Creating 360° VR Experiences - In Progress

This guide introduces the concept of 360° VR experiences and explains how to create 360° VR experiences in 3 phases: pre-production, production and post-production.
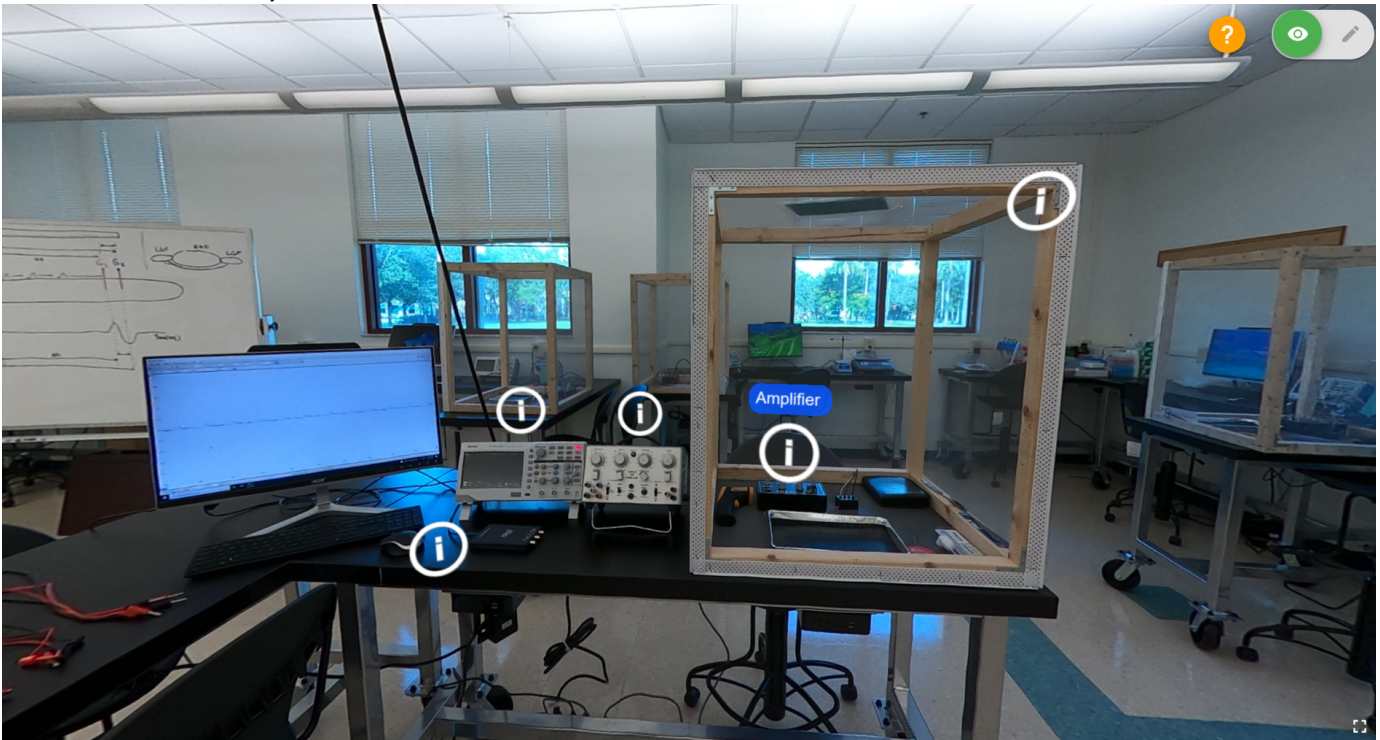
> ℹ️ Throughout this guide, 360° VR experiences will mostly be referred to as Scenarios. This is the term used by CenarioVR, the VR authoring tool that the media team currently uses.

📝 Introduction

Scenarios consist of scenes of 360° photos and/or videos, with objects and events added to those scenes for interactivity.

Objects include hotspots, question cards, info cards, audio, images, and video. Hotspots trigger actions when the learner clicks on them, while events trigger actions at a specific time. CenarioVR also allows for conditional branching, meaning you can create varied outcomes based on how learners interact with objects.

For example, this scene contains several hotspots: the information icons ( ) near various pieces of lab equipment. When the learner hovers over an information icon hotspot, an info card with the name of that piece of lab equipment is shown. When the learner clicks on an information icon hotspot, a standard video explaining that piece of lab equipment appears and plays.

