Interactive Public Art: Teacher Facilitation Guide

How can we encourage people to interact with people, places, and ideas in new ways?

Learning Goals & Rubric

Note: *Given that the pilot is significantly shorter than the module will be when fully developed, some of the learning goals may not be as much of a focus. The full list is given as a resource to unpack some of the specific AI content knowledge that the module covers.*

Knowledge (K)

AI + Ethics (AI)

1. **Perception**: Explain how images &/or audio is perceived from the surroundings and represented digitally in a computer.
    a. Computers used sensors to perceive the world around them: cameras are used to sense images and microphones are used to sense sounds from the environment.
    b. Images are encoded as 2D arrays of pixels, where each pixel is a number indicating the brightness of that piece of the image, or an RGB value indicating the brightness of the red, green, and blue components of that piece
    c. Sounds are digitally encoded by sampling the waveform at discrete points (typically several thousand samples per second), yielding a series of numbers.
2. **Learning**: Explain how machines classify two different types of media from a dataset.
    a. Computers take collections of media (such as images) as input datasets.
    b. Computers learn to identify visual features in the images to learn to form classes or categories of images from this *training* data.
    c. When presented with new samples of *testing* data, computers are now trained to classify them on categories that they are trained on.
    d. Computers use this training in a real world problem to make decisions.
3. **Natural Interaction**: Explain how humans and machines interact with each other and the kinds of knowledge that machines require to interact with humans.
    a. Identify what data computers use to interact with humans
    b. Understand how humans and computers react to each others' actions.
4. Discuss how domain knowledge needs to be broad enough to encompass all the groups an application is intended to serve.
    a. Biases datasets can lead to biased computers that are not only inaccurate but can lead to discrimination. Understand that measures should be taken for responsible AI design:
        i. Speech recognition systems need to accommodate different types of accents and alternative pronunciations.
        ii. Image classification systems trained with images of people or faces need to accommodate diverse skin tones and features.

Skills (S)

AI + Ethics (AI)

1. Create a supervised learning model using image or audio classification that works for all intended users and use cases.
2. Can improve performance of a supervised learning model by strategically adding additional data to a data set to better represent all intended users and use cases.

Design Thinking (DT)

1. Identify stakeholders and their needs and goals. Gather information from users and other sources that will help them understand the experiences, emotions, and motivations of users.
2. Synthesize observations and other relevant information to define a design problem (statement) based on an understanding of what matters most for users.
3. User testing the solution and iterating on the design based on user feedback.

Attitudes (A)

From RAICA Atlas

1. Students will identify more as AI creators.
2. Students will have increased self-efficacy and feel more empowered to design and build new and meaningful AI artifacts.

Rubric

Single Point Rubric Guide, with example feedback.
Blank Single Point Rubric, for use with Final Project Portfolio in Design Journals.

Academic Vocabulary (Suggested)

- Artificial Intelligence (AI): Computer systems that are able to do tasks that previously were only done by humans, including visual perception, speech recognition, and translation.
- Machine learning: A specific form of artificial intelligence where computers take large sets of data and learn to make predictions.
- Input: Data going *into* a computer or system
- Perception: The way a machine sees the world.
- Classification/classify: Sorting data into different categories.
- Data: Information about the world. Data can take many forms, including numbers, images, audio clips, and more.
- Model: A machine learning "machine" takes in large datasets and creates a model to make predictions.
- Prototype: A simple, testable object, sketch, or description used in the design thinking process to get quick feedback about ideas.
- Closed-ended question: A question that can be answered with "yes," "no," or one word.
- Open-ended question: A question that cannot be answered with one word.
- Ethical Matrix: A method for defining who might be invested in or affected by a situation, and finding what they care about.
- Stakeholder: Someone involved in a situation. Their views and opinions are considered when building an ethical matrix.

