# Virtual Field Trip: Learning Experiences

## Materials and Preparation

**Day 1**

- Determine the prompt for the field trip depending on what content you are trying to integrate (see example prompts for an ancient Maya/Aztec/Inca civilizations virtual field trip assignment).
- Update Pre-assessment questions as needed and decide if students will complete online or on paper.
- Update Virtual Field Trip Planner as needed and decide if students will complete online or on paper.
- Make sure Scratch is either installed or you/your students create accounts through an educator account in order for students to be able to save their work. Watch Scratch Desktop vs. Online video for more information. Be sure you keep a log of their account names and password.
- Determine which rubric you would like to share with students and update as necessary: Virtual Field Trip Self-Evaluation or Virtual Field Trip Rubric.
- Create exit ticket - Day 1: Students complete and share their pre-assessment questions and virtual field trip planner.

**Days 2-4**

- Watch the Sprites and Backdrops video, Using events to switch scenes, and Using sensing to add interactivity to help you demo how to do each of these things with your class.
- If students are working in pairs, they will need to pick one account (online Scratch) or one computer (downloaded Scratch) to use through the duration of the project.
- Create exit tickets to help you track engagement and troubleshoot problems:
    - Days 2 & 3:.
        - What did you accomplish today? (Describe tasks you finished and/or new things you learned.)
        - What are you going to work on next?
        - What, if anything, is blocking you from making progress?
    - Day 4 - Check for understanding:
        - Take a screenshot of code in your Scratch project that shows an example of using an event. Does it currently work? Why or why not?
          OR
        - Take a screenshot of code in your Scratch project that shows an example of using a conditional. Does it currently work? Why or why not?
- You may want to have the ability to project student projects for them to share common problems you are noticing to display for class to help debug.

# Virtual Field Trip: Learning Experiences

**Day 5**

- In person: sticky notes/feedback forms for each student
- Remote: create a padlet to share projects and have students give each other feedback there
- Exit ticket: What feedback did students either incorporate into their project or would have, if they had more time.

**Day 6**

- Update Assessment questions as needed and decide if they will complete online or on paper.
- Student Reflection:
    - What went well with creating your Scratch project?
    - What did you struggle with creating your Scratch project?
    - What will you tell someone at home about what you learned creating your Scratch project?

# Virtual Field Trip: Learning Experiences

## Day 1: Introduction and Plan

**Pre-assessment**

- Determine comfort level with Scratch and familiarity with CS concepts: sequencing, conditionals, debugging, iterative design, algorithm, decomposition, and citing sources.

**Learning Objectives**

- *Students will know how to break down (decompose) their project into smaller chunks (5.5)*
- *Students will know the steps in an iterative design process - plan, code, test, debug (5.4)*

**Introduce students to the project**

- Ask students to share memorable field trip experiences.
- Explain that they will be creating a virtual field trip based on an ***interdisciplinary*** [CS teaching strategy] subject that you have chosen, but they will have a lot of ***choices*** [CS teaching strategy] to make about what they show people on their field trip.
- Ask students to think about strategies to tackle a big project like this where they have a lot of ***creative freedom*** [CS teaching strategy].
- Tell students that one strategy is **decomposition** [SOL: 5.5] - or to break down a complex problem into smaller parts that are more manageable and easier to understand. They are going to break down the larger project into different scenes to help them **plan their field trip** [SOL: 5.4].

### Activity

- Hand out Virtual Field Trip Planner (either in google docs or paper) edited with your specific prompts.
- Students work to break down their field trip into 3 scenes and make a plan.
- Have students login to Scratch either through accounts you have set up or accounts they create.

### Discussion

- What was difficult/easy about planning your field trip? Any problems that you came across?
- Remind students that their plans can always change, but it is good practice to start with a plan and then go back an update as the project progresses.

### Exit ticket

- Collect students' pre-assessment, virtual field trip planner and Scratch account info (if you have not collected this info before).

