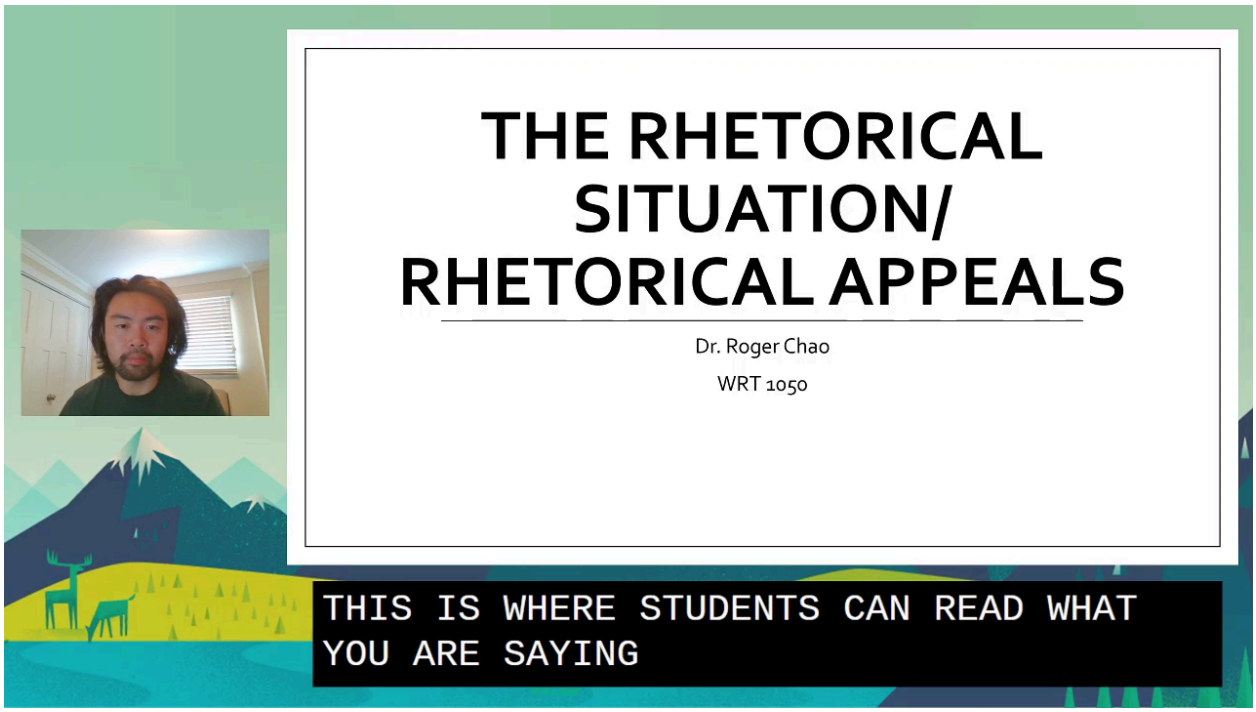
Using Open Broadcaster Software (OBS) to enhance your video lectures (for PC/Windows)

Introduction

Video supplement for this section here: https://youtu.be/7Rziqst5p9g

Welcome! This document is a guide on using a free program called Open Broadcaster Software (hereby referred to as OBS) to help you record video lectures that are a bit more visually engaging. As an example, below is a screenshot of how I personally lay my video lectures out:



(I am excited, can you tell??)

Although I have recorded lectures in the past for students, I was never fully satisfied with the final product. Many of the recordings were simply audio of me talking over a PowerPoint. This presentation style was not always the most engaging and ultimately led to a lot of my students skimming my lectures or skipping them entirely. Using OBS, I feel my lectures are now much more student-friendly.

Disclaimers

First, this is a guide specifically for PC and Windows users. Unfortunately, I do not have enough experience using macOS to write up a guide for Mac users. However, there might be some concepts covered in this guide that are transferable to the Mac version of OBS.

Second, I am a bit of an OBS novice myself so I am still learning about the software. There is a good chance that some of the information covered in this guide may not be the most efficient or optimal way of doing things. However, given that many teachers across the country are currently teaching online, I wanted to get this guide out as quickly as possible. As I learn more and more about OBS, I will update this document.

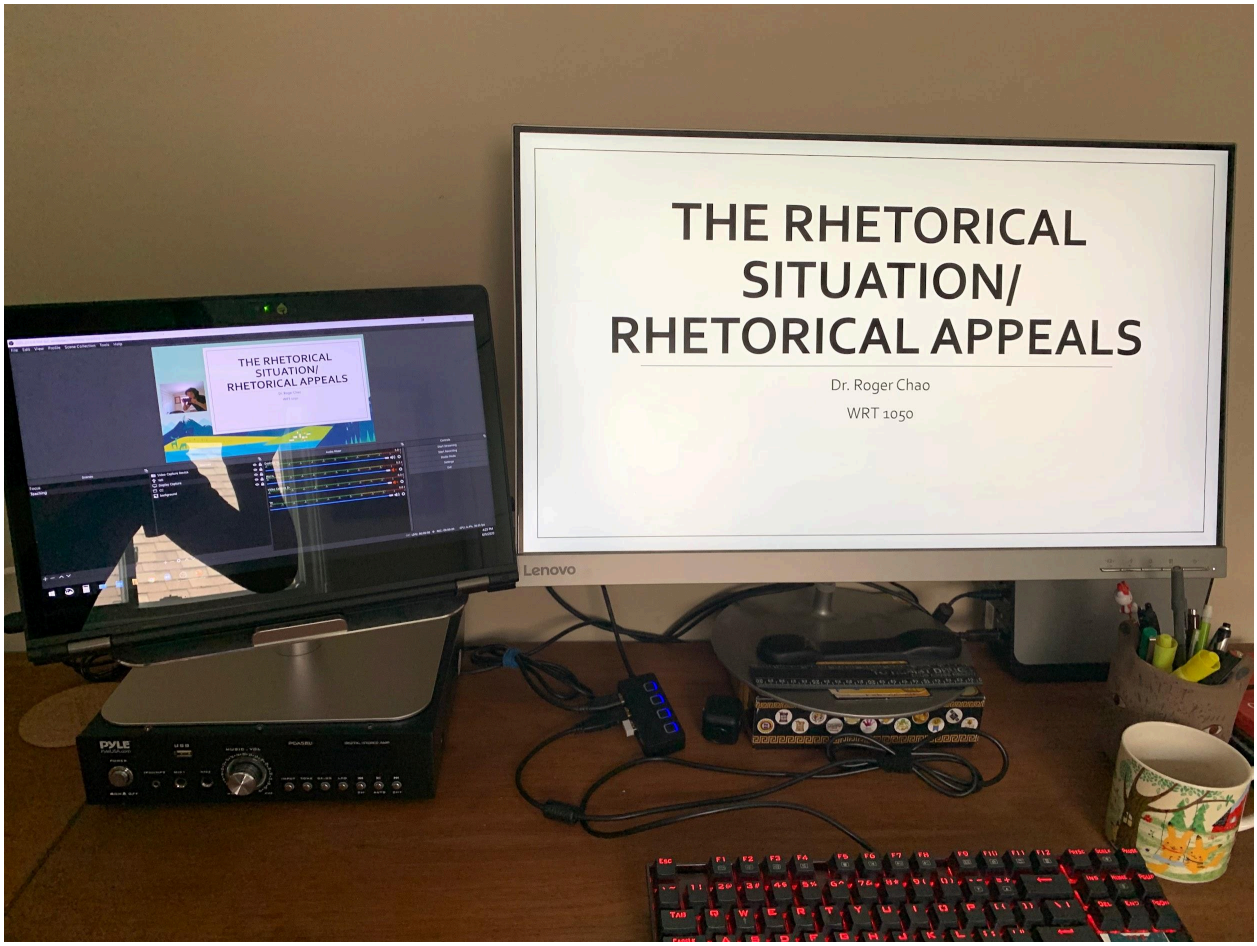
Finally, If you have never recorded video lectures before, some of the information covered in this document may seem a bit too complicated. I recommend starting out by recording some basic lectures (e.g., narrating a screen capture of a PowerPoint presentation). Once you have a hang of the basics, this guide will be much more helpful.