Overall, Scenarios are immersive, interactive, and individualized (optional).

Interact with at least one of the following Scenarios:

- FAU Brain Lab Scenario
- Molecular Models Scenario
- Photochemical Reactions Scenario
- Redox Reactions Scenario
- Separating a Mixture Scenario
- Limiting Reagent Study Scenario
- Refractory Period - Earthworm Scenario

📑 Pre-Production

The pre-production phase involves storyboarding the Scenario. The storyboard is a Google Docs document that will be referenced both during recording (production phase) and editing (post-production phase).

> ℹ️ The storyboard document and meeting serve to:
>
> 1. Establish the subject and flow of the experience
> 2. Identify questions, answers, and points per question
> 3. Itemize assets, including text for info cards, audio, graphics, photos, and videos

View at least one of the following storyboards:

- Molecular Models Storyboard
- Photochemical Reactions Storyboard
- Redox Reactions Storyboard
- Separating a Mixture Storyboard
- Limiting Reagent Study Storyboard
- Refractory Period - Earthworm and Cricket Storyboard

To create a storyboard, follow the steps in the next three sections: before, during, and after the meeting.

Before the Meeting

First, you'll need to schedule a 1 hour storyboarding meeting with the SME in Teams.

> ⚠️ Before the meeting, ask the SME to have all questions, answers, and points per question ready to copy and paste into the storyboard. Remind the SME that the total score needs to equal 100. For example, if there were 12 questions, then 10 questions could be worth 9 points and 2 questions could be worth 5 points (10 x 9 = 90, 2 x 5 =10, 90 + 10 = 100).

Duplicate the 360 VR Storyboard Template to the appropriate recording session folder and update the name of the document, following the department's naming convention: COURSEID_SMELASTNAME_NAMEOFSCENARIO.

During the Meeting

> ℹ️ If desired, you can record the meeting in case you want to review something later. Just be sure to let the SME and any other attendees know that you are about to record before doing so, they may turn off their cameras if they wish, and the recording is for internal use only.

At the start of the meeting, ask the SME to briefly explain the subject of the Scenario: what do they want the student to learn, experience, interact with, etc.? This will help you get a "big picture" view of the Scenario, which will help you start thinking about the flow and assets, as well as what equipment you'll need for the recording session.

