

Exploring Voice AI in Education

A Team Investigation of Present Uses and Future Educational Experiences

Scientific Inquiry with AI

Student Guide — V5

Detailed Instructions & Course Material

Why This Lesson

What can voice AI help you do as a learner? In the first class of this lesson, you will work in small teams to explore a wide range of potential applications of voice AI in education. Your team will then select one application, create a prompt, test the experience, and improve it using what you observe. You will also investigate related research and assess the application's potential.

In Class 2, six teams will share their applications, so the class encounters a broad range of possible uses for voice AI. Each team will explain the learning goals of its application, what the team observed, what related research has been published, and what remains untested.

Learning Goals

Upon completion of this investigation, you should be able to:

Phenomena:

- Describe diverse educational uses of voice AI, including a use available today and a future experience that requires additional capabilities.
- Explain what speaking and listening contribute to an educational activity.

Experimental Practices:

- Generate distinct ideas, try a current use with an observable outcome, and revise it.
- Design a future experience around a learning goal.
- Locate and read related research, explain its relevance, and propose how you would evaluate your own design.

Habits of Mind:

- Assess how voice AI could support your own learning and identify its limitations.
- Distinguish an appealing idea, a working demonstration, and evidence of learning.
- Work with a team to brainstorm, test, and share ideas within a limited time.

What You Will Need

- A phone or computer with an AI tool that supports back-and-forth voice conversation, plus headphones and a microphone if available. Test access before class.
- A notebook, a shared team document, and a way to save brief interaction notes and prepare slides.

The Core Idea

- An educational use begins with a learner and a learning goal. The conversational role should serve that goal.
- A smooth conversation can be useful, but does not by itself show that a learner understands more.
- Research on a related activity can inform a new proposal. Differences in learners, technology, and outcomes limit what transfers.

Driving questions. What can voice AI help you learn now, and what new educational experiences could we build around responsive conversation?

Your Time Plan

When	Time	Main task
Before class 1	~100 min	Explore voice conversation, complete the reading and understanding check, generate two ideas, and search for related research
Class 1	110 min	Share ideas, choose one application, build a prompt, and conduct initial testing
Between classes	~180 min each	Test and revise the application, find related research, and prepare the team presentation
Class 2	110 min	Finalize slides and share applications through presentations and questions
After class 2	0 min	No post-class assignment