Day 1: Project Launch

Before this class:

- (Ideally before start of module)
  - Build a list of staff at your school that would be willing to work with your class as community member interviewees. Discuss expectations and give an overview of the project.
  - For each community member, ask them to share a short blurb about themselves. This will be shared with each student group to give them background on their community member ahead of the interview.
- Create student group assignments
  - Size will depend on how many community member interviewees you have for this class.
- Decide on a Team Builder activity.
- Review the "Question Formulation Technique," the brainstorming protocol which will be used during the Project Launch. Supporting Resources:
  - PDF Guide
  - [Short QFT intro](#)
  - [Video of QFT in action](#)

Tech Checklist:

- Check that the volume works when you present slides with video.
- Make copies of Design Journal for each student, and put in an accessible location (through your LMS or shared drive).
- Create the Padlet, Jamboard, or other collaborative whiteboard you will use to capture and track the student inquiry questions generated by the QFT process.
  - Padlet template.
  - [Jamboard template.](#)

⏰	Activity	Notes / Needs
2	Introduction to Project ● *We're going to be working on projects over the next few weeks to explore the question:* **How can AI help us interact with people, places, and ideas in new ways?** ● *To do that, we'll work with folks around the school to make art installations that let us interact with people, places, and ideas with AI.* ● *This kind of learning might feel different and new. I (teacher) have a general plan for where we are headed, but it is new for me, too and we will all figure it out together. As a class, you will drive your own learning by asking questions and sharing your learning with each*	

	other.	
5	Share Design Journals ● *We'll be documenting our project and keeping notes in a Design Journal. You can find your copy of the journal [HERE]. You'll use it to document your process in the project, and it also has all of the handouts we'll use in class sessions.* ● Provide link / location of Design Journals to students. Have them verify they can open and add to their design journals by changing their name on the first page.	

10	Explore Example Projects
	
	Let's look at some examples of public art that other people have made that helps people interact in new ways?
	
	● HeartHug (video): This was an installation in Boston, MA as part of an overnight festival.
	  ○ https://www.codaworx.com/projects/izobrulo-polylight-hearthug-luminartz-illuminus-boston/
	  ○ **If not said by students during notice**, explain that if one person stood beneath the heart half would light up. If two people hugged beneath it, the whole heart would light up. The more people hugging, the brighter the heart. **Don't try and explain the AI / image classification / technical details.**
	  ○ **Connection to Driving Question:** The project is using tech tools (AI) so that people interact with each other to interact with the art.
	● EN Tea House: This was a Tea House in Tokyo created by artists called TeamLAB where flowers bloom your teacup.
	  ○ https://www.youtube.com/watch?v=59CXfrZpBak
	  ○ **If not said by students during notice**, flowers bloom in your teacup when it's sitting on the table, and turn into an explosion of petals when you pick up your teacup. **Don't try and explain the AI / image classification / technical details.**
	  ○ **Connection to Driving Question:** This tea house responds to the person drinking the tea and the tea itself, without a computer / robot / etc being front and center. You just drink your tea.
	● Staff Stories (object classes): These were created as installations in a school, for students to learn more about school staff.
	  ○ **If not said by students during notice**, explain that you can get different stories of people who work in the school by holding up different objects in front of the camera. **Don't try and explain the AI / image**	

	classification / technical details.
	 ○ **Connection to Driving Question:** This installation is giving people new ways and reasons to interact with people in their school / ideas and stories from history using physical objects instead of a keyboard and mouse.
	 ● Class Welcome example project (hand sign classes): This was created as an installation in a school for students to check in on how they are doing.
	    ○ **If not said by students during notice**, explain that you show how you're doing with one of three different hand signals, and the animation responds. **Don't try and explain the AI / image classification / technical details.**
	    ○ **Connection to Driving Question:** This installation is giving people ways to explore and share their emotions using a tech tool.
	
	 Provide some background on each, ask for 1-2 "noticings" from students about each. If they don't come out, share a bit about the info in the bullets for each project.	