My computer setup (Read this section before you start)

I am currently using a Thinkpad Lenovo Yoga 14. Here are its specs.

It's not a new or powerful laptop by any means. I can run OBS on my laptop but it slows down when I have the program open while I am trying to do other things, like surf the web or play a video. Therefore, if your personal computer is older than my laptop or has "worse" specs than mine, there is a chance your computer may not be able to handle OBS. However, your computer speed is directly related to the number of "sources" you add to your video lecture layout (i.e., how many different elements you are trying to record). If you are trying to record a lecture that includes your voice, your webcam, a PowerPoint lecture, and a browser all at once on the screen, then your OBS software will likely run very slowly. However, if you only have a few sources (e.g., just your webcam and audio), then it should run a bit faster. More details on "sources" in a later section.

I also recommend a dual monitor set up. OBS can run on a single monitor but from what I have read, it is definitely a bit more complicated. With two monitors, you can have OBS and its controls open on one monitor while you display your lecture/main content on the second monitor. Here is what my setup looks like:



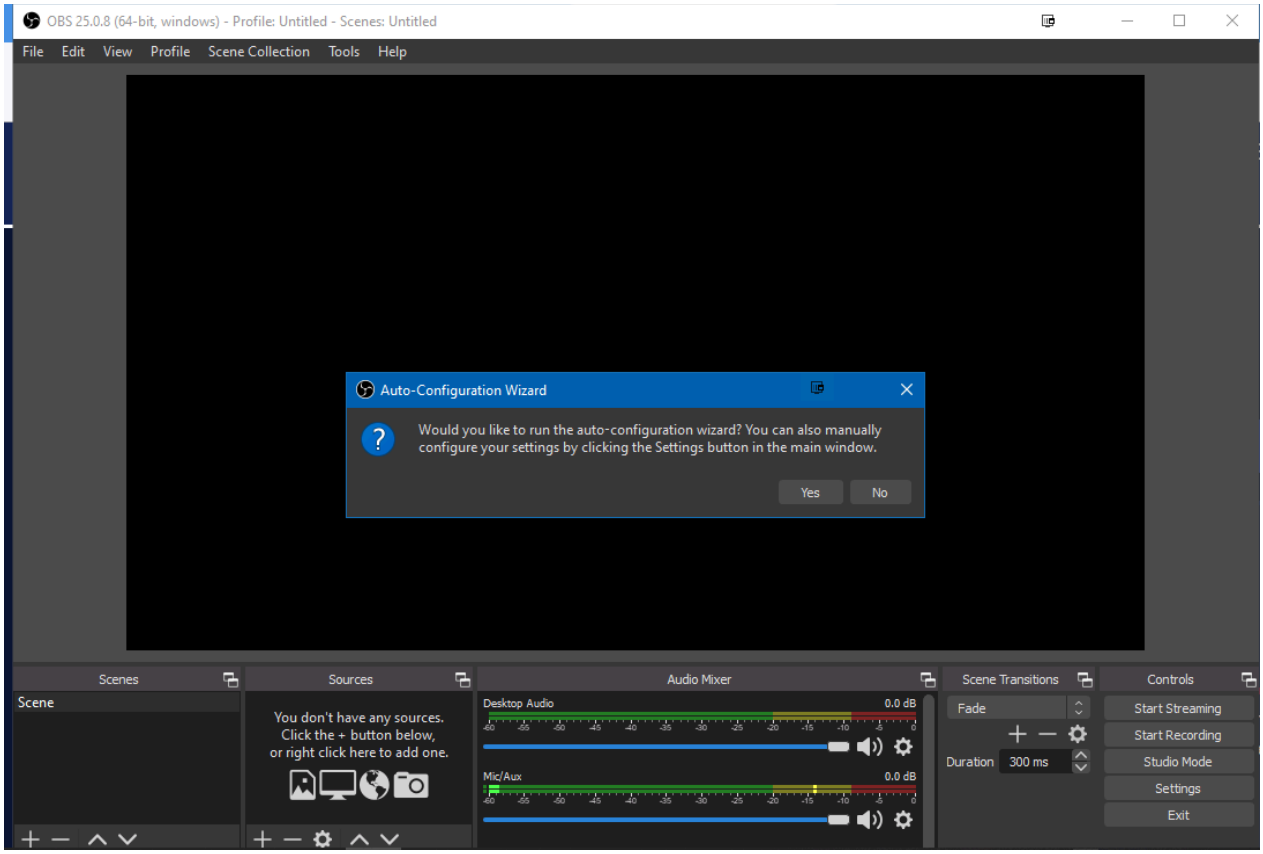
On the left is a monitor for your OBS control panel. The right monitor is displaying my desktop - the main focus of my video lecture - so I can easily read off of it.

Getting started

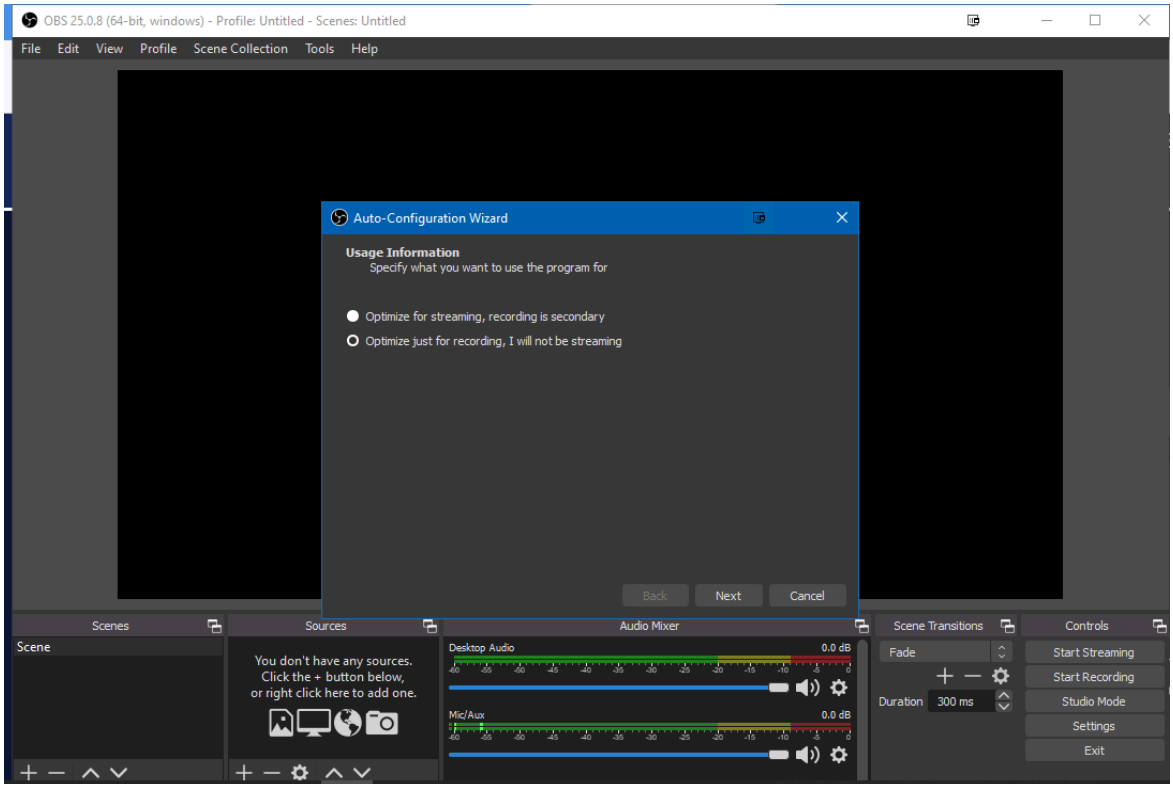
Download OBS here: https://obsproject.com/. Make sure you are grabbing the Windows version.