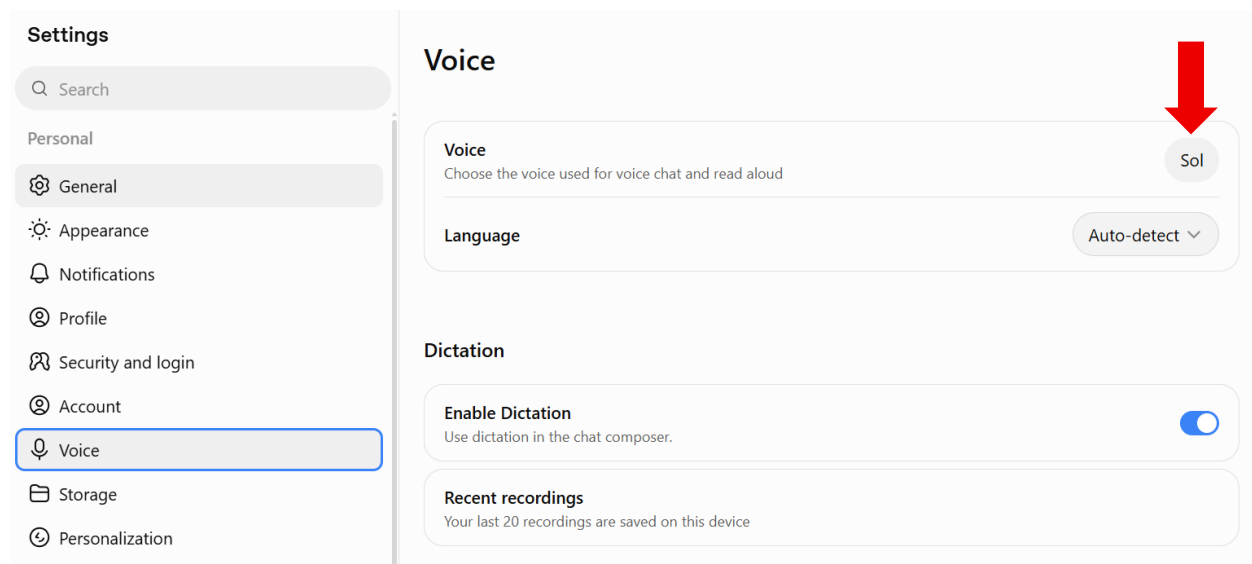
Session A — Pre-Class Preparation

~100 minutes

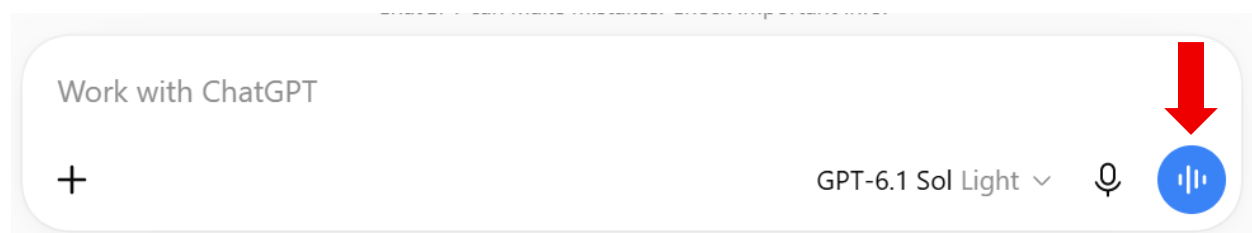
Allow about 100 minutes before the first class. Bring your ideas and observations to class.

A. Explore ChatGPT Voice Mode (~15 minutes)

Investigate the capabilities of ChatGPT voice mode through a 10-minute conversation with ChatGPT. Before you start, go to settings and choose the voice you want to use. Click on the current voice and you will see a list of voices you can listen to before choosing one.



Pick any topic to discuss with the AI that interests you. The goal here is just to give you experience interacting with the AI in voice mode. When you finish, check the transcript to see how well the dialogue was captured.



Example starter prompt: “I am interested in learning more about UC Merced. What can you tell me about how it got started?” Ask follow-up questions about topics that interest you. Verify factual claims before relying on them.

B. Background Reading (~30 minutes)

Download the document titled “Talking, Listening, Reading, Writing How the Way We Share Ideas Shapes Learning” from the supplemental files folder on the knowledgewithai.com website. Spend

about 15 minutes reading the document. Then download the Voice Check Your Understanding document which contains seven questions. Allow about 10 minutes to answer them. Load both documents into a chatbot and follow the instructions below.

1. Begin in a text conversation. Upload both the reading and the check your understanding documents, then copy and paste the **Starting Instruction** into the chat.
2. **Continue that same conversation in voice mode.** Headphones and a quiet space can help. If voice is unavailable or impractical, type your answers instead.
3. Answer each question in your own words. Say “let me think” when you need time. A tentative answer with reasoning is useful.
4. The tutor should ask all seven questions in order and give only brief feedback.
5. After question seven, or when your 10 minutes are up, end voice mode and type “summary.” Save the summary and conversation and submit them as your instructor directs.

Starting instruction: Start my voice check. Use the attached worksheet as the question script and the attached research review as the reading. Ask question 1 of 7 exactly as written, then wait for my answer. Track progress through all seven questions and follow the worksheet instructions throughout the conversation. I will stop after 10 minutes if we have not finished. Include any unfinished questions in the summary.

If the tutor drifts: Say “Go back to the worksheet. Check which numbered question is next, read it exactly as written, and wait for my answer.” You may pause or stop whenever you need to; the summary must identify any questions left unfinished.

C. Generate Your Own Possibilities (~30 minutes)

Identify two potential use cases where you think voice mode might be beneficial in education and career preparation. First develop your ideas on your own, then use AI to expand upon them. Write them down in your notebooks with a short description of how AI would be used and describe the role of the learner.

D. Literature Research (~15 minutes)

For one idea, use your AI-assisted literature-research skills to conduct a preliminary search to see what is already known about using AI and voice mode for that particular application. For one relevant source, note its title, link, research question, and whether it concerns voice conversation, text AI, or a related teaching method. This is preparation for the discussion you will have in class.

E. Review of In-Class Investigation (~10 minutes)

Preview the stages below and note one design decision you want to discuss.

Session A — In-Class Investigation

The Investigation, Stage by Stage

The investigation runs across two class periods and depends on teamwork between the two classes where teams will build out their ideas from the first class period. Your instructor will lead the timing and checkpoints. The guide identifies decisions your team needs to make; you choose the educational situation, interaction, and evidence.

