025 GEE! Award for Investigation Declaration.
Diffit	Adjusts any text to different reading levels and generates comprehension questions, vocabulary lists, and discussion prompts. Processes PDFs, links, videos, and pasted text. Ideal for adapting complex historical documents for mixed-ability classrooms.
Transkribus	AI transcription of handwritten historical documents and manuscripts across 100+ languages and centuries of handwriting styles. 300+

	public models covering scripts from the 9th century onward. Makes primary sources readable and searchable.
VictoryXR	VR and AR experiences with 150+ global field trips including D-Day beaches, the Selma Bridge, the Berlin Wall, and Egyptian temples. Includes an AI Tutor feature. Finalist for best edtech product in 2025.
Nearpod	Interactive engagement platform with 22,000+ standards-aligned lessons and virtual field trips to historical locations. Supports quizzes, polls, matching activities, and drawing prompts. Available in live and student-paced modes.
MagicSchool AI	80+ teaching tools with generators for lesson plans, rubrics, assessments, and text leveling. Studio Mode generates entire lesson packages with images and scaffolded versions. Available in 30 languages.
Eduaide.ai	110+ resource types organized by pedagogical frameworks like UDL and Understanding by Design. Built by two public school teachers. Resources include lesson plans, worksheets, graphic organizers, and gamified activities.
Brisk Teaching	Free Chrome extension with 30+ AI tools. Creates presentations, scaffolds materials, generates podcasts from content, and detects AI-generated text. Works inside Google Docs and Slides.
Consensus	AI-powered research engine built on 200+ million scholarly papers. Generates summaries with proper citations and avoids hallucinated sources. No sign-up required. Strong option for teaching students credible source discovery.

AI Activities for Math Teachers

Math teachers hear a familiar worry every time AI comes up: if students can get the answer instantly, what's the point of teaching the process? It's a fair question, and it's the wrong one. The real question is what happens when students use AI to check their reasoning, challenge a solution, or generate practice material they couldn't access before. The calculator didn't kill math instruction. It changed what math instruction could focus on. AI is doing the same thing, faster and with more range.



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The activities in this section treat AI as a support tool. Students still do the thinking. They work problems by hand, analyze errors in AI-generated solutions, and build their own practice materials. AI handles the repetitive production work (generating problem sets, creating differentiated tasks, formatting review games) so teachers can spend their planning time on the parts that actually require a human: sequencing concepts, spotting misconceptions, and adjusting instruction in real time.

One thing worth noting: AI math solvers have gotten remarkably accurate in the past year, but they still make mistakes, especially with multi-step reasoning and word problems. That's not a flaw in the context of a classroom. It's a feature. Students who learn to catch an AI's errors are doing exactly the kind of critical thinking that math education is supposed to build.

1. Check Your Work, Not Your Answer

Students complete a problem set by hand first, then use an AI math tool to check their solutions and walk through any steps they got wrong. The AI comes in after the thinking, not before it. This builds a habit of independent problem-solving while still giving students immediate, detailed feedback on their mistakes.

> Tools: Photomath, Mathway, Wolfram Alpha, ChatGPT

2. Spot the AI's Mistake

Give students an AI-generated solution to a math problem that contains a subtle error. Working in pairs, they identify the mistake, explain why it's wrong, and correct it. This works especially well for algebra and geometry, where skipped steps or sign errors are easy to miss. It teaches students to read math critically, not just produce it.