Follow the installation process. When you start up OBS for the first time, you should see something that looks like the screenshot below. Think of this screen as a mixing board, the control panel that DJs and music producers use. This is where you will control what appears on the eventual video lecture recording.

Upon using OBS for the first time, the software will ask you to go through an auto-configuration wizard. Click “Yes”:



On the next screen, select “Optimize just for recording, I will not be streaming.” Given that we are using OBS to record lectures instead of live streaming, we do not have to worry about streaming-related settings. Then, click “Next”:



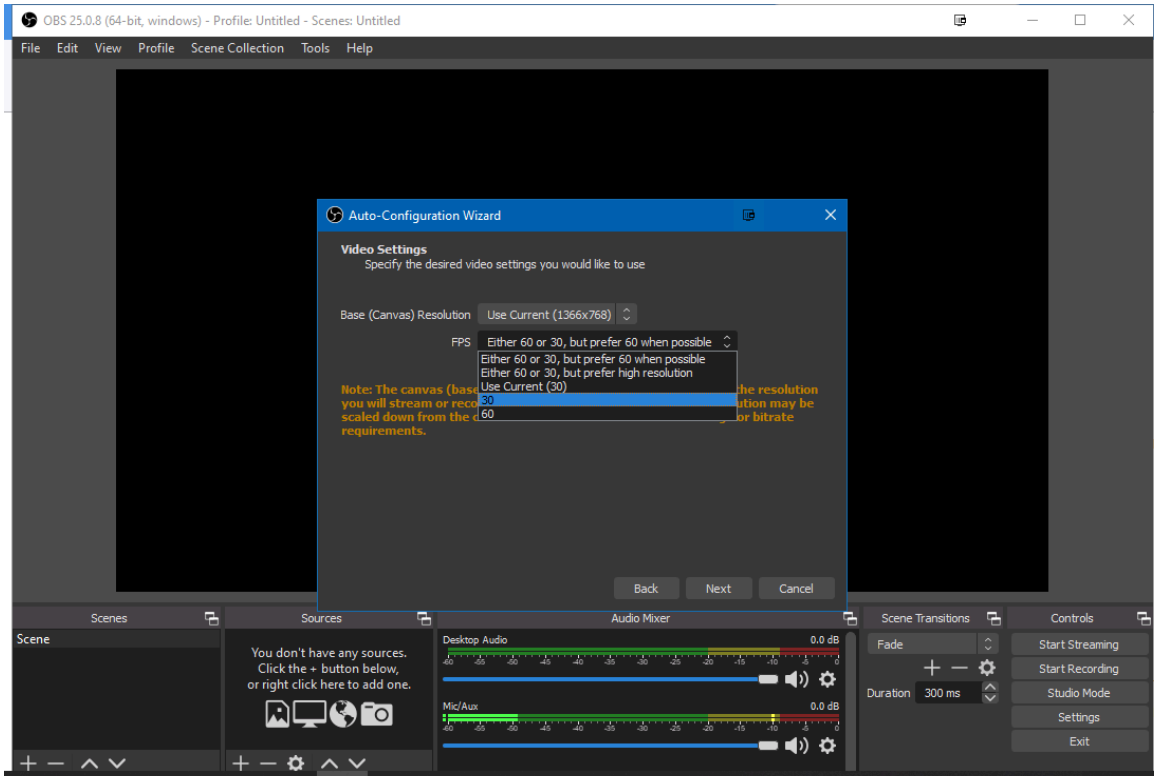
On the next screen, OBS will ask you about your video settings. If you are just starting out, I would not worry about over-modifying these settings. For “Base (Canvas) Resolution,” just go with the “Use current” option.

FPS means “frames per second”. Here is some background on FPS, taken from this website:

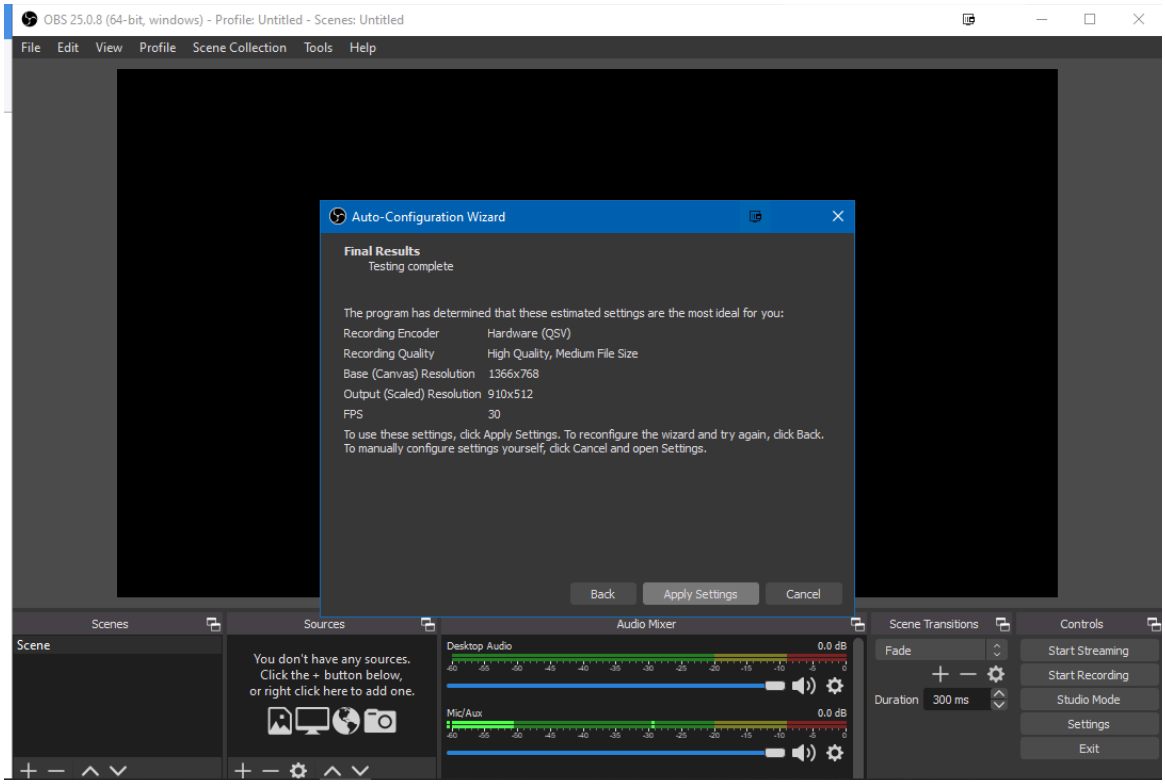
“Your Frames Per Second (FPS) or Framerate is how smooth the motion is displayed. For most games, a setting of 30 fps will be just fine. However, for higher motion games like first-person shooters where running, jumping, and quick camera pans are common, an FPS setting of 60 can help keep things super crisp. Make sure to test things out with any changes and get feedback from your viewers.
Tips:

- *Keep in mind that going from 30 fps to 60 fps can be more taxing on both your computer and internet upload.*
- *60 fps likes a higher bitrate to keep the quality clean. We support up to 10000, and your computer, upload speed, and the internet traffic of the day will determine how high you can support on your side.*

Since we are not going to be capturing any higher motion gaming footage, just go with the 30 FPS option. Then click “Next”:



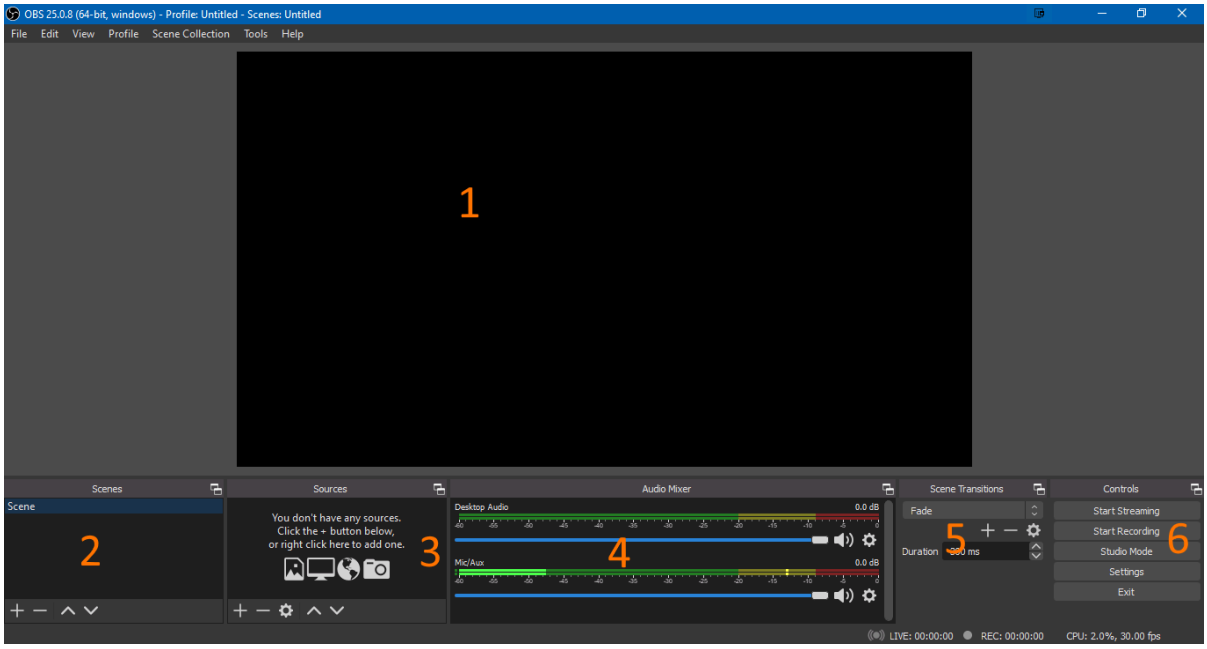
On the next screen, click “Apply settings.” You have now completed the autoconfiguration wizard.



Understanding the OBS control panel

Video supplement for this section here: https://youtu.be/6U0LPFcl8Xs

OBS can do a lot of different things and is extremely customizable. For the sake of time and clarity, here is a rundown of the basic elements on the control panel that you will need to familiarize yourself with:



1. This is your **preview pane**. This is the area that will show what your recording will look like visually. When you start OBS for the first time, your preview pane should be a black screen. This is because you have not added sources yet. More on that in a second.

2. This is your **scenes** section. Think of scenes as layout templates that you can set up. What I mean by that is you can save the layout of your video lecture as a scene so that the next time you start up OBS, you will not need to set everything up again. Scenes are also helpful for intermediate/advanced users who want to switch between multiple layout styles during their video lecture.

   If you are a beginner, do not worry too much about this section. You can leave this section as is.

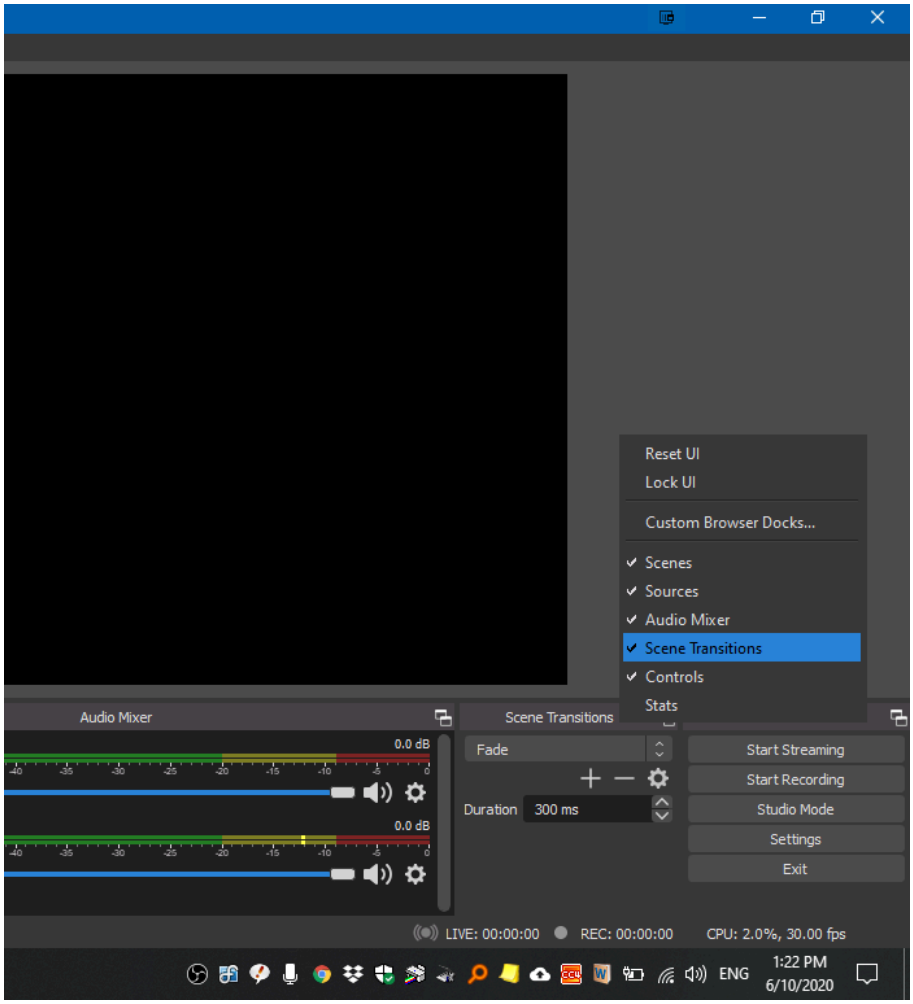
3. This is your **sources** section. This is probably one of the most important sections on your OBS control panel. A source represents the various elements that can be incorporated into your video lecture. For example, if you plan on recording your voice, you will need to add an “audio input capture” source into this section. If you are planning

on showing something on your desktop or a PowerPoint, you will need to add a “display capture” source or a “window capture” source into this section.

Instead of explaining what all the various sources do (there are quite a few of them), I will keep it simple and introduce/explain only the sources needed for recording video lectures. You can read more on that in the “Laying out your video lecture” section below.

4. This is your **audio mixer** section. Here, you will be able to see whether or not your audio-related elements are being picked up. If you are talking and you don’t see any of the volume meters move, that will let you know your audio isn’t being picked up. You can also mute/unmute/remove audio sources here.

5. This is your **scene transition** section. For the sake of simplicity, do not worry about this section. In fact, you can remove it entirely if you want. Just right click “scene traditions” at the top of the section, then uncheck “scene transitions”. OBS will then hide this section (see screenshot below):



6. Finally, this is the **controls** section. The only buttons you need to know about are “Start Recording” and “settings”.