Class One — Explore the Possibilities (90 minutes)

Segment	Time
Build teams and share prelab experience	10 min
Teach an AI experiment	20 min
Share and brainstorm potential applications	30 min
Build prompt for the application	20 min
Conduct initial testing	10 min

Stage 1 — Build Your Teams and Teach an AI (30 minutes)

Form groups of three or four. Exchange contact information so you will be able to continue to work together outside of class. Share your experience from the prelab with others and make sure everyone knows how to enter voice mode and select voices. Conduct a short conversation involving multiple people with a single chatbot using voice mode. Using the prompt in the blue box below, instruct the chatbot to play the role of an introductory physics student who does not understand linear motion. Use the Socratic method (teach through questioning and dialogue) to teach them about distance, displacement, speed, and velocity. Your goal is to understand what the student is thinking and ask a question that helps them reconsider it.

- **Each team member should teach at least one idea.** Assign teaching topics before you start the tutoring session.
- **Notice when the AI breaks character.** If it starts lecturing, someone can say "Stay in character as the confused student."
- **Ask the AI to “wrap up” and provide the role-play reflection specified below. Check its account of** the simulated student’s understanding and correct any errors.

Read this prompt and then paste it into the message box of your chat window:

You're going to play a student in an introductory physics class who is confused about linear motion. Several of us are sitting around one device, and we're going to teach you using the Socratic method: we'll ask questions, listen to your reasoning, and help you reconsider your ideas. Our goal is to understand your thinking and ask questions that help you learn, rather than simply tell you definitions.

Your role

- Be a friendly, curious beginning physics student. You initially confuse distance with displacement and speed with velocity.
- Start with one misconception at a time. Give plausible reasons for your answers rather than making random mistakes.
- Stay in character. Don't give textbook explanations, take over as the teacher, or reveal the correct answer before our discussion helps you reach it.
- Keep most responses to one to three sentences. Ask only one question at a time, and leave room for us to respond.

How your understanding should develop

- Explain your current thinking, even when it is wrong. Let us identify what is confusing you.
- Don't agree simply because we sound confident or ask a leading question. If our explanation conflicts with your thinking, ask for a reason or a concrete example.
- When a question or example helps, explain briefly what changed your mind. Retain that understanding as the conversation continues.
- Don't remain confused artificially after we give a clear, convincing explanation.
- After an idea becomes clearer, try applying it to a slightly different example. Let us check your reasoning before moving on.
- If we lecture for a long time, respond with a short statement of what you understood and one question about what remains unclear.

Ideas to explore

We want to cover distance, displacement, speed, and velocity, including:

- How vector quantities differ from scalar quantities.
- How distance and displacement differ when someone reverses direction or returns to the starting point.
- How direction matters for velocity.
- The distinction between average and instantaneous speed and velocity.
- How someone can have zero average velocity over a trip while moving during most of it.

Don't present this list as a lesson or supply the answers. Let us develop the ideas through our questions. If an idea has not come up near the end, raise a natural question about it.

Keep examples to motion along a straight line at first. Begin with your confusion about walking away from a starting point and then walking back. Let us choose the distances and times.

Managing the group

- At the beginning, ask us to introduce ourselves and say our names before each speaking turn.
- Use only names we explicitly provide. If you're unsure who spoke, ask rather than guess.
- When you can identify who has contributed, occasionally invite someone who has spoken less to share their thinking. Keep invitations friendly and allow anyone to pass.

- If we appoint a student facilitator, follow their guidance about turn-taking.
- Don't rank our contributions or assume that speaking more means understanding more.

Wrapping up

When we say “wrap up,” briefly step out of character and label your response “Role-play reflection.” Then:

1. Describe the understanding your character reached about each of the four ideas, including the distinction between average and instantaneous quantities where discussed.
2. Identify specific questions or examples that helped change your character's reasoning. Mention student names only when you are sure.
3. State any confusion that remains. If something was not covered, say so rather than inventing progress. Don't manufacture uncertainty if the discussion resolved it.
4. Remind us that your simulated progress does not establish our own understanding, and suggest that we each try a new motion problem independently.

Start now

Introduce yourself with a first name, share one short, plausible misconception about an out-and-back walk, and ask us to introduce ourselves before we begin.

Note: This is an exploratory activity. It is not clear how well this exercise will work. After you complete the tutoring session, we will discuss what worked and what did not. This experience will help guide your team in understanding how to design a custom application of voice AI for education, which will be the subject of the rest of this lesson.