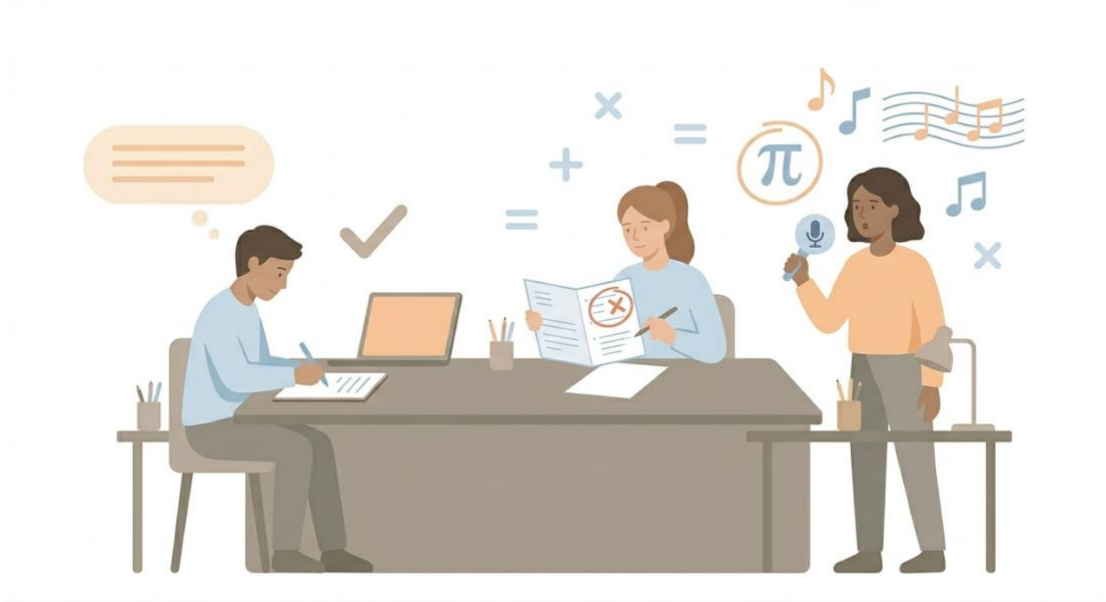
> Tools: ChatGPT, Claude, Gemini, Wolfram Alpha

3. Math Rap and Creative Concept Builder

Students use an AI chatbot to generate a rap, song, or story that explains a math concept like vectors, proofs, or order of operations. They then perform or present it to the class. The creative format forces students to understand the concept well

enough to explain it in a completely different register, and the presentation adds accountability.

> **Tools:** ChatGPT, Claude, Gemini.



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4. AI-Powered Choice Board

Use AI to build a choice board with six to nine tasks at varied difficulty levels on a single topic. Students pick their own path through the board, choosing tasks that match their confidence level. This cuts planning time dramatically for the teacher while giving students agency over how they practice.

> **Tools:** ChatGPT, Gemini, MagicSchool AI, Diffit

5. Real-World Data Set Builder

Use AI to generate a data set tied to something students actually care about: sports stats, streaming numbers, local weather patterns, social media trends. Students analyze the data, build graphs, and draw conclusions. The AI creates the raw numbers. The students do the math and the interpretation.

> **Tools:** ChatGPT, Gemini, Google Sheets AI features, Excel Copilot

6. Three Ways to Solve It

Project an AI math solver on the whiteboard and work through the same problem using three different methods (factoring, quadratic formula, graphing). Students discuss which method is most efficient and why. This builds flexibility in mathematical thinking and shows students that there's rarely just one correct path to a solution.

> **Tools:** Wolfram Alpha, ChatGPT, Desmos, Photomath

7. Find the Flawed Worksheet

Generate a practice worksheet using AI, then hand it to students with one instruction: some of these problems may have errors in the setup or the answer key. Find them. Students work through the math and flag anything that doesn't add up. This builds content knowledge and a healthy skepticism toward AI-generated material at the same time.

> **Tools:** ChatGPT, Claude, Gemini, MagicSchool AI

Here are more tools for Math teachers:

AI Tool	What It Offers for Math Teachers
Khanmigo	Khan Academy's AI teaching assistant, free for U.S. teachers. Guides students with Socratic questions without giving away answers. Generates lesson plans, exit tickets, rubrics, and student groupings on the teacher side.
Photomath	Students scan printed or handwritten problems with their phone camera and get animated step-by-step solutions. Covers arithmetic through calculus. Includes AI voiceover narration for each step. Works well as a group activity comparing approaches.
Wolfram Alpha	Computational engine handling basic arithmetic through professional-level math. Step-by-step solutions, interactive graphing, and a Problem Generator for printable worksheets with randomized problems. One of the most reliable AI tools for accuracy.
Symbolab	500+ built-in calculators for algebra, trigonometry, calculus, and statistics with detailed step-by-step breakdowns. Teachers can create custom practice quizzes. No special syntax required. Pro version adds AI chat support.
Mathway	Covers basic math through statistics. Students photograph or type problems and get step-by-step answers. One of the most widely used math solvers with billions of problems answered. Available as web platform and mobile app.
Microsoft Math Solver	Free AI tool that recognizes printed and handwritten math. Strong with geometric proofs and interactive graphing. Pulls learning resources from multiple sources to offer different ways of understanding each concept.
Desmos	Free graphing calculator used by millions. Graph functions, plot data, add interactive sliders, and animate transformations. Includes graphing, scientific, 3D, and geometry calculators. Makes abstract algebra visually tangible.
GeoGebra	3D visualization, dynamic coefficient manipulation, and a library of over one million shared math resources. Free, supports dozens of languages, and can be integrated with AI assistants like ChatGPT and Gemini for enhanced explanations.
Mathigon Polypad	Award-winning digital math playground with 50+ virtual manipulatives and dynamic geometry tools. Includes shapes, fraction tiles, algebra tiles, probability tools, and music-based learning activities. Strong for hands-on exploration.

MATHia	AI coaching system for grades 6-12 built on 25 years of learning science research. Recognizes why students make specific mistakes, not just that they got it wrong. Research shows it nearly doubles student growth on standardized assessments.
DreamBox Learning	AI engine that analyzes student behavior patterns in real time and adjusts lesson sequencing to match individual learning styles. Grades K-8. Rich analytics dashboards show exactly where each student needs support.
IXL Math	8,000+ skills from Pre-K through 12th grade with a SmartScore system measuring understanding based on accuracy, difficulty, and recent performance. Automatically recommends targeted skills when it detects gaps in foundational knowledge.
Gradescope	AI reads student handwriting including fractions, integrals, and matrices. Groups similar answers for faster batch grading and applies rubrics consistently. Integrates with Google Classroom and Canvas. Strong for handwritten problem sets.
Snorkl	Students record themselves explaining their reasoning on a virtual whiteboard. AI rates accuracy on a 1-4 scale and evaluates how clearly they articulate mathematical thinking. Partnership with Illustrative Mathematics adds AI feedback to their curriculum.
Numbas	Free, open-source math assessment system from Newcastle University. Built-in computer algebra system checks mathematical expressions. Question randomizer creates unlimited variations. Used by 1,000+ institutions. Integrates with major LMS platforms.
MagicSchool AI	60+ AI tools with math-specific generators for word problems, spiral review, and academic content. Creates standards-aligned lesson plans with objectives, materials, procedures, differentiation, and assessments. Available in 30 languages.
Eduaide.ai	110+ resource types with math-specific features: worksheet generator, intentional-mistake activities, and math bell-ringer questions. Built by two public school teachers. Free tier allows 15 generations per month; paid plan under $6/month.
Wolfram Problem Generator	Creates unlimited printable worksheets with randomized math problems. Generates fresh questions at the appropriate level each time. Strong for independent practice, test prep, and building confidence through varied repetition.

AI in Language Learning

English learners are often the first students to benefit when a teacher starts experimenting with AI, and for good reason. Language classrooms run on exactly the kind of tasks AI handles well: generating vocabulary lists, producing listening material, translating content across proficiency levels, and creating low-stakes practice environments where mistakes don't carry social weight.

The challenge has always been personalization. A classroom of 25 students might include five different home languages, three proficiency levels, and wildly different comfort zones for speaking out loud. AI won't replace a good language teacher, but it can do something no single teacher physically can: run 25 different practice sessions at once, each one calibrated to the student in front of it.

Image generated using Gemini Pro

A quick caveat before the activities. There's a real debate in the language learning community about AI chatbots as conversation partners. Some teachers swear by them. Linguist Dr. Taylor Jones argues the opposite: that unstructured AI

conversations are a waste of time because LLMs produce plausible language, not meaningful interaction.

The truth probably depends on how you structure the task. Aimless chatting with a bot? Low value. A structured role-play scenario with specific goals and built-in correction? That's a different activity entirely. Keep that distinction in mind as you read through these ideas.