Laying out your video lecture (aka, setting up the visuals)

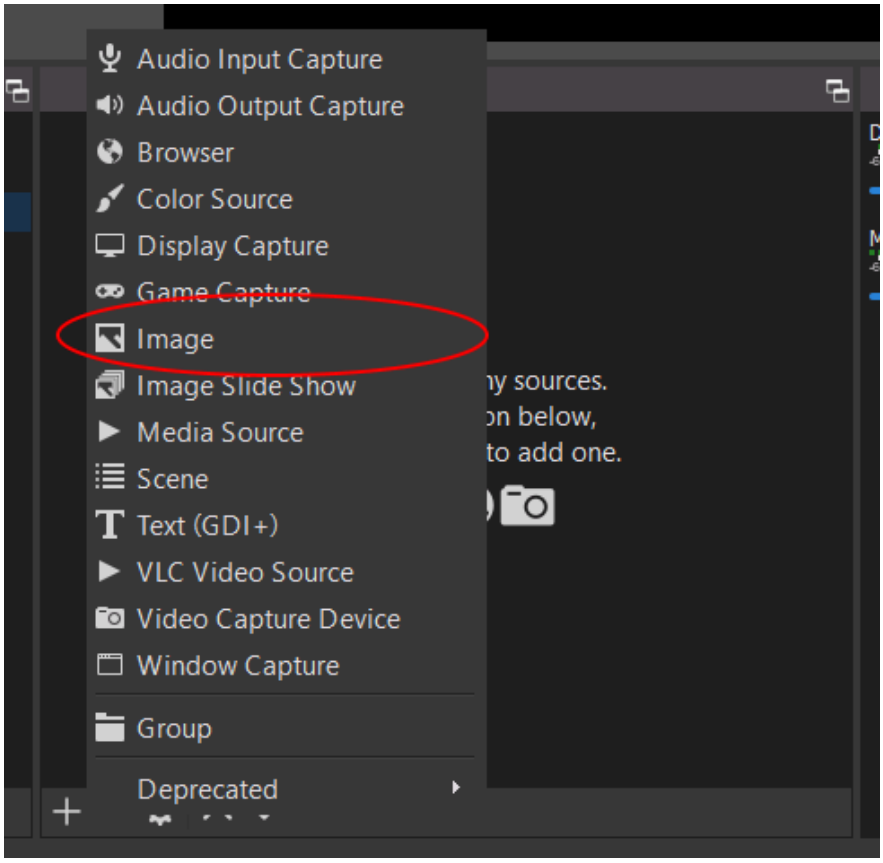
Now that you are a bit more familiar with the OBS control panel, let’s start setting up your video lecture layout.

Adding a background image

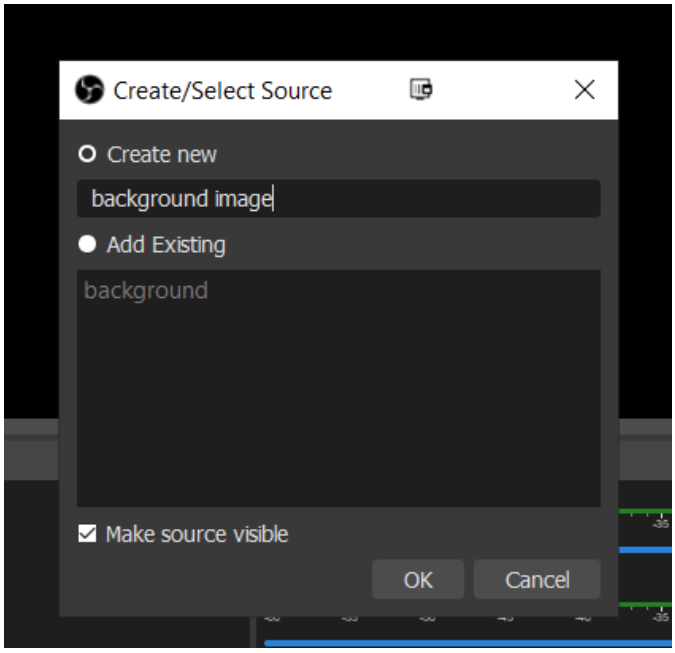
Video supplement for this section here: https://youtu.be/Uh2a2We5QPU

First, let’s set up a background for your lecture. While adding a background is totally optional, I personally feel having one is a bit more aesthetically pleasing than simply lecturing off of a solid color background.

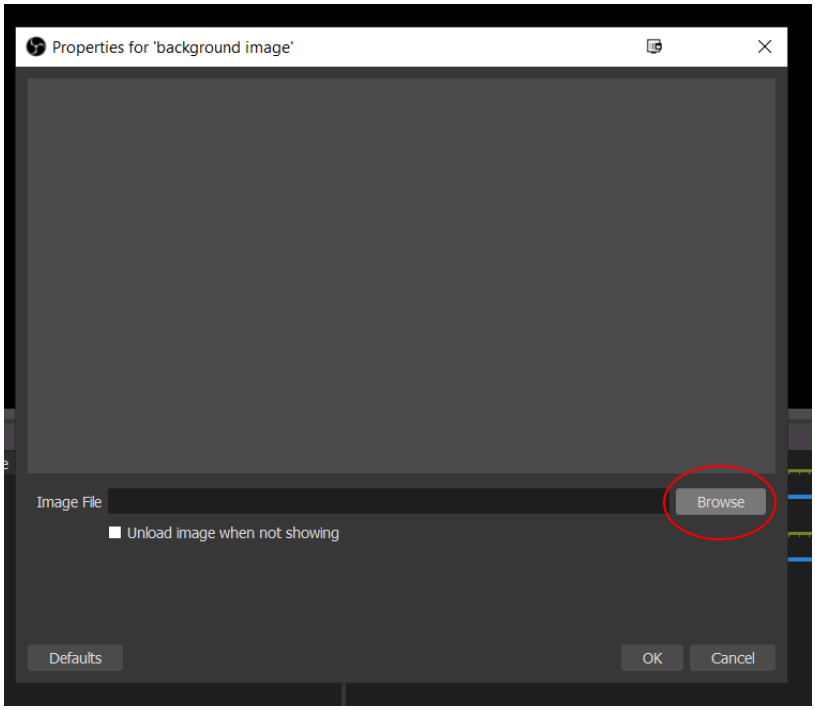
First, go to the bottom of the **sources** section and click on the “+” icon, and then select “Image” in the list:

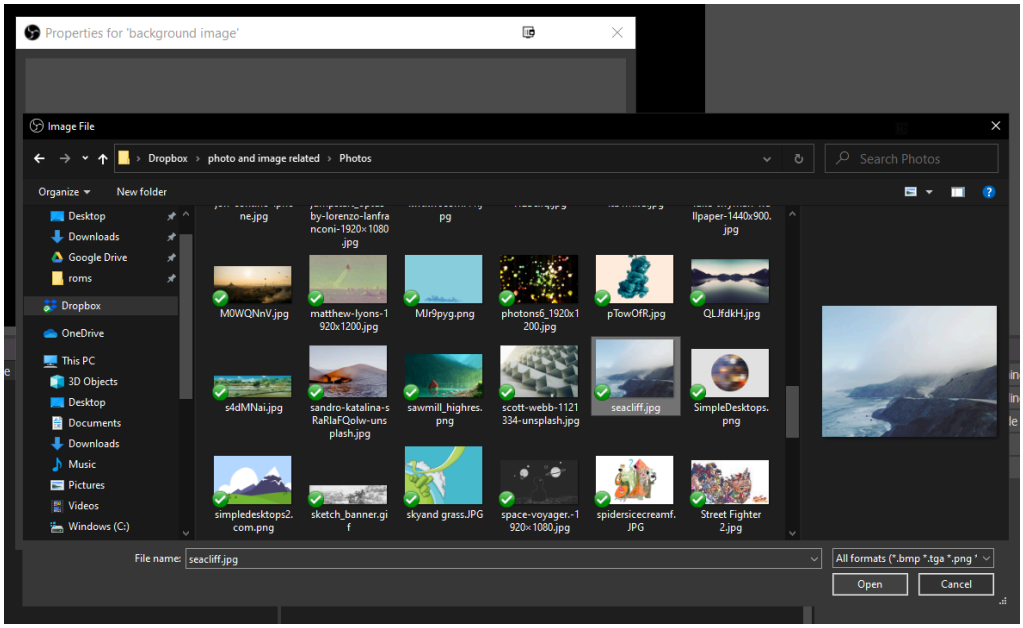


You will then be asked to create a new name for this image source. This will help you label and categorize your OBS sources in an efficient manner. You can just go with something simple, like “background image”. Then click “OK”:

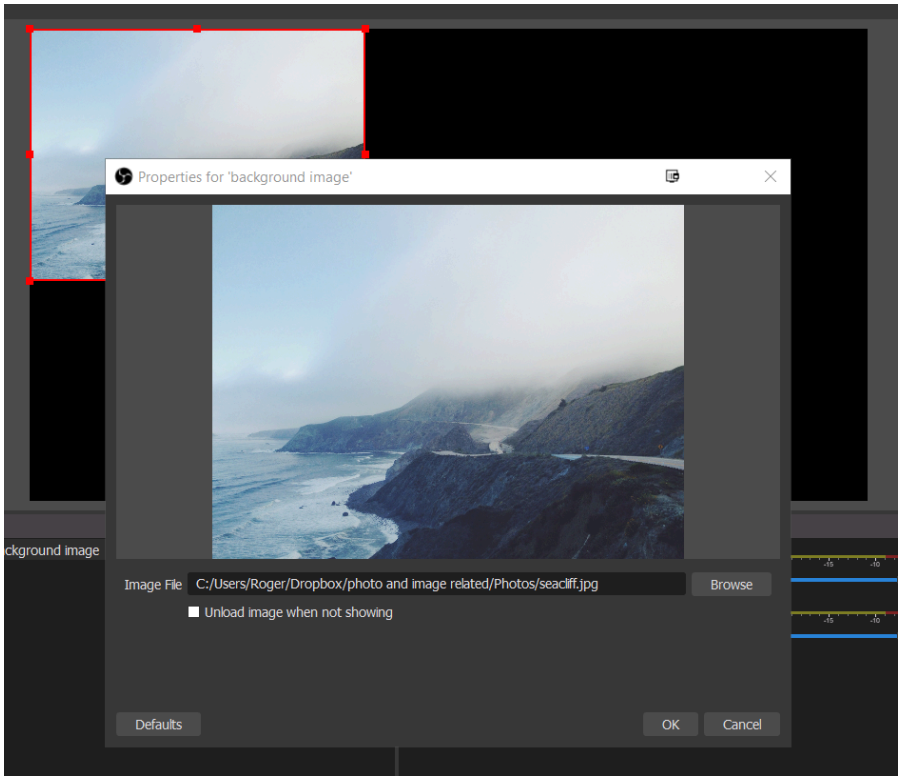


You will then be prompted to select an image saved on your computer to use as your background. First, click “Browse” and then select an image from your computer. Then click “Open”:



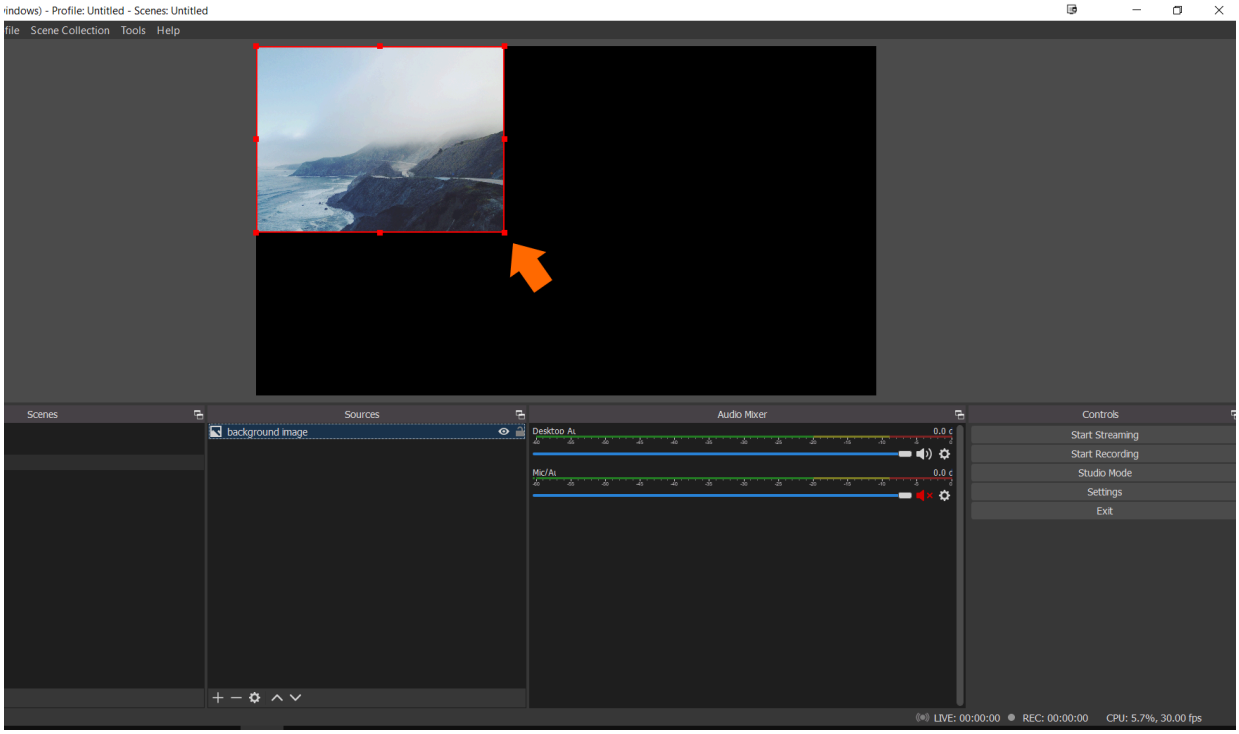


OBS will show you a preview of the image you selected. Click “Okay”:

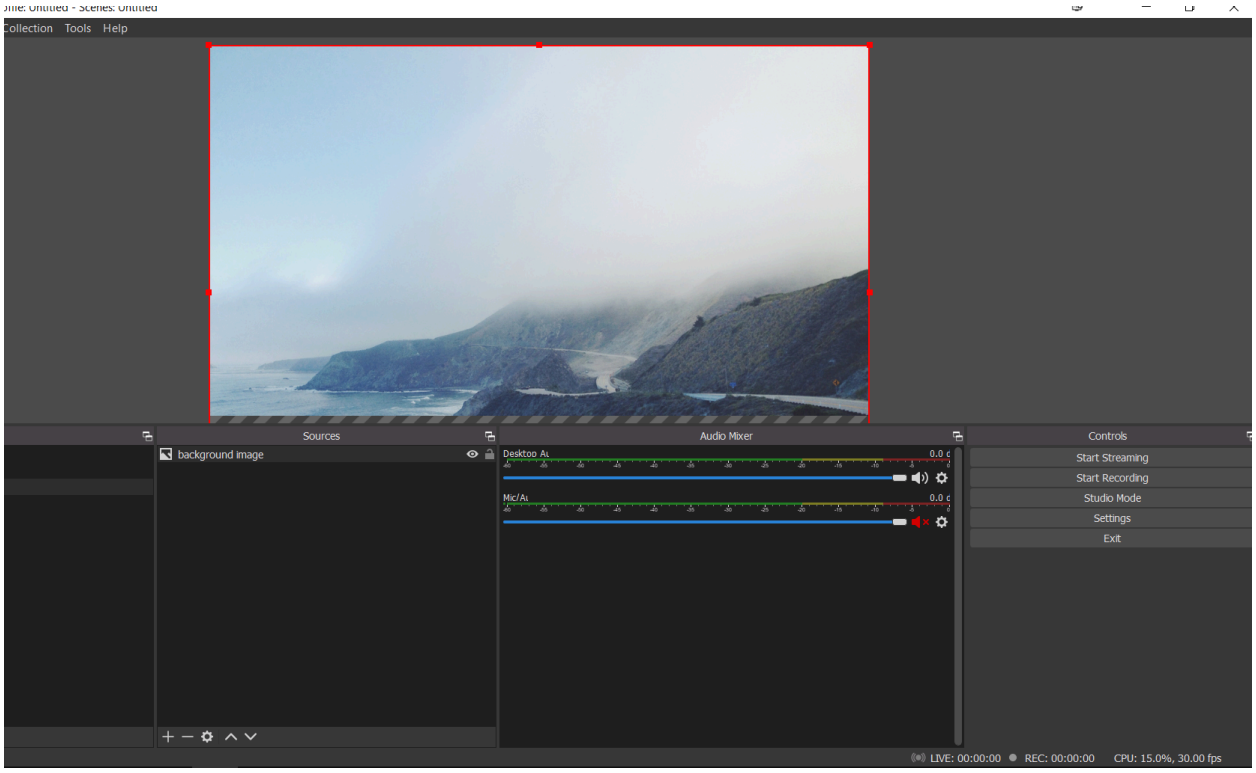


Once you have added the image to OBS, you can see the “background image” source now appears in the **sources** section. You can also see that the image does not take up the full screen. To expand the image, click, hold, and drag on the bottom-right corner of the image (on

that little red square). Expand the image to cover the entire screen (or however big you wish it to be):