25	Question Formulation Technique *Now we're going to think about all of these projects and ask questions about them for us to answer using a process called the Question Formulation Technique. The questions we come up with will help us figure out what we need to learn to make public art installations ourselves.* **1: Introduce the QFT Rules** ● Ask as many questions as you can. ● Do not stop to discuss, judge, or answer the questions. ● Write down every question exactly as it is stated. ● Change any statement into a question *Which of these might be most difficult for you to follow today?* [Take a few responses] **2: Introduce the Question Focus & Produce Questions** *We'll be working with folks around the school, and making projects that use AI to interact with people, places, and ideas in new ways. Thinking about the examples we just looked at, what questions do you have? Let's take 3 minutes on your own to brainstorm in your Design Journal. Remember, ask as many questions as you have!* (3 min)	Padlet or Jamboard (see Tech Checklist for links to templates)

Lets share a few of our questions!

Popcorn around, capturing what is shared on a public padlet. With that new inspiration, give students 2 more minute to add any additional questions.

(2 min)

3: Improve Questions

Discuss / define open-ended and closed-ended questions.

[Closed-ended can be answered with yes, no, or one word. Open-ended require an explanation, and cannot be answered with yes, no or with one word]

Categorize: *Go through your list, mark all your close-ended questions with a C and your open-ended questions with an O.*

(3 min)

Discuss the value of each type of question: Students identify advantages & disadvantages of closed-ended questions. Students identify advantages & disadvantages of open-ended questions.

Change: Students go through their list and change at least one open-ended question to closed, and one closed-ended question to open.

4: Prioritize Questions

Have students read through their questions, this is the opportunity as the facilitator to re-center the questions around the learning goals. The prioritization question might shift based on the specific class, but should ask students to return to thinking about the project.

Go through your list of questions, and select 3 questions that are most important to answer to make an AI public art project for our school? Mark those with a *STAR*

After you've selected 3 to star, pick one that feels most important

	and to our class padlet, along with a C or O for closed or open. This can also be done verbally with teacher adding to padlet if that makes it easier/quicker. (3 min) After adding, give students a minute to review all the questions on the board. Ask for a few students to share why they selected their priority question. Are there any questions you starred in your design journal that don't have something similar on our padlet? Share them aloud, and the teacher adds to Padlet. **5: Share next steps** These questions will guide our process as we work on our projects. After class today, I'll go through and combine and group any questions that are similar. We'll return to this list regularly to see if we have answers to any, and also have opportunities to add any new questions that come up.	
5-10	**Reflect** *On Today* ● *What new thing did you learn today?* ● *What are you wondering about?* *Recurring* ● *If a friend or family member asked you "How does AI help us interact with people, places, or ideas in new ways?" what would you say? Note: It's okay if you're not sure, give it your best shot!*	

Before next class:
● Group, cluster, merge questions. Aiming for <15 questions total from the class, but this might not be possible.
● Make note for yourself to help with facilitation, but not on Padlet cards:
  ○ Which of these questions might be answered/supported by the station activities for the rest of the week? [Use this to guide/direct students during these sessions]

- ○ Are there big ideas / learning goals in the station activities which didn't come up from the students? Take a note of that to bring up/suggest in the framing of the next day, but don't add them to the Padlet (the Padlet is just for the student questions).
- **Review student Design Journals**, leave comments on student work, and make notes for yourself on which concepts and tools students understand and where you may need to provide additional support to the whole class, small groups of students, or individuals. Since it would be too time consuming to review each Design Journal between each class, we recommend the following protocol (Also found in this separate document):
  - ○ At the beginning of the project:
    - ■ **Make a table** of all students where you can keep track of who's Design Journals you have visited and what you noticed.
  - ○ After each class:
    - ■ **Anticipate & Focus your Review**: Decide which slides from the Design Journal will give you the best formative information about where students are, and what supports they may need. This will often be either the project planning slides from the day or the daily exit ticket slides.
    - ■ **Timebox Review Time**: Set a timer for 10-15 minutes for Design Journal reviews. You may decide more or less time is necessary depending both on your comfort with reviewing AND where students are in the process.
    - ■ **Review Design Journals**: Work down your list of students, getting through as many as you can in the time you set out. Leave 1-2 comments within student design journals you look at, make a note of any misconceptions or follow up you may need with a student in your table.
    - ■ **Reflect:** Think about the Design Journals you reviewed today, jot down a note for yourself of any processes, concepts, or tools you may need to review with students based on what you read.