1. Custom Listening Labs

Generate short audio clips in the target language on topics your students actually care about, matched to their proficiency level. A Spanish teacher could create a podcast-style dialogue about soccer for one group and a cooking conversation for another, both at intermediate level. Students pick a topic, generate a two-minute clip, then transcribe what they hear and compare their transcription to the original. That listen-write-compare loop builds both comprehension and accuracy in one exercise.

> Tools: ElevenLabs, AI Vocal, NaturalReader

2. Build-Your-Own Flashcard Deck

Have students prompt an AI chatbot to generate a themed vocabulary list (food, travel, healthcare, academic writing) with 20 terms and example sentences in the target language. Students then export the output and build their own flashcard deck in a spaced-repetition app. Students who create their own flashcards retain more than those using pre-made sets, and the AI handles the heavy lifting of producing accurate, level-appropriate content.

> Tools: ChatGPT, Claude, Gemini, Anki

3. Scenario-Based Conversation Role-Play

Free-form chatting with an AI produces mediocre results, but structured role-play is a different story. Give the chatbot a specific scenario (checking into a hotel in Tokyo, negotiating a price at a market in Marrakech, calling a doctor's office in Berlin) and ask it to stay in character, correct errors, and suggest more natural phrasing. Build a scenario bank of 10 to 15 real-world situations. Each week, students pick one, run the conversation, screenshot the exchange, and highlight three corrections or suggestions the AI made. That reflection step is what turns a chatbot interaction into actual learning.

> **Tools:** ChatGPT, Claude, Gemini

4. Instant Lesson Translation for Multilingual Classrooms

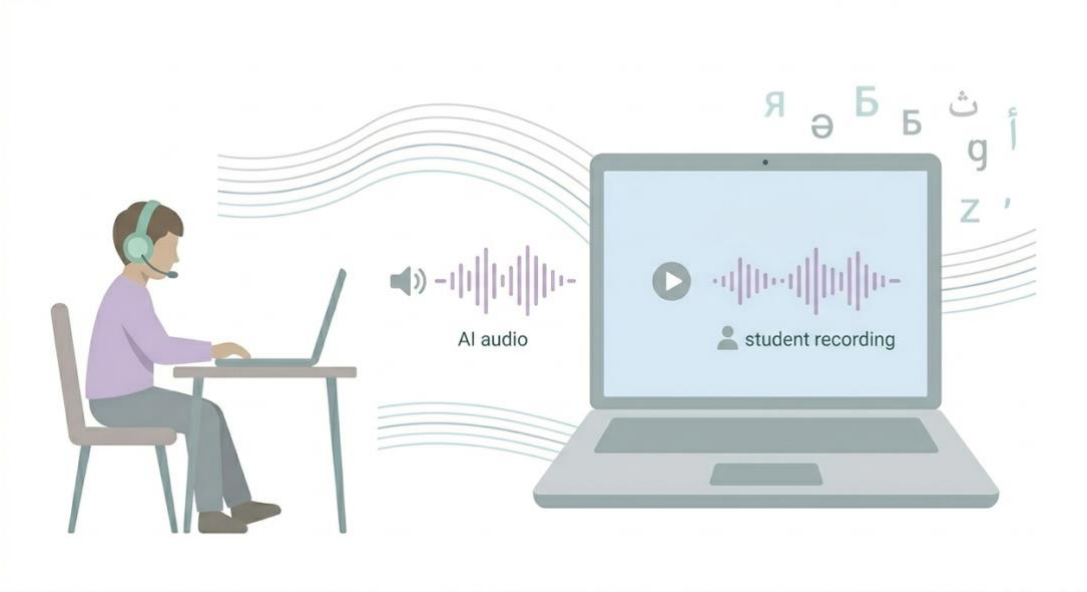
When a new student arrives mid-semester speaking a language nobody else in the building speaks, AI can close the gap fast. Run any major assignment or reading through an AI chatbot with the prompt "Translate this to [language] at a [beginner/intermediate] reading level" and provide both versions side by side. Students read in their home language first for comprehension, then work through the English version with that foundation already built. What used to take weeks of waiting for district translation services now takes minutes.