Then, ask the SME how many parts they want to include in the Scenario and begin populating the storyboard with information, as you and the SME discuss each part in order.
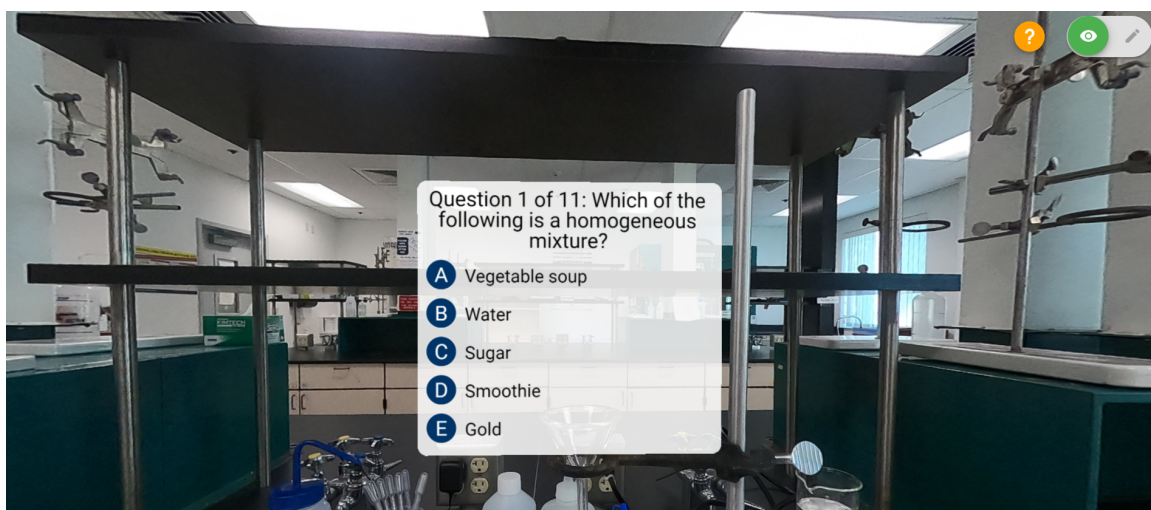
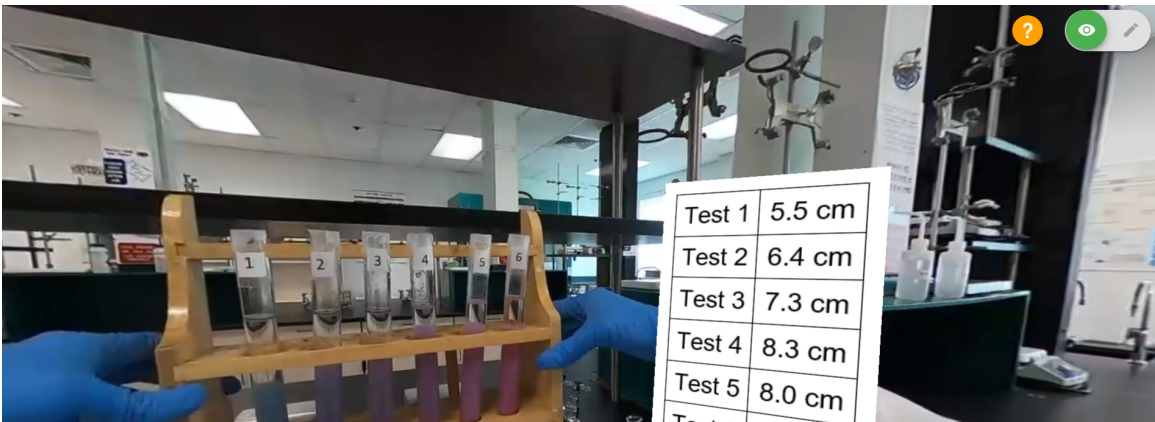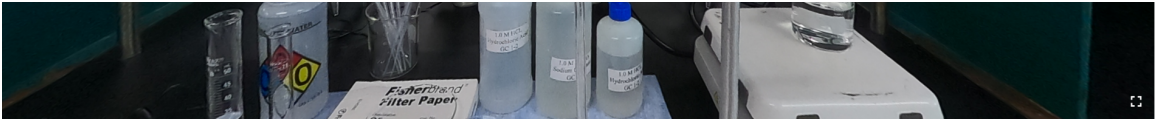**Questions to ask the SME as you discuss each part:**

- What is the name of this part?
- What do you want to record or photograph in 360° to use as the base of this part?
  - If using a 360° video as the base, do you want to include audio? Do you want to narrate while you record?
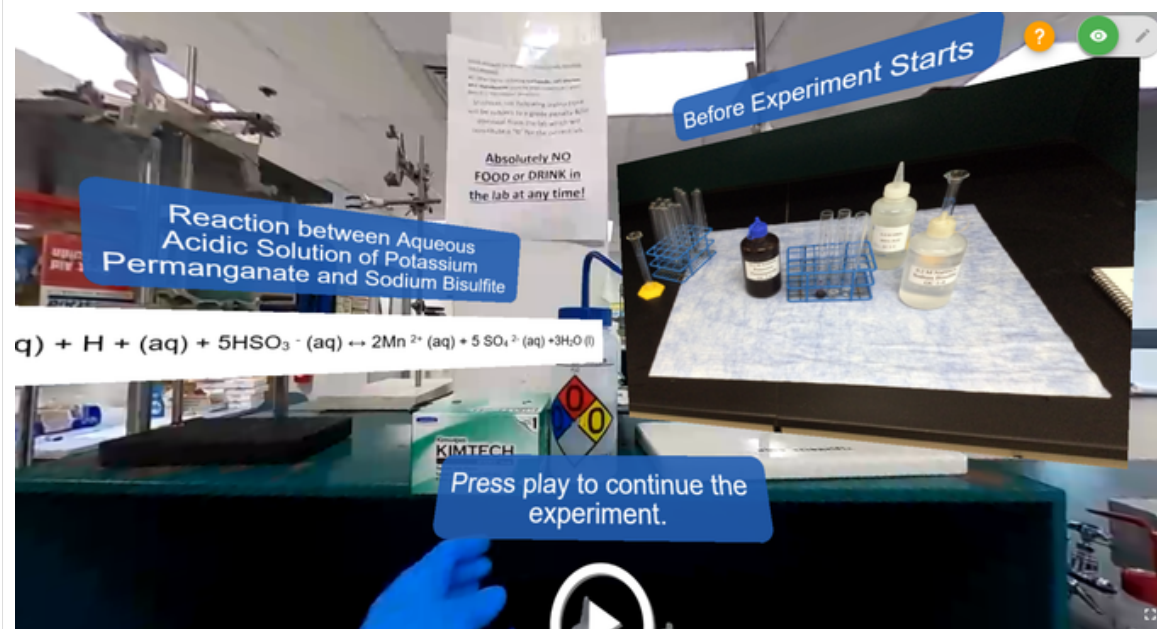
⚠️ Remind the SME that it's best practice to keep each 360° video less than 10 minutes long, both for student engagement and to prevent buffering in CenarioVR.