Day 2: Explore, Play, Learn!

Before this class:
- For the next two days, students will get to explore, play, and learn with AI, Scratch, and art stations. This will be a chance for them to explore the driving question, *"how can AI help us interact with people, places, and ideas in new ways?"*   - Students will hopefully be able to answer some of their questions from the QFT process. They will have an opportunity to share this knowledge with each other on day 4.   - Review Design Journals, focus on students' prioritized questions.   **Tech Checklist:**   - Make sure the <u>link to the perception activity</u> isn't blocked by your school.

During class:		
⏰	Activity	Notes / Needs
5	Warm up - Allow students to individually complete the warm-up slide in their design journals. - When students are finished, ask for 2-3 ideas about how a computer "sees" the world. *Our goal today is to explore two different parts of our driving question. You get to choose which stations to explore today, and you'll complete the other two next class.*	
15	First station - Have students choose the first station to explore. Remind students to record notes and observations in their design journal. - Encourage students to really explore; there's no need to follow the stations in a specific order!	
15	Second station - Have students move on to their second station for the day. - If time allows, students can explore the third station.	
10	Exit ticket: Students will reflect on questions in their design journals at the end of the day.	

Day 3: Preparing to Interview Community Members

Before this class:
    ● Build a list of staff at your school that would be willing to work with your class as community members to be interviewed. Discuss expectations and give an overview of the project.
    ● Create student group assignments
        ○ Size will depend on how many community member interviewees you have for this class.
    ● Review Design Journals, focus on student comprehension of **Teachable Machine** & **Perception** content.
Tech Checklist:
    ● If students are working in groups, then you may want to modify the interview guide so that there is a single copy for group members to collaborate on (as it is now, students take notes independently in their own design journals).
        ○ One option for sharing notes is to copy the relevant slides into a separate slide deck that is shared between all group members.
        ○ Another option is allowing students to share their design journals with each other, copying relevant shared slides as needed

During class:		
⏰	Activity	Notes / Needs

5	Warm up: Thinking about empathy
	    ● Allow students to individually complete the warm-up slide in their design journals.
	    ● When students are at a good stopping point, ask 2-3 students to share their definitions.
	Introduction
	    ● *Today, we'll be shifting gears and starting to work directly on our projects. We'll divide into teams, learn who our community member interviewees are, and prepare to interview them!*
	    ● *Planning and doing an interview with a community member may be new for a lot of us! So before diving in, let's take a moment to talk about what we should keep in mind while doing this work.*
	        ○ Remind norms, in particular with respect to group work and discussion:
	            ■ Existing classroom norms
	            ■ Taking productive risks	

2	Introduce interviews, emphasize user-centric approach to the project ● *The work for this project may be different from what we've done in the*	

	past. Our project is open-ended: we don't even know exactly what we'll make yet for our project!
	 ● *Our process will be centered on our community members, and working closely with them throughout all steps of this project.*
	 ● Emphasize the goals for the interview:
	    ○ Learn about who our community member interviewees are
	    ○ Understand their perspective and experiences
	    ○ Figure out what matters to them
	 ● *Right after we assign groups and community members, we will begin working in groups on our interview guides. By the end of today we will be ready to do our interview!*
	 ● Share groups and community member assignments with students.	

30	Interview Preparation in groups
	 ● Students should break into groups to work through Part 1 of the interview guide.
	 ● Rotate between the groups to make sure they are keeping on track to complete the guide by the end of group time
	 ● You may want to provide extra guidance on notetaking and interview roles
	    ○ See "Decide how to record information" in the interview guide
	    ○ Modelling 80/20 conversation rule with a student: Interview a student modeling ~20% of the time and letting them talk ~80%.	