# Virtual Field Trip: Learning Experiences

## Day 2: People, Places, and Things

**Learning Objectives**

- *Students will know the steps in an iterative design process - plan, code, test, debug (5.4)*
- *Students will be able to storyboard their project (5.4)*
- *Students will know when and how to give credit to sources they have used in their project, like images or ideas (5.6)*
- *Students will be able to cite their sources (5.6)*

**Activity**

- Introduce students to either the Virtual Field Trip Self-Evaluation or Virtual Field Trip Rubric.
    - If you have time, this would be a great opportunity to ***set expectations*** [CS teaching strategy] with your students. Look at examples of field trips on Scratch together and have students brainstorm a list of "must have" they think they should include in theirs.
- Today's goal is to begin **iterating** [SOL: 5.4] on their project by working on getting the background images and sprites (people, artifacts, etc.) for each of their scenes based on their plan.
- Students work on gathering/creating sprites and backdrop images for scenes.
- Demo to the class how to create sprites and backgrounds (Watch the Sprites and Backdrops video for help).
- Students can use the Scratch paint tool or Piskel to create images.
- Students can use google search to find images. Make sure that they copy the website URL into their Image Citations at the bottom of their planning doc. Make sure the URL does not include google (that is just a reference to the image and also google is never a valid citation for an image).
- Students log in to Scratch and start adding sprites and backdrop images into a project.

**Discussion**

- Have students share out their works-in-progress, ask what was difficult and how they solved their problems (or ask other students for ideas if they haven't solved problems)
- Ask students about if and how they have had to change their plans.

**Exit ticket**

- What did you accomplish today? (Describe tasks you finished and/or new things you learned.)
- What are you going to work on next?
- What, if anything, is blocking you from making  progress?

# Virtual Field Trip: Learning Experiences

## Day 3: Field Trip Events

**Learning Objectives**

- *Students will know the steps in an iterative design process - plan, code, test, debug (5.4)*
- *Students will know that that the sequence of their code is important and impacts how it runs (5.1a)*
- *Students will be able to use events to switch scenes & sprites (5.3)*
- *Students will know to expect bugs in their code (5.3)*
- *Students will know how to use debugging (problem solving) strategies to fix bugs in their code (5.3)*
- *Students will be able to debug their project (5.3)*

**Activity**

- Introduce students to the activity. Tell students that they should finish creating/gathering images for sprites and backdrop images and start coding events into their project.
- Demo to the class how to use **events** [SOL 5.1] to switch scenes (watch the Using events to switch scenes video for help). You can find sample code here.
- Students work on their projects.
    - During work time, encourage ***experimentation***, ***risk taking*** and using ***peer mentors*** [CS teaching strategies] and to **debug** [SOL 5.3] problems they encounter.
- Be sure that by the end of class, that students have clicked Share on their projects in Scratch.

**Discussion:**

- Have students share out their works-in-progress, ask what was difficult and how they solved their problems (or ask other students for ideas if they haven't solved problems).
- Ask students about if and how they have had to change their plans.

**Exit ticket**

- What did you accomplish today? (Describe tasks you finished and/or new things you learned.)
- What are you going to work on next?
- What, if anything, is blocking you from making  progress?

# Virtual Field Trip: Learning Experiences

## Day 4: Making the Field Trip Interactive

**Learning Objectives**

- *Students will know the steps in an iterative design process - plan, code, test, debug (5.4)*
- *Students will know the code needed to create conditionals (if-statements) in their code (5.1e)*
- *Students will be able to use conditionals to add interactivity to their project (5.1e)*
- *Students will know to expect bugs in their code (5.3)*
- *Students will know how to use debugging (problem solving) strategies to fix bugs in their code (5.3)*
- *Students will be able to debug their project (5.3)*