- Do you want to include any audio files in this part?
  - How many audio files and when should each start playing?
- Will there be any questions in this part?
  - Ask the SME to copy and paste the prepared questions and answers into the storyboard.
- Do you want to include pop-up standard videos in this part, such as an introduction to the part or an answer video after a question?
  - How many, what are they, and when should they pop-up?

- Do you want to include any standard photos in this part?
  - Are they stock photos, photos you've already taken, or photos we'll need to take during the recording session?
  - How many and when should they pop-up?
- Do you want to include any graphics in this part?
  - How many, what are they, and when should they pop-up?
- Do you want to include any text on info cards in this part?
  - How many, what should they say, and when should they pop-up?

Examples of Objects Added to Scenes

40 W 60 W

3:
our
vations,
gth allows
tion?

Test 1	5.5 cm
Test 2	6.4 cm
Test 3	7.3 cm
Test 4	8.3 cm
Test 5	8.0 cm

At the end of the meeting, select a day and time for the recording session.

After the Meeting

Immediately after the meeting, send a calendar invitation for the recording session to the SME and any colleagues that are joining.

Then, finalize the storyboard by formatting and color-coding the text (follow the template) and populating the Shooting Order checklist, found on the last page.

The Shooting Order checklist is very important as it will be referenced during the recording session to ensure all assets are captured. Typically, we take the 360° photo first, record all 360° videos associated with that 360° photo, and then finish with the standard videos. Standard photos are taken as needed throughout.

> ⚠️ When populating the Shooting Order checklist, pay particular attention to when you need to take any standard and 360° photos. For example, for one lab we needed to take standard photos of test tubes before and after each 360° video. This was noted in the Shooting Order checklist.

📷 Production

The production phase involves packing equipment, conducting the recording session, and backing up footage and photos.

Pack Equipment

First, at least one hour before the recording session (or the day before if the shoot is early in the morning), pack all needed equipment.

> ⚠️ The day before the recording session, ensure all batteries, iPads, and other items are fully charged and all SD and microSD cards have enough free space.

For the standard photos and videos, you'll need all of the usual on-location recording equipment.

For the 360° photos and videos, the following table lists each piece of additional equipment you'll need and its use on set or notes about item(s).

Equipment	Use/Notes
360° Camera	To capture 360° photos and videos, the media team has two cameras to choose from: 1. GoPro Max 2. Insta360 Pro 2
360° Tripod with Mount	This specialized tripod has short legs that are less noticeable in a 360° frame than a standard tripod. For the Insta360 Pro 2, you can use the built-in mount. For the GoPro Max, use a small screw mount instead of a GoPro screw mount to avoid seeing it in the 360° frame.
iPad	Each camera is operated by it's own app which allows you to preview the framing, adjust settings, and start recording.
Lavalier Mic	*OPTIONAL:* Used if the SME wants to record audio during the recording of any of the 360° videos.
Memory Cards for 360° Cameras	The GoPro Max holds one microSD card. The Insta360 Pro 2 holds six microSD cards and one full SD card.
Additional Batteries for 360° Cameras	Each camera has two batteries.

Conduct the Recording Session

Use the Shooting Order table from the storyboard to guide the recording session and to ensure you capture all assets.

> ℹ️ If recording needs to stop for an extended period of time, turn the cameras off to save battery.

> ⚠️ You and any colleagues that have joined the recording session will need to either hide behind something or, if possible, leave the room during the capture of all 360° photos and videos. Use the camera's app to preview the framing and ensure you are all hidden.