Stage 2 — Brainstorm as a Team (30 minutes)

Each member of the team should share the two ideas for AI voice mode use in education that they developed in the prelab. Create a list of all the individual ideas and then review the ideas in the list below. Use your experience from the “teach a student” activity to help guide your decision. The team should discuss all ideas and consider merging roles and uses. Teams should agree on a single concept that they will develop and evaluate. Aim for an activity that will only take 5–10 minutes of engagement between the learner and the AI. We want to explore different ideas as a class so try to be creative. As you determine your application, write it on the front whiteboard to encourage others to pick something different.

AI role	Example learning activity	Why use voice?
STEM tutor	Explain a physics concept; ask for questions before hints.	Practices reasoning aloud.
Debugging coach	Describe a coding problem; talk through possible causes.	Pairs spoken reasoning with coding.
Lab assistant	Hear approved steps and dictate experimental observations.	Supports hands-free work.

AI role	Example learning activity	Why use voice?
Fieldwork partner	Record observations; discuss competing explanations.	Supports inquiry away from a desk.
Student to teach	Teach the AI distance versus displacement; answer its questions.	Encourages explanation and rephrasing.
Presentation coach	Rehearse a science talk and respond to audience questions.	Practices spoken communication.
Simulated patient	Practice interviewing or explaining science to a nonexpert.	Develops listening and questioning.
Language partner	Role-play a conversation in another language.	Offers responsive speaking practice.
Reading tutor	Read aloud; receive help and discuss meaning.	Connects listening with reading support.
Accessible interface	Explore voice access for low vision or limited hand mobility.	Can reduce visual and typing demands.
Communication partner	Explore student-chosen turn-taking practice for autistic learners.	Offers repeatable spoken exchanges.
Multimodal access aid	Combine speech, captions, text, and translation.	Offers choices for participation.
AI-literacy experiment	Check a scientific explanation; test how voice affects trust.	Makes convincing speech an object of study.

Stage 3 — Develop the Prompt for Your Application (30 minutes)

Write a short summary of the application, including its learner, learning goal, and what voice conversation adds. Explain why listening, speaking, follow-up questions, or turn-taking serve the learning goal.

Build a Prompt for the Application

Write a detailed prompt specifying the learner, goal, AI role, learner task, and limits on AI assistance. Use the prompt from Stage 1 to guide you in the detail that you want to include in your prompt. Conduct an initial test of your prompt as a group to observe if the engagement is supporting your intended learning goal. Before testing, identify one observable outcome, such as an explanation, a solved problem, or a rehearsed response, that would help you judge the interaction.

Decide on a Plan for Revision, Testing, and Creating Your Class Presentation

Your goal is to work together before the next class to have an improved version of the prompt and a summary of how well the application supported your learning goal. You will have 10 minutes to present to the class with 5 minutes for questions.

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Between Classes — Test, Design, and Find Research (~3 hours)

You can decide how you want to organize your outside of class effort, but one suggestion is provided below:

- Each person first tests the shared prompt, then tests a revision to determine whether it improves the learning experience.
- Each team meets in person or over Zoom to share their findings. The team revises the prompt based on all the input to create a new prompt for testing. The team tests the prompt as a group and records their assessment.
- Divide responsibility for preparing a coherent team presentation for the next class.

For this lesson, we will dedicate more time between the two class meetings and will eliminate any post-class activities.

Stage 4a — Try, Revise, and Document (30 minutes - individual)

Each member works independently to test the team's shared prompt to establish a baseline for comparison. Record the prompt version, the learner task, one useful exchange, and your observation of the outcome.

Choose one change to the prompt or procedure and test the revision. Repeat the same learner task with the revised prompt. Record what changed and a possible explanation; a single trial cannot establish that the revision caused an improvement.

Stage 4b — Connect the Idea to Research (30 minutes - individual)

Each person on the team should apply their literature-review skills to find at least one closely related research example relevant to the application the team is exploring. Use your description of your tool as the foundation of your search.

Open the source yourself. Verify that it exists and read enough of the methods and results to support your summary. An AI summary or search snippet is not evidence. If only an abstract is accessible, identify that limit and avoid claims that require details you could not inspect.

Stage 5a — Revise Prompt and Plan Your Presentation (90 minutes – team)

Discuss findings from your individual testing and agree on a final prompt. Test it as a group and evaluate performance. Review the suggested elements for your presentation below and assign responsibilities to prepare about six slides in total, with one or two slides per person. Agree on the slide order to avoid repeating material.

Presentation Guidance

Your team will have **10 minutes to present, followed by 5 minutes for questions and discussion**. Explain the educational application you tested, what you learned from trying and revising it, and the future experience you envision.

Help your classmates understand what the learner actually does and what speaking and listening contribute. Use specific examples from your trials to support your conclusions.