5	Class wrapup
	 ● Ask groups to share back on the interview prep process as a full class
	    ○ *What was one interesting thing that came out of your discussion?*
	    ○ *Did you get stuck anywhere in the process?*
	    ○ *Is there anything else you need to do so that you're ready for the interview?*	

5	Exit Ticket: Return to Driving Question. ● What would you say if a friend or family member asked you: **"How does AI help us interact with people, places, or ideas in new ways?"**	

Day 4: Interviewing Community Members

Before this class:
Before this class:
• Ensure students have their completed list of interview questions.
• If possible, students should interview their assigned community members during class. If that's not possible, consider having students interview teachers outside of class or submit questions to their community member for the community member to respond to via video or writing.
• Review Design Journals, focusing on student questions for the community member.
Tech Checklist:
• Make sure students have a way to take notes in their design journals while interviewing (e.g., with a laptop) or they are able to write notes to later add to their design journals.

During class:		
⏰	Activity	Notes / Needs
5	Warm up: • Students list three things they might want to know about their community member in order to build an art project for their space.	
20	Interviewing community members • Students should take notes in their slide handouts from the previous day, or plan to copy important notes into their design journal.	
20	Debriefing after interview • Students complete the debrief questions in their design journals. • Groups generate a project statement for their project, which summarizes how they know they will reach their goal.	
5	Exit ticket: Reflecting on the interview • Students create a collage/artifact to represent important points from the interview.	

Day 5: Prototyping

Before this class:
● Review Design Journals, ensure that students have completed their project statement (day 4).

During class:		
⏰	Activity	Notes / Needs
5	Warm up: Design Journal Prompts ● Think back to your interview and summarize: what is important to your community member? ● What might be important to other people who will interact with your project? Introduction ● *Today we'll move from gathering data to building things! We're going to start by making prototypes, which are quick, simple representations of ideas that we use to get feedback and test our ideas. They're not meant to be perfect or even good! We just want feedback on our ideas.*	
5	Generate ideas ● *What ways are there to make a project that supports what is "most Important" to your community member?* ● Using the notes from their interview, students generate ideas for art installations with their groups. ● Encourage students to think broadly about how teachers' responses could be addressed with an art project.	
15	Create 3 prototypes (sketches) ● Students create sketches of three ideas. Depending on group size, consider specifying if all members should create multiple sketches, or if they should divide up the work.	
20	Share prototypes w/ peers to get feedback (paired groups) ● Each group will have ~7 minutes to share their prototypes with another group and get feedback on each one ● The presenting group will take notes while the other group is giving feedback; this feedback is recorded in the presenting student's slides, underneath the orange box.	

5	Return to QFT questions again (exit ticket):	

	• *As we try to explore how AI can help us interact with people, places, and ideas in new ways we made a list of questions we need answers to. Let's go through and see if we've answered any.*
	• Go down the padlet list. For each question, ask it aloud and check student understanding:
	  ○ "I can answer this"
	  ○ "I have a partial answer"
	  ○ "I can't answer this"
	• If all, or nearly all students say "I can answer this" or "I have a partial answer":
	  ○ Ask for a student to try to answer the question.
	  ○ Capture their answer on the padlet card.
	  ○ Ask at least 1 other student to repeat/build on that idea.
	  ○ Ask if there are different understandings (use this as an opportunity to bring students who had a "I can't answer this" into the conversation to see/build their understanding)
	  ○ Once set, mark the card as "answered" by moving it to the "Answered Questions" column.
	• If the majority of students say, "I can't answer this," move on and leave it as a question to be answered.	

Day 6: Scratch

Before this class:

- Review Design Journals, ensure that students have completed their project statement (day 4) and prototypes (day 5).