> **Tools:** ChatGPT, Claude, Gemini, Pocketalk, Pear Deck translation features

5. Pre-Reading Vocabulary Preview and Text Breakdown

Before assigning an authentic text (a short story, a news article, a song), have students prompt an AI to generate a vocabulary preview of the 15 most important words with definitions and example sentences in context. After reading, they return to the AI and request a line-by-line breakdown of any paragraph they found difficult, showing the original text, a word-by-word gloss, and a natural English translation. That two-pass approach (vocabulary before reading, linguistic breakdown after) builds both independence and analytical skill.

> Tools: ChatGPT, Claude, Gemini



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6. Pronunciation Shadowing Challenge

Use an AI voice tool to generate native-speaker audio of specific sentences in the target language. Students listen twice, then record themselves repeating the sentence using a voice recorder or audio app. Comparing the two recordings side by side trains the ear for rhythm, stress, and sounds that don't exist in the student's home

language. Create a weekly challenge with five sentences targeting specific trouble sounds (the English "th" for Spanish speakers, French nasal vowels for English speakers). Students record their attempts, self-assess, and resubmit after practice.

> Tools: ElevenLabs.

Here are more tools to try in your language teaching classes:

AI Tool	What It Offers for Language Teachers
Khan Academy Writing Coach	Free for U.S. teachers. Guides students through the writing process from outline to final draft without writing for them. Provides stage-by-stage feedback using a Socratic approach. Tracks student progress in real time.
Grammarly for Education	AI-powered feedback on grammar, tone, clarity, and style. Includes plagiarism detection and citation assistance in APA, MLA, and Chicago formats. Schools can control access to generative AI features. Free and premium options.
Quill.org	Free nonprofit platform with immediate, targeted feedback on student writing and reading comprehension activities. Teachers report hundreds of hours saved yearly and measurable improvement in writing quality.
EssayGrader	Imports essays from Google Classroom, Canvas, or Schoology and grades against your rubrics. Provides detailed, consistent feedback for entire classes in minutes. Free plan covers up to 100 essays per month.
Flint	Inline writing feedback based on teacher-configured rubrics and guardrails. Teachers control what the AI can and can't do, preventing it from writing for students. Strong for maintaining boundaries around AI use.
Amira Learning	AI reading tutor that listens to students read aloud, analyzes each word, and diagnoses foundational reading skills in under 20 minutes. Used by over 4 million students. Research shows faster reading growth with regular use. Subscription-based.
ReadTheory	Personalized reading passages that automatically adjust difficulty based on student performance. True differentiation through real-time level matching. K-12. Subscription model.

Microsoft Reading Coach	Free AI reading practice tool that detects challenging words, offers targeted practice, and provides personalized feedback. Available in 81 languages. Integrated with Microsoft education tools.
Diffit	Converts any text to any reading level from 2nd grade through 11th+. Generates vocabulary lists and comprehension questions from adapted texts. Translates to 50+ languages. Works with YouTube video transcripts.
Brisk Teaching	Free Chrome extension that works inside Google Docs and Slides. Converts online content to different reading levels and generates quizzes, guided notes, and lesson plans from web articles, PDFs, or YouTube videos.
Hypothesis	Online annotation tool for collaborative close reading. Students and teachers highlight and comment directly on web articles and texts. Public and private annotation options. Integrates with LMS platforms. Free with optional premium.
LitCharts	Side-by-side original Shakespearean text and modern English translation. Includes scene summaries, character analysis, themes, and key quotes. Helpful for ELL learners and struggling readers engaging with complex language. Free and paid options.
Conker AI	AI quiz builder that creates assessments by subject, grade, topic, and difficulty. Includes a Read and Respond format for reading comprehension. Exports to Google Forms and Canvas. Quiz creation takes under 5 minutes.
Curipod	Interactive lesson platform with AI-powered slides, polls, word clouds, drawings, and constructed-response activities. AI provides feedback on student responses during class. Documented test score improvements at schools using it regularly.
QuillBot	Paraphraser, summarizer, grammar checker, and citation generator in APA, MLA, and Chicago styles. The paraphrasing tool helps struggling readers understand complex texts. Browser extension works across platforms.
Hemingway Editor	Focuses on clarity and conciseness by highlighting complex sentences, passive voice, and wordiness. Helps students write more directly. A simple, visual tool that makes revision feel concrete and approachable.
MagicSchool AI	80+ AI tools including lesson plan generators, rubrics, assessments, and a Text Leveler that rewrites passages at different grade levels. Available in 30 languages. Free tier with limited features; paid plan for unlimited access.
Eduaide.ai	110+ resource types including lesson plans, worksheets, graphic organizers, and gamified activities like Jeopardy and escape rooms. Built by two public school teachers. Free tier allows 15 generations per month.