Important notes about 360° photos:

There are two uses for 360° photos in Scenarios:

1. As the base of a scene
2. For masking out the SME's face in Adobe Premiere Pro during post-production

You'll need to capture one 360° masking photo for every new recording location.

For example, if the SME records two videos at one end of a lab workbench and one video at the other end, you'll need to take two 360° masking photos, one at each end.

You'll need to capture a new 360° masking photo anytime adjustments - even minor ones - are made to the set or camera position, after taking the initial 360°.

For example, if the SME repositions a piece of lab equipment or you adjust the camera tilt or position, retake that 360° masking photo.

> ⚠️ For 360° masking photos, make sure everyone hides or leaves the room, including the SME.

Back Up Footage and Photos

Back up all the footage and photos from the various cameras to the network drive and Microsoft OneDrive.

💻 Post-Production

The post-production phase involves processing the 360° videos, preparing all assets, editing in CenarioVR, internal review and user-testing, and review by the SME.

Processing the Footage

Before you can begin editing, you'll need to process the 360° videos.

First, in the network drive and Microsoft OneDrive, create a subfolder named Exported in the GoPro folder.

Then follow the steps below, depending on which camera was used:

GoPro Hero Max

1. Install the GoPro Player app.
2. From the File menu, select Batch Exporter or press Ctrl+B.
3. Click "Choose a file" and select the .360 files or drag the files into the Batch Exporter window.
4. Under Codec, select H.264.
5. Under Resolution, select 4K.
6. Uncheck World Lock (to prevent shifting).
7. Press Start on the top left.

The files are now ready to be edited in Adobe Premiere Pro.

Insta360 Pro 2

1. Install the Insta360 STITCHER app.
2. Follow this tutorial: https://www.youtube.com/watch?v=6TANeUo8aIA
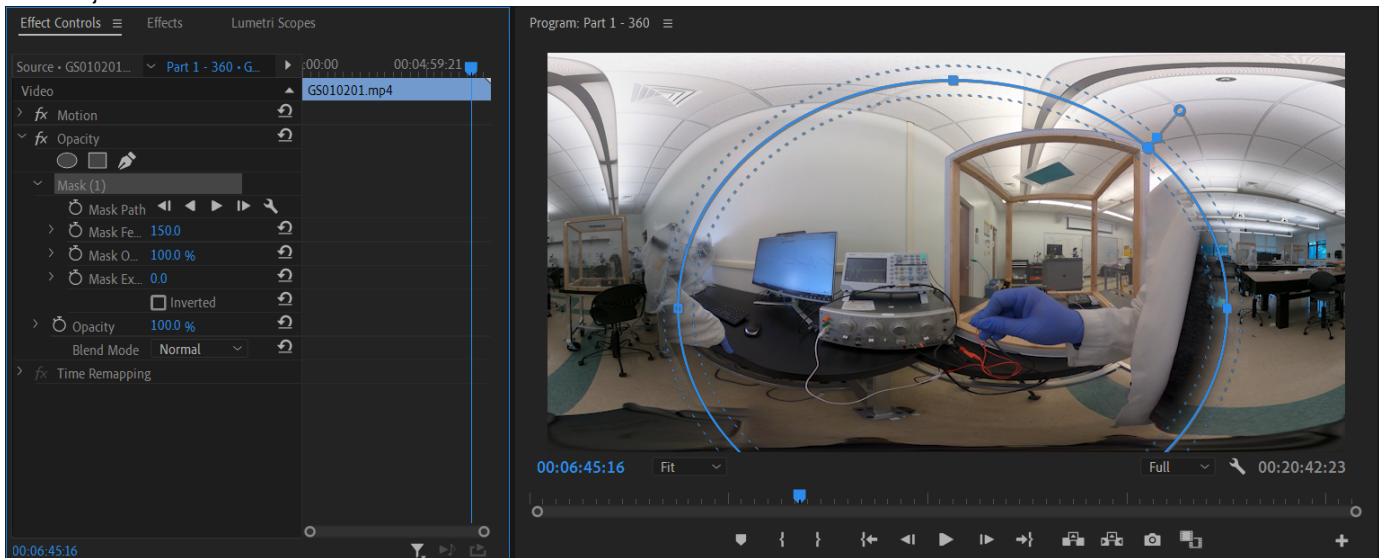
Prepare All Assets

The main step in preparing all assets is masking out the SME's face in the 360° videos.