During class:

⏰	Activity	Notes / Needs
5	Warmup ● Students reflect on the previous day's work and set goals for themselves. Introduction ● *Today's goal is to create a Scratch prototype.* ● *We are only creating the Scratch portion of the project today. We will create the Teachable Machine model later.* ● Demo an example prototype, pointing out how there are keyboard presses that will be replaced with actions once the Teachable Machine model is added in. ● Remind students that they should be implementing their selected prototype.	https://www.youtube.com/watch?v=K7r4GDXsVXY

40	Work time
	● Students individually create a Scratch prototype of the idea they chose at the start of class.
	● Checkpoints:
	   ○ Make sure each group/student has selected an idea to prototype
	   ○ Make sure they have an idea of what they are coding in Scratch
	   ○ Check on coding progress	

5	Exit ticket: Students reflect on their goals.	

Day 7: Teachable Machine

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Before this class:
- Refamiliarize yourself with [Teachable Machine](#) and be prepared to answer student questions
  - For projects that recognize objects, students will likely use images as inputs
  - For projects that recognize whole people, students may use poses instead
- Refamiliarize yourself with how to export models from Teachable Machine.
- Review Design Journals, review if students have questions or issues with Scratch.

Tech Checklist:
- Make sure students have access to webcams for use in Teachable Machine.

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During class:		
⏰	Activity	Notes / Needs
5	Warm-up: Teachable Machine review ● Students will review Teachable Machine recap in their design journals and jot down any questions they have. ● Review Teachable Machine inputs and categories as a whole-class, and have students share questions they wrote down.	
10	Deciding on the model ● Students decide what their model should contain, and write about it in their design journal. Students could ideate aloud with their group, instead.	
30	Teachable Machine studio time ● Students create their Teachable Machine models.	
5	Exit Ticket ● Students reflect on what they're excited to share with their community member.	

Day 8: Community Member Review

Before this class:	

Before this class:
- Ensure students have completed the previous day's work; if not, allocate time for completing their project before the community member review.
- Review Design Journals, looking to see if students have questions or issues with Scratch & Teachable Machine.

Tech checklist:
- Ensure students are able to present their work to the community members.

During class:

⏰	Activity	Notes / Needs
5	Warm-up	
10	Prepare for community member review • Students create advertisements to show their work to the community member.	
30	Community member review • Students present their work to the community member and record the community member's feedback in the student design journal	
5	Exit ticket • Students reflect on the community member's feedback.	

Day 9: Finishing Up!

Before this class:
● Review Design Journals, to see which students or groups may need additional time to complete the project. Strategize how they might get the support they need.
Tech checklist:
● Make sure students have their links for their Teachable Machine models.
● Ensure students have access to their Scratch+Teachable Machine project from Day 9.

During class:		
⏰	Activity	Notes / Needs
5	Warm-up ● Students set goals for themselves. Introduction ● Introduce that students will be completing their final projects today by putting their Teachable Machine model into their Scratch project and start reflecting on the whole project.	
30	Studio Time ● Let students split into their groups and give them time to finalize their projects ● Check in with each group with any questions they have. ● If needed, demo how to upload their project to the [AI Scratch workspace]().	

10	Return to QFT questions again (exit ticket):
	● *As we try to explore how AI can help us interact with people, places, and ideas in new ways we made a list of questions we need answers to. Let's go through and see if we've answered any.*
	● Go down the padlet list. For each question, ask it aloud and check student understanding:
	  ○ "I can answer this"
	  ○ "I have a partial answer"
	  ○ "I can't answer this"
	● If all, or nearly all students say "I can answer this" or "I have a partial answer":
	  ○ Ask for a student to try to answer the question.	

	○ Capture their answer on the padlet card. ○ Ask at least 1 other student to repeat/build on that idea. ○ Ask if there are different understandings (use this as an opportunity to bring students who had a "I can't answer this" into the conversation to see/build their understanding) ○ Once set, mark the card as "answered" by moving it to the "Answered Questions" column. ● If the majority of students say, "I can't answer this," move on and leave it as a question to be answered. **Note: This is the last formal review of this Question Board, because at the end of next week you'll be reflecting on the whole project.**	
5	Exit Ticket ● Students reflect on the driving question.	