Speechify	Converts text into natural-sounding audio in 70+ languages. Used by over 1 million people, including students with reading disabilities. Useful for creating audio versions of classroom texts. Free version available.
NaturalReader	Text-to-speech tool that converts PDFs, Google Docs, webpages, and scanned images into clear, natural audio. Supports multiple languages and voices. Teachers use it to create audio assignments and support ELL students.
Microsoft Immersive Reader	Free tool built into Word, OneNote, and Edge. Reads text aloud, adjusts font size and spacing, changes background colors, breaks words into syllables, and includes a picture dictionary and translation features. Supports ELL and dyslexic learners.

AI in Science Classes

Science teachers have a problem that AI is uniquely suited to solve: the gap between conceptual understanding and real-world application. Students can memorize that ecosystems have components affecting biodiversity, but until they see how three actual lakes in western Canada produce wildly different food webs because of salinity, altitude, and temperature, that understanding stays abstract. Case studies bridge that gap.

The trouble is finding good ones. AI changes that equation entirely. A teacher can now generate a case study tailored to a specific learning outcome, pitched at the right reading level, grounded in a real phenomenon, in about five minutes. That alone makes AI worth the learning curve for any science classroom.

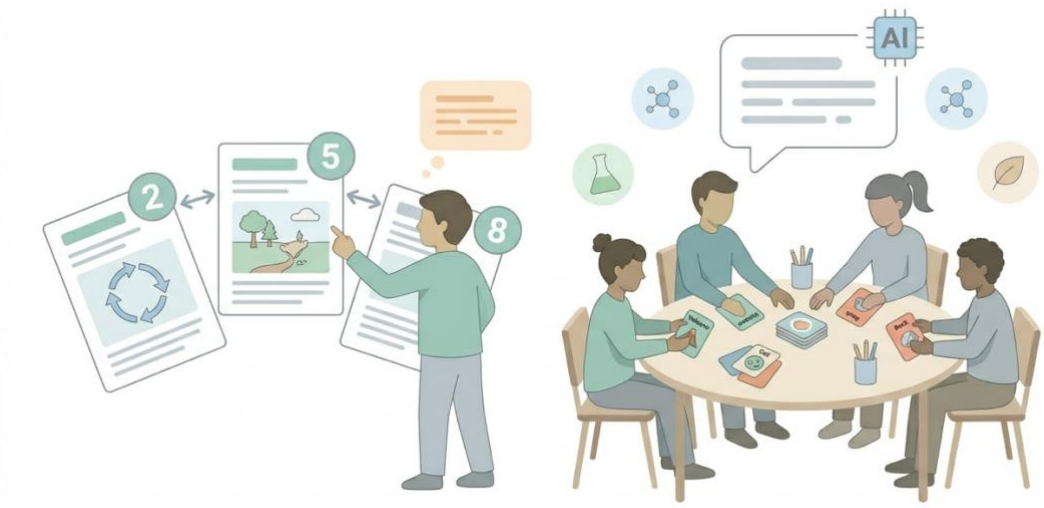

Image generated using Gemini Pro

But generating content is only half the story. The other half, and this is where science teachers need to be especially careful, is verification. AI models produce text that sounds authoritative, and in science, sounding right and being right are two very

different things. The rule is simple here: always ask the AI for its references, then read those references yourself before sharing anything with students. It's good modeling, too. Students who watch their teacher fact-check AI learn something about scientific verification that no worksheet can teach.

1. AI-Generated Case Studies

Have student groups take a specific learning outcome (for example, "components of an ecosystem affect the diversity of organisms in it") and prompt an AI to generate a case study based on a real location or phenomenon. Case studies work because they force students to apply what they've learned to unfamiliar situations. Once groups finish building their case studies, they trade with another group and answer each other's analysis questions. That double layer, generating and then responding to someone else's scenario, builds both prompting skills and scientific reasoning at the same time.