**Activity**

- Introduce students to the activity. Tell students that they should finish coding events into their project before adding interactivity.
- Ask students for examples of times they had to make decisions based on an if-statement something happened. For instance, if it rains, then I know I need an umbrella.
- Using **if-statement** [SOL 5.1e] in coding is also known as **conditionals** [SOL 5.1e]. If-statements are often used in conjunction with sensing things in your environment, like using your eyes to see it is raining or your hand to feel the rain. In this lesson the environment is in Scratch, so students will be using sensor blocks to determine if a sprite is touching another sprite.
- Demo to the class how to use if-statements and sensing to make the project interactive (watch the Using sensing to add interactivity video for help). You can find sample code here.
- Students work on their projects:
    - Finding problems in your code and **debugging** [SOL 5.3] them is common and expected. Nobody's code works perfectly the first time through.
    - Adding interactivity can be an optional activity as a way to ***differentiate*** [CS teaching strategy] the project. Another is to employ students who wrap up early as peer mentors for others.
    - If a student thinks they are done, ask them to think about the user experience of their field trip and what they could do to improve it?

**Discussion:**

- Ask students about if and how they have had to change their plans.

**Exit ticket**

- Link to students Scratch projects.
- Take a screenshot of code in your Scratch project that shows an example of using an

event. Does it currently work? Why or why not?
OR

- Take a screenshot of code in your Scratch project that shows an example of using a conditional. Does it currently work? Why or why not?

# Virtual Field Trip: Learning Experiences

## Day 5: Feedback

**Learning Objectives**

- *Students will know how to give and get constructive feedback (5.4)*
- *Students will be able to offer constructive feedback and help to their peers (5.4)*
- *Students will be able to incorporate feedback into their project (5.4)*

**Introduction**

Tell students that getting ***feedback*** [CS teaching strategy] on your programs from others and using the feedback to improve the project is an important part of the **iterative** [SOL 5.4] design process in CS.

**Class feedback activity**

- Tell students that they are going to look at other students' field trips and give feedback to their peers. Ask students what they know about feedback.
    - What makes it useful? Feedback is clear and you can do something with it to make your program better.
    - What makes it not useful? Feedback is vague or has to do with the person and not the program.
- Tell students that to help provide good feedback you are going to say at least one thing you like about the program and one thing you wish the program had:
    - I like ....
    - I wish ...
- In person: Have students travel to other students' computers with their sticky notes/paper and show each other their programs, then work on their feedback.
- Online: Create a padlet to share projects and have students give each other feedback there
- Have students use feedback to improve their projects.

**Discussion**

- Ask students about giving feedback. What was easy about giving feedback? What was hard? What kind of feedback was helpful?
- Have students share examples of feedback they got and how they used the feedback to improve their field trip.

**Exit ticket**

- What feedback did students either incorporate into their project or would have, if they had more time.

# Virtual Field Trip: Learning Experiences

## Day 6: Present, Assess and Reflect

**Learning Objectives**

- *Students will know the definitions of the computer science terms: sequence, conditional, debug, decomposition, and algorithm*
- *Students will be able to create a project that share their learning in another subject area*
- *Students will understand that we all have the power to be creators of technology, not just consumers*
- *Students will understand that with great power of technology creation comes great responsibility*
- *Students will understand that creating is an iterative process*
- *Students will understand that you can learn CS skills through debugging and remixing code*

**Introduction**

Tell students that presenting work is a valuable skill not only for school but also for future jobs and that creating technology is a super power they now possess.

**Prepare Presentation**

Tell students that they have a few minutes to talk to their partners (or plan themselves) for what they are going to say in their presentation. If they are working in groups, you may want to emphasize equal participation in the presentation.

**Presentations**

Students present their field trips to the class.

**Assessment**

Remind students that it is important to have a growth mindset and understand that everyone comes to CS with different experiences and skills. The assessment is to show you where your growth is and to help me, as your teacher, understand how I can do my job better.

**Reflection**

- Tell students that we are now going to ***reflect*** [CS teaching strategy] on what they learned.
    - What went well with creating your Scratch project?
    - What did you struggle with creating your Scratch project?
    - What will you tell someone at home about what you learned creating your Scratch project?

# Virtual Field Trip: Learning Experiences