Day 10: Project Reflection & Presentation Prep

Before this class:
- Make sure that students have finished their projects by this point and that they are uploaded on flipgrid.
- Review Design Journals, review which students or groups may need additional time to complete the project. Strategize how they might get the support they need.

Tech checklist:
- Familiarize yourself with re-Flipgrid. You can watch a video overview of the tool, and how to do the steps below here: Art & AI Flipgrid Introduction for Teachers
- Flipgrid discussion here: https://flipgrid.com/artandai
- Note: Screen recording in Flipgrid only works using the Google Chrome or Microsoft Edge browsers.

During class:		
⏰	Activity	Notes / Needs
5	Warm-up • Students reflect on what they'd like to accomplish for their project.	

10	Introduction
	
	• Introduce that students will be preparing to present their final projects using flipgrid.
	• Whole class discussion:
	  ○ How will you demonstrate your installation?
	  ○ How will you explain your installation in words?
	• Share "Presenting your project" guide, as prompts they'll have to create their presentation.
	• Flipgrid Demo (For more details, watch this video: Art & AI Flipgrid Introduction for Teachers)
	  ○ Demonstrate how to log into Flipgrid using First name + last initial.
	  ○ Show how to record a video, including how to record screen so they can demo their projects. They will have 2:30 for their presentations.
	  ○ Show how to trim clips.
	  ○ Finally, how to submit video.
	• Remind students that once they submit their presentation, they can start working on their Project Portfolio.	

30	Studio Time ● Work on presentations & Portfolios ● Record their presentations in Flipgrid	
5	Exit ticket ● Students reflect on their goals.	

Day 11: Presentations

Before this class:
- Review Design Journals, review which students or groups may need additional time to complete the project. Strategize how they might get the support they need.

Tech checklist:
- Set up a method for students to give feedback. Your class can use a Google Jamboard, a Google Form, Padlet, paper version, or any other method of your choice. Students can also leave feedback directly within Flipgrid.
  - If using a Google Jamboard, duplicate the slide so there is one slide per presenting group and ensure the sharing settings allow your students to edit the board.
  - If using a Google Form, edit the dropdown list so each group is represented.

During class:

⏰	Activity	Notes / Needs
5	Warm-up in design journal • Students reflect on how they can be supportive and active listeners during student presentations.	
40	Student presentations • Allow students to present. After each presentation, have students fill out the feedback form.	Share feedback method with students.
5	Exit ticket in design journal • Students compare other projects to their own.	

After this class:
- Organize student feedback so each group has access to the feedback about their project.

Day 12: Project Portfolios & Reflections

Before this class:
● Update slides to include screenshots / photos from your class's process.
● Start Project Review: You can use this Single Point Rubric as you watch project demo videos and read through Final Project Portfolios to give feedback to students on their work.

During class:		
⏰	Activity	Notes / Needs
5	Warm-up ● Students write, draw, record, make a collage, or find a picture that describes their favorite part of their project. Intro ● Our Project Portfolios help us reflect back on what we've done and what we've learned. I'll also be looking them over to give you feedback on your projects. ● Some of you have already started, we'll take most of today to finish them up. ● We will spend the last 15 minutes of class returning to our driving question, to see what we've learned.	
20	Studio time for Portfolio	Share feedback method with students.
20	Closing Discussion ● We spent the last few weeks making projects to help us explore this question: **How can AI help us interact with people, places, and ideas in new ways?** ● We explored sample projects. ● We talked to members of the community for inspiration. ● We designed, iterated, created. ● As students to provide any shout-outs/appreciations to their peers. ● *We asked and answered a lot of our own questions.* ● [Add any additional slides for important points in	

	your class process, too!] ● And now we come back to our driving question. Give students time to reflect/write in their journals about this question. ● Facilitate full class discussion, sharing out some of the answers, build some consensus and document some of the new answers the class has to this question.	
5	Exit ticket ● Students reflect on the driving question.	