> Tools: ChatGPT, Gemini, Claude

2. Train and Break a Machine Learning Model

Students collect images of leaves, rocks, or insects from the schoolyard, then use a free browser-based tool to build their own classification model. They train the model on their data, test its accuracy, then deliberately introduce edge cases (a damaged leaf, an unusual rock) to see where the model fails. That failure analysis is where the deepest learning happens: students discover firsthand that a model is only as good as its training data, that small or biased datasets produce unreliable results, and that AI classification has real limitations.

> Tools: Google Teachable Machine

3. Underrepresented Scientist Research Project

Students use AI to discover a scientist not found in their textbook, someone from an underrepresented background working in the field you're currently studying. They write a one-page profile using at least three non-AI sources to verify everything the chatbot told them, then create an AI-generated avatar of their scientist for an oral presentation. The project gives AI three distinct roles: discovery (finding the scientist), drafting support (organizing the writing), and presentation (avatar creation). The verification step turns the whole thing into a lesson about scientific sourcing.

> **Tools:** ChatGPT, Gemini, Grok, Canva (for AI avatars)

Image generated using Gemini Pro

4. Same Topic, Three Reading Levels

For your next science reading assignment, paste the text into an AI chatbot and generate three versions of the same passage: below grade level, on grade level, and above grade level. Let students self-select their version. All three groups read the

same core scientific ideas with different vocabulary complexity, so they can still participate in a shared discussion afterward. That discussion is the proof that comprehension happened at every level. This technique is especially useful in mixed-ability classrooms where finding the same content written for different readers is nearly impossible through traditional channels.

> **Tools:** ChatGPT, Gemini, Claude, Diffit

5. Vocabulary Card Game Tournament

Prompt an AI to generate 12 to 15 key terms for your current unit, each with a grade-appropriate definition, its real-world impact, and an associated image description. Print them as card sets (four cards per term) and run a spoons-style game as your unit review. Students pass cards trying to collect a complete set for one term. The format works across grade levels and subjects: earth systems, cell biology, chemistry, ecology. Students who can quickly match a term to its definition and real-world application have built the foundational vocabulary they need for deeper scientific thinking.

> **Tools:** ChatGPT, Gemini, Canva (for card design and printing)

6. AI-Assisted Assessment Builder

Use AI to generate a bank of 10 to 15 questions at lower thinking levels (recall and basic application) for your current unit. Then write the higher-order questions yourself, the ones that require strategic thinking, extended reasoning, and real scientific judgment. AI handles routine assessment items well but struggles with the

nuance of complex questions, so this approach saves you time on the items that don't need your expertise and focuses your energy on the ones that do.

> Tools: ChatGPT, Gemini, Claude

Here are more tools to try in your science classes:

AI Tool	What It Offers for Science Teachers
Labster	300+ immersive 3D lab simulations across biology, chemistry, physics, and biotechnology. AI assistant guides students in real time, adapting to their actions. Includes auto-graded assessments, LMS integration, and teacher dashboards. Paid institutional subscription.
PhET Interactive Simulations	Free, open-source collection of 100+ interactive simulations covering physics, chemistry, biology, earth science, and math. Game-like interface encourages exploration through cause-and-effect discovery. Elementary through university. Completely free.
Beyond Labz	Virtual labs for chemistry, organic chemistry, biology, and physics. Features customizable experiments, structured lab books, auto-graded assessments, and Lab Cam for reviewing student work step by step. Teachers can author custom labs. Supported by Pearson.
PraxiLabs	200+ 3D virtual lab simulations with gamification and instant reporting. Includes AI lab assistant, built-in question banks, and LMS integration. Free plan offers 20 virtual labs. High school through university.
ChemCollective	Free virtual chemistry lab with hundreds of reagents for acid-base, thermochemistry, solubility, redox, and kinetics experiments. Strong for pre-lab preparation and homework alternatives. Completely free.
CloudLabs	600+ gamified STEM simulations focused on real-world problem-solving and challenge-based activities. Available in English, Spanish, and Portuguese. Strong for vocational and applied science courses. K-12 and higher education.
BioDigital Human	Cloud-based virtual human body with 14,000+ anatomical structures, disease pathology models, and treatment visualizations. AI-powered search for finding specific structures. Available on web, mobile, VR, and AR. Used by 3 million+ students.
Visible Body	10,000+ 3D anatomical models with cadaver lab simulations and diagnostic imaging comparisons. Students explore body systems layer by layer, animate muscle movements, and study innervation and blood supply. Subscription-based.