Aim for about six slides in total, including a concluding question. The times below are suggestions.

1. The learner and learning goal — 1 minute

Introduce your application. Who is it for, and what should the learner be able to understand or do?

Explain why voice conversation could help meet that goal. What do speaking, listening, follow-up questions, or turn-taking contribute?

2. Show the experience — 2 minutes

Walk us through a short example of the interaction. Explain the AI's role, the learner's role, and the important instructions in your prompt.

Use a brief saved exchange, audio excerpt with readable text, or reenactment of an actual exchange. Choose an example that reveals something about the learning experience. Identify reenactments and paraphrases clearly.

Avoid reading the full prompt aloud. Make it available separately for classmates who want to try your application. Prepare a saved example so your presentation can proceed without a live demonstration.

3. What your testing revealed and what you changed — 2 minutes

Briefly describe who tried the application, what they did, and how you checked whether it met your goal.

Present your most useful observations:

- What worked as intended?
- What failed, surprised you, or differed across participants?
- What did the learner accomplish, and what remained difficult?

Explain one important change to your prompt or procedure, why you made it, and what you observed when you tested the revision.

Distinguish a successful conversation from evidence of learning. If you checked what someone could do afterward without AI, report that result. If you did not, explain what your observations can and cannot establish. A trial that exposes a problem is a valuable result.

4. What related research contributes — 1 minute

Summarize one relevant research example. Identify the learners, activity, and outcome studied, then explain one finding that informs your application.

Clarify whether the research concerns voice AI, text AI, or a related educational practice. Explain where it matches your idea and one important limit to that connection.

Include a citation and working link. If you could not find a credible related source, briefly describe your search and the evidence gap.

5. Your future educational experience — 3 minutes

Begin with this question: **What did our trial make us wish the system could do?** You may extend your tested application or propose a different opportunity.

Show a short sequence of the proposed experience using a storyboard, sample dialogue, or role-play. Identify what the learner says or does, how the system responds, and what happens next.

Explain:

- What valuable learning opportunity would this create?
- Why does voice conversation matter?
- Which capabilities have you demonstrated, and which would still need to be developed?
- What is one uncertain assumption you would test first?

Describe a small first test involving willing classmates: what they would do before and afterward without AI, how you would check their work, and what result would lead you to revise the design. Label imagined interactions and outcomes as hypothetical.

6. Your assessment and an open question — 1 minute

Conclude with your team's assessment of the application's potential. Who might benefit, under what conditions, and what important limitation remains? End with one question you would like your classmates to help you consider.

Participation and discussion

Every team member should contribute to the presentation and be prepared to discuss the work.

During the five-minute question period, classmates should help the team examine its reasoning and develop the idea further. Questions might address the learning goal, the value of voice, the interpretation of the testing, or the proposed next step.

Stage 5b — Each Individual Creates One or Two Slides for the Presentation (30 minutes – Individual)

Our goal is to share ideas, not to produce a perfectly polished presentation. The presentation itself is not graded; participation credit is described in Stage 7. Work efficiently as a team to explain what you tried and learned. Use a few bullets, examples, or images to support what you will say.

Session B — In-Class Investigation

Share and Compare

Segment	Time
Finalize and rehearse presentations	20 min
Team presentations with questions (six teams)	90 min

Stage 6 — Finalize Presentations (20 minutes)

Assemble your final presentation and submit the slide deck and final prompt on the knowledgewithai.com website for the Exploring Voice AI in Education Lesson. This will allow it to be pulled up quickly for each presentation.

Everyone should already have their individual slides prepared before class. This time is intended to allow others to provide rapid feedback and make any final adjustments while assembling the final slide deck.

Stage 7 — Presentations and Class Participation (90 minutes)

Each group will have 10 minutes to present their topic. Every student should present the slide(s) they prepared.

Separate observed outcomes, research findings, proposed capabilities, and evidence still needed.

We will have five minutes for questions after each presentation. You can earn participation credit by asking at least one relevant question during these discussions or by showing your notebook notes on all the team presentations to the instructor.

Part 3 — Post-Class Work

~0 hours

There will be no post-class activity for this lesson.

Deliverables

Before class one (individual)

- Two ideas for educational uses of voice AI, plus brief prelab observations and one preliminary research source, recorded in your notebook. Save the understanding-check summary and conversation as directed in Part B.

Class two team

- One team slide deck and the final prompt, submitted during the second class meeting.

Class two individual

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- Notebook notes on all team presentations or at least one relevant question during the class discussions.