You may also need to gather graphics and photos from the SME, if you haven't received them already, create graphics or request graphics from our in-house graphic designer, or make simple edits to photos taken during the recording session.

Masking the 360° Videos

After creating an Adobe Premiere Pro project file and importing the processed 360° videos, follow the steps below to mask out the SME's face in each video:

1. Right click on the video and select "New Sequence from Clip".
2. Move the video to the "V2" track.
3. Drag the 360° masking photo that corresponds to the video onto the timeline, to the "V1" track.
4. Select the video on the timeline and in Effect Controls, under Opacity, select the oval to "Create an ellipse mask".
5. Adjust the size and positioning of the mask so that the SMEs face is no longer visible.
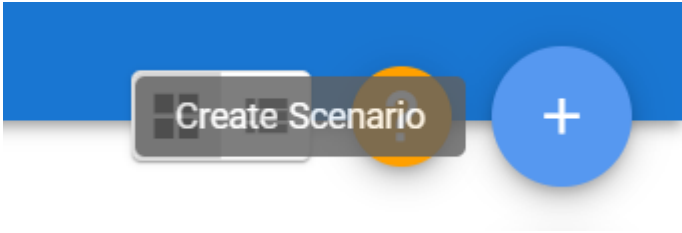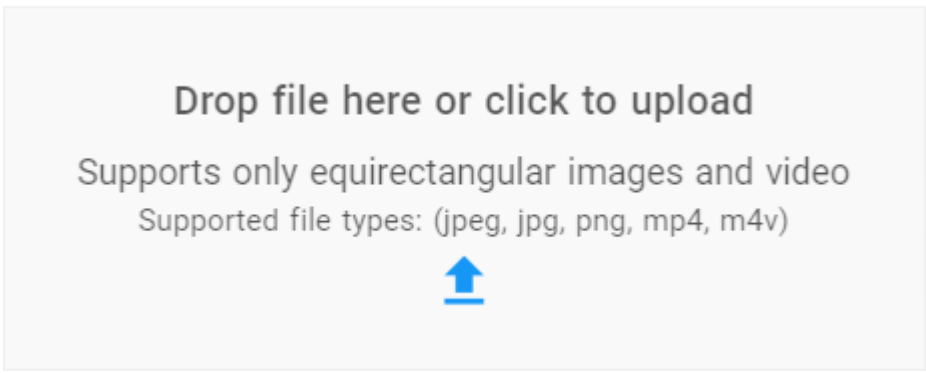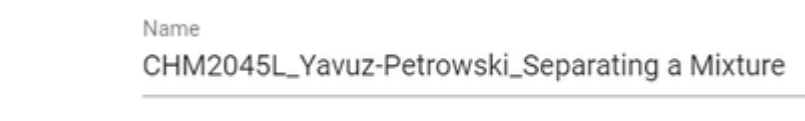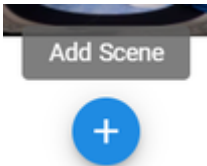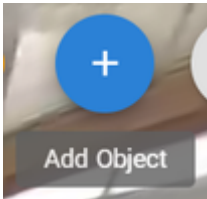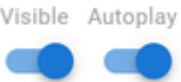6. Adjust the Mask Feather to about 150.

Edit in CenarioVR

The media team currently uses the authoring tool CenarioVR to create 360° VR experiences.

Use the storyboard as a guide as you edit.

> ℹ️ Note that you'll probably need to add additional objects that aren't explicitly listed in the storyboard, typically related to the flow of the Scenario. For example, to connect one scene to the next you might need to add a hotspot like a right arrow and an info card that says something along the lines of "Click the arrow to proceed to the next part."

Here is the process for creating a Scenario in CenarioVR:

	Instructions	Reference Image
1	Click the "Create Scenario" button - blue circle with a plus sign - on the top right.	
2	Drag and drop or click to upload the 360° photo or video to be used the base for the first scene of the Scenario (typically the introduction, using a 360° photo as the base).	Drop file here or click to upload Supports only equirectangular images and video Supported file types: (jpeg, jpg, png, mp4, m4v)
3	Name the Scenario, following the department's naming convention: COURSEID_SMELASTNAME_NAMEOFSCENARIO.	Name CHM2045L_Yavuz-Petrowski_Separating a Mixture
4	Click the "Create Scenario" button - blue rectangle on the bottom right.	CREATE SCENARIO
5	Click the "Add Scene" button - blue circle with a plus sign - in the pane on the left to add each of the remaining scenes. Give each scene a a clear name.	Add Scene +
6	Add all of the objects to each scene using the "Add Object" button - blue circle with a plus sign - on the top right. Give each object a clear name.	Add Object +
7	Move through each scene, adding actions, conditions, effects, etc., to the objects, and adding links between scenes. Adjust the "Visible" and "Autoplay" settings, which are on by default, as needed.	Visible Autoplay *See more images below table.*
8	Use the "Preview Mode Switch" toggle to test the Scenario for any issues with flow, design, or total score.	

Scenes

Link to Scene	Play Scene	Pause Scene	Jump to Scene Time

Object Actions

Show	Hide	Animate	Stop Animation	Pan To	Disable	Enable	Reset

Audio, Video and Timers

Play	Pause	Stop	Set Time

Variables and Completion

Modify Variable	Add to Score	Set Score	Send Completion	Reset	Exit Scenario

Web

Web Link	Open Attachment

📍 **Hotspot**   **ON SELECT**   ON HOVER IN   ON HOVER OUT

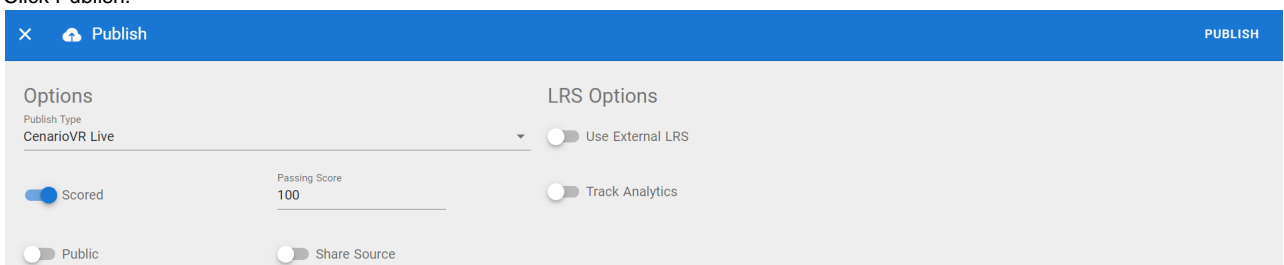| Action	Objects		Condition	Remove
👁 SHOW	📍 Continue the Tour	Duration ___ sec	⤴	🗑
IF	Object/Variable 📍 Centrifuge	Condition Has Been Selected		Remove 🗑
AND	Object/Variable 📍 Hotplate-Buffer	Condition Has Been Selected		Remove 🗑
AND	Object/Variable 📍 Pipette	Condition Has Been Selected		Remove 🗑
AND	Object/Variable 📍 Gel	Condition Has Been Selected		Remove 🗑

To learn more, visit the CenarioVR section of the ELB Learning Knowledge Base.

Internal Review and User-Testing

After you have finished editing the Scenario and reviewed it several times yourself, it is ready for internal review and user-testing by a producer and a few student assistants or other members of the media team.

To initiate internal review and user-testing, follow these steps:

1. Publish the Scenario:
   a. Click the "Scenario Setting and Publish" button - purple circle with three dots - on the top left.
   b. From the dropdown menu, select CenarioVR Live.
   c. Set the "Scored/Not Scored" toggle to Scored and the "Passing Score" to 100.
   d. Set the "Public/Private" toggle to Public.
   e. Click Publish.

2. Copy the link that is included in the Published Package and paste it in the comments section of the Wrike task for editing the Scenario.
3. Change the status of the task to "Needs Approval".
4. Await and incorporate revisions in the comments section of the Wrike task, repeating steps 1 through 3 as needed.

Review by the SME

The final step before a Scenario can be considered complete and ready for embedding in a course is review by the SME. As the subject-matter expert, they might notice issues that the media team cannot.

Send the link from the most recent Published Package in an email to the SME, asking if they have any revisions.

Await and incorporate revisions, if any.

The Scenario is now ready to be embedded in the Canvas development shell for the course.

Related articles

- Creating 360° VR Experiences - In Progress
- Faculty Innovation Hub Tech Guide
- Close-out Instructions
- How-To: Applying the COCE Syllabus Template
- How-To: Importing Quiz Questions