MolView	Free web-based molecular sketcher and 3D viewer. Students build molecular structures, switch between representations, access spectroscopy data, and measure bond angles. Works for chemistry at all levels. Completely free.
Inspirit VR	VR, AR, and spatial computing for science education with no-code creator tools for building custom simulations. Covers chemistry, biology, physics, and earth science. NGSS-aligned. Works on VR headsets, computers, and tablets.
Gradescope	AI reads handwritten student work including scientific notation and lab calculations. Groups similar answers for batch grading and applies rubrics consistently. Integrates with Google Classroom and Canvas. Strong for handwritten lab reports.
Cognii	Conversational AI that assesses open-response science answers with immediate feedback using natural language processing. Students attempt problems multiple times until mastery. 96% accuracy compared to human assessment. Strong for evaluating scientific reasoning.
Snorkl	Students record themselves explaining their thinking on a virtual whiteboard. AI rates accuracy and verbal articulation separately. Partnership with Illustrative Mathematics adds AI feedback to their curriculum. Evaluates both written and spoken reasoning.
MagicSchool AI	60+ AI tools with science-specific generators: Lab Generator, 5E Model Lesson Plan Generator, and Three-Dimensional Assessment Generator aligned to NGSS. Available in 30 languages. Free tier with limited features; paid for unlimited.
Eduaide.ai	110+ resource types including a Lab + Materials tool that recommends procedures and supplies based on your topic. Also generates graphic organizers, gamified activities, and science bell-ringers. Built by two public school teachers. Free and paid tiers.
Brisk Teaching	Free Chrome extension that works inside Google Docs and Slides. Science features include lab outline creation with materials lists, procedures, observations, and guiding questions. Seamless for teachers already in Google Workspace.
Consensus	AI search engine that searches 250 million+ research papers and shows visual summaries of scientific consensus on specific questions. Great for bringing current research into lessons and modeling evidence evaluation. Free basic version.
SciSpace	Searches 280 million+ papers, generates literature reviews, and lets users chat with scientific PDFs. Includes citation generator and academic AI detector. Useful for teaching students to read and interpret scientific literature. Free and premium plans.
Pivot Interactives	500+ video-based activities where students use overlay tools (rulers, protractors, grids) to take measurements from real footage. Bridges

	simulation and real experimentation with authentic data from actual phenomena. Part of Discovery Education.
ExploreLearning Gizmos	550+ interactive STEM simulations with guided investigation lessons. Deliberately human-centered design that avoids AI automation in favor of keeping the teacher in full control. K-12. Subscription with free trial.
Google Teachable Machine	Free tool where students train their own machine learning models to recognize images, sounds, or poses. Science teachers use it for classification activities like identifying rock types, plant species, or insect orders. Teaches science and AI literacy together.
Arludo	25+ mobile science games where students set hypotheses, collect data, and analyze findings through game-based experimentation. Covers biology, psychology, and geography. Includes AR games and collaborative activities. Builds experimental thinking through play.

About the Author

Med Kharbach, PhD, is an educator, researcher, and the editor of Educators Technology (educatorstechnology.com). A former K-12 teacher with nearly two decades of teaching experience across K-12 and higher education, Med currently serves as an Instructor at Mount Saint Vincent University, where he teaches Critical Theory and Education at the graduate level. He is the author of Teaching with AI: Practical Strategies to Integrate AI in The Classroom, and co-author of The AI Turn in Academic Research and The BEARA Framework for Pedagogical Integration with Dr. Jonathan Woodworth. His work focuses on AI literacy, assessment in the age of AI, and practical classroom applications of educational technology. You can read more about Med and his research at medkharbach.com.

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