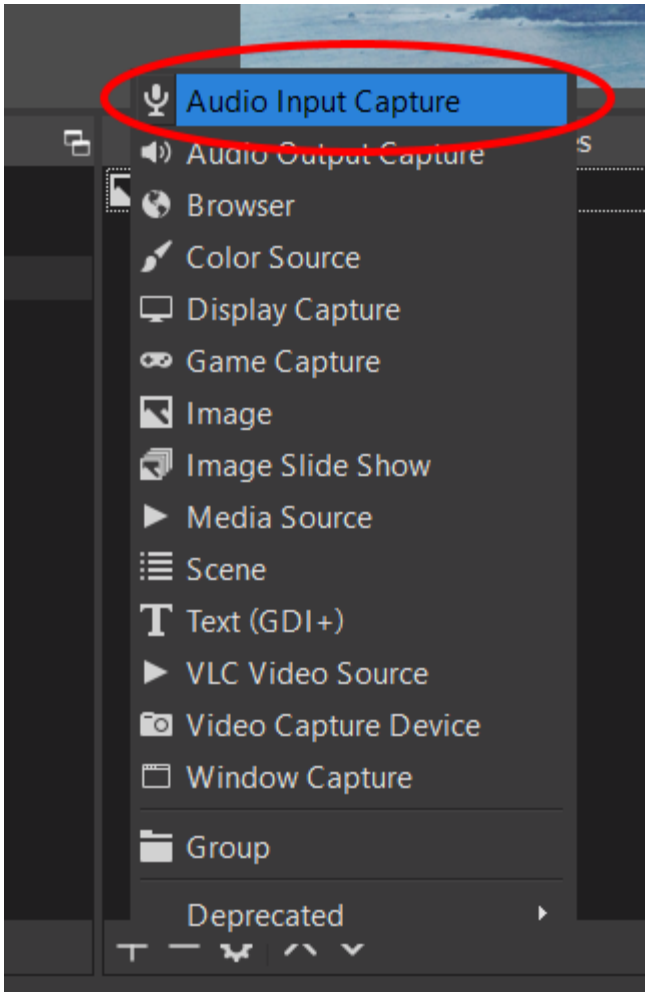
If you did that correctly, you should now have something that looks like this in the preview pane of your OBS control panel:



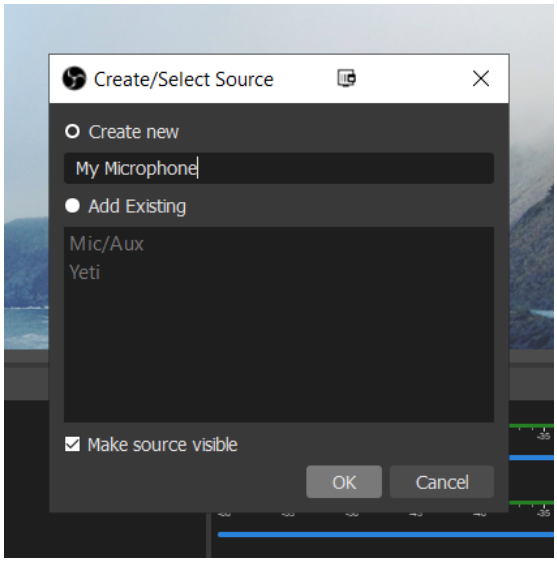
Adding a microphone source

Video supplement for this section here: https://youtu.be/VP5eCE_LAG8

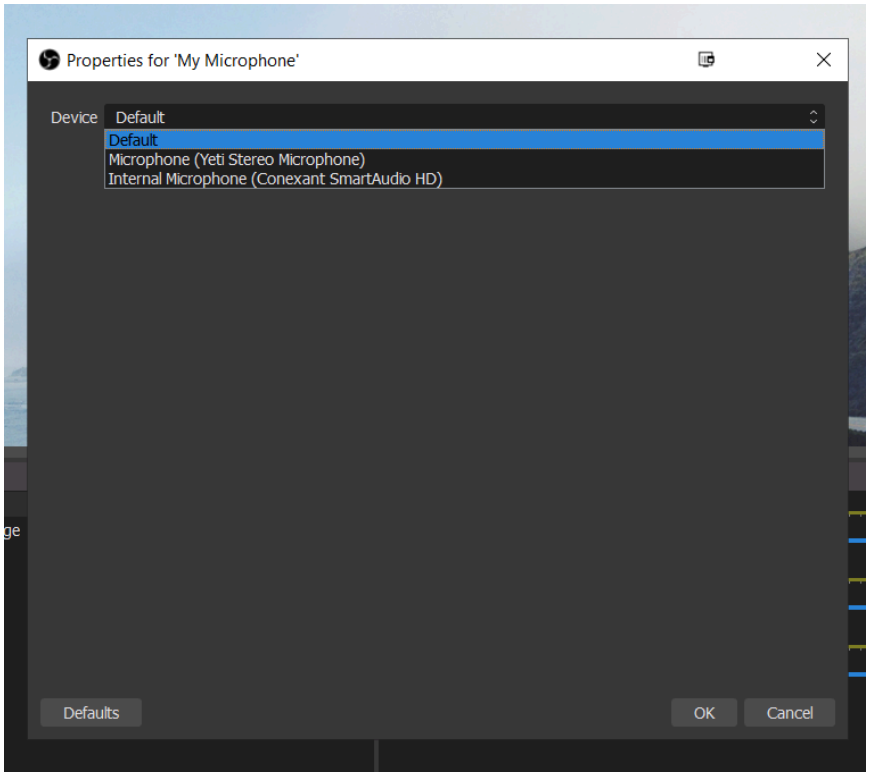
The process for adding an audio/microphone source is very similar to adding a background image. Again, go to the bottom of the **sources** section and click on the “+” icon, and then select “Audio Input Capture” in the list:



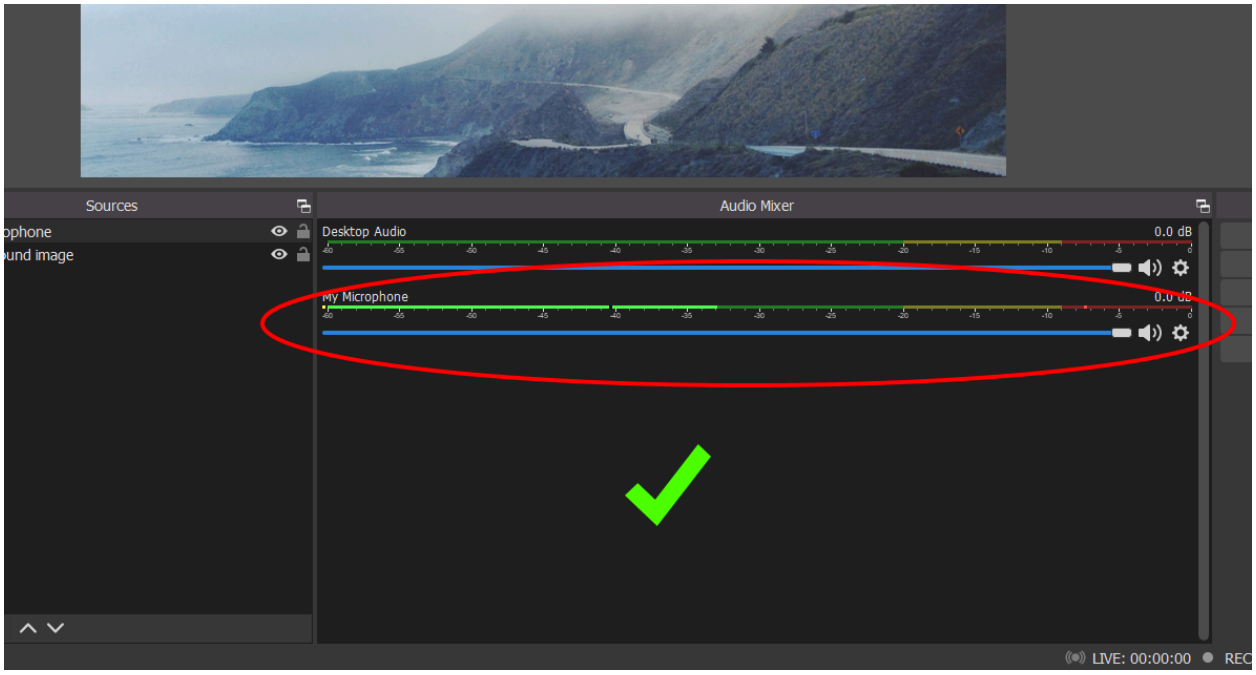
Create a name for your audio input source. I used something simple like “My Microphone”. Then, click “OK”:



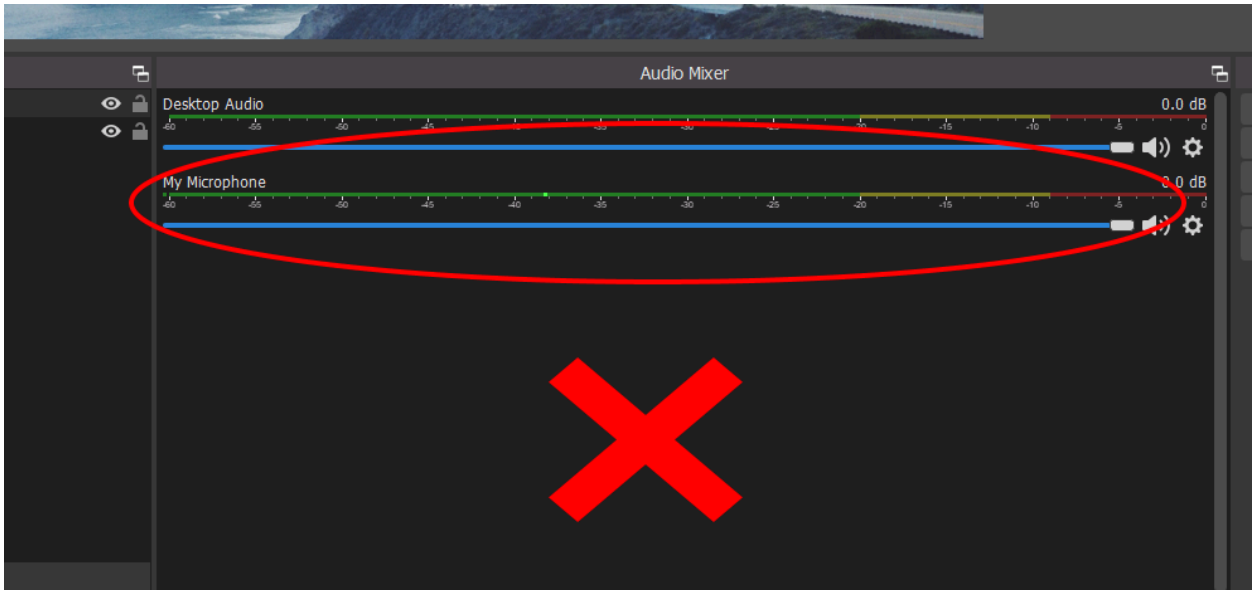
If you are just using the internal microphone that is part of your computer/laptop, you should go with the “Default” option. Or, you might have something listed like “internal microphone.” As you can see in my screenshot below, I also have an attached external Yeti microphone attached to my laptop, thus it is an option. For this guide, I’ll just select “Default”. Once you have made your selection, click “OK”:



If you look down at the **Audio Mixer** section on your OBS control panel, the “My Microphone” source that you just created should now appear. More importantly, you should see the volume meter lighting up, since your microphone is currently picking up various sounds in the environment. To test this, say something out loud; you should see the meter moving and lighting up, like this:

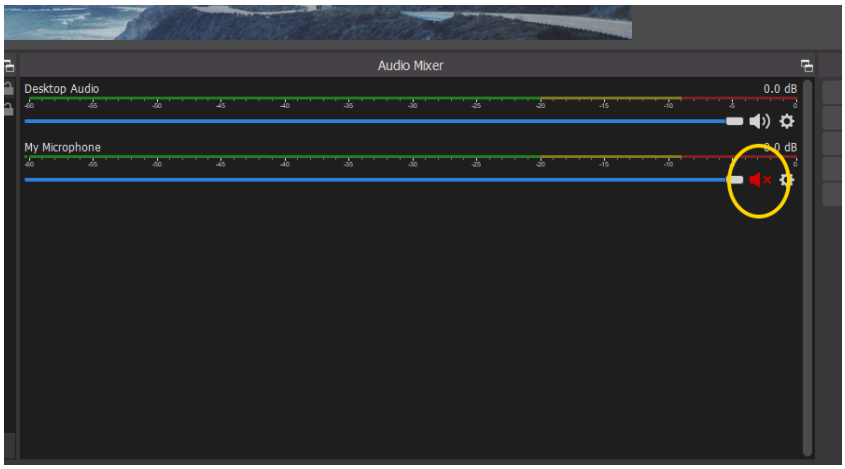


What you **don’t** want is an unlit volume meter. That means your audio input source isn’t picking up any audio.



There are a couple of things you can try to do to troubleshoot this issue:

1. Delete the “My Microphone” source that you just set up, this time selecting a different input option. (To learn how to delete a source, jump down to the “editing or removing your sources” section)
2. At the bottom of the volume meter, you should see a blue line. That is your volume control. Make sure it is dragged all the way to the right.
3. Make sure you didn’t accidentally click the sound icon on the right side and mute your microphone. If you see a red speaker icon and with X, that means your microphone is muted. Click on that icon to unmute:

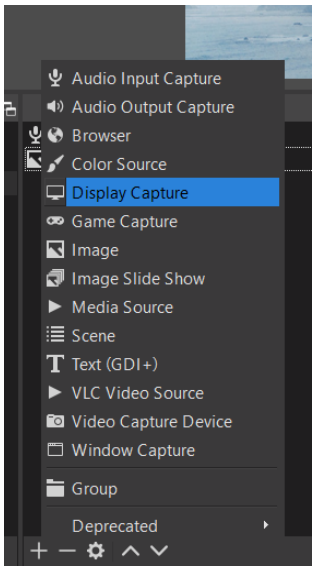


Adding your desktop

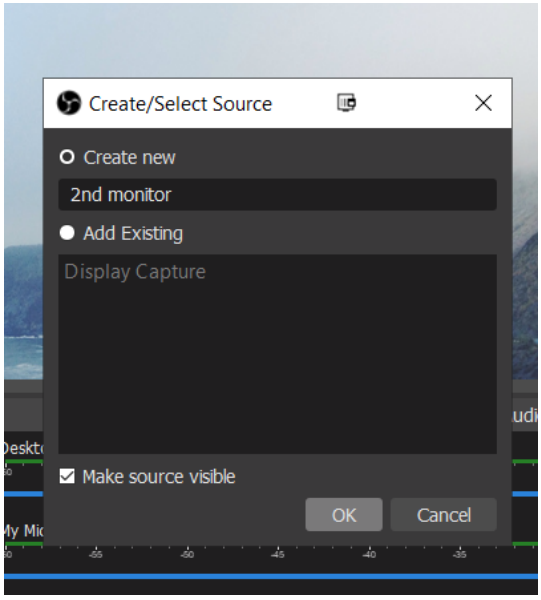
Video supplement for this section here: https://www.youtube.com/watch?v=mKHPAYZjleI

This is going to be the main area of your video lecture layout, where you can display your PowerPoint slides and/or anything else you want to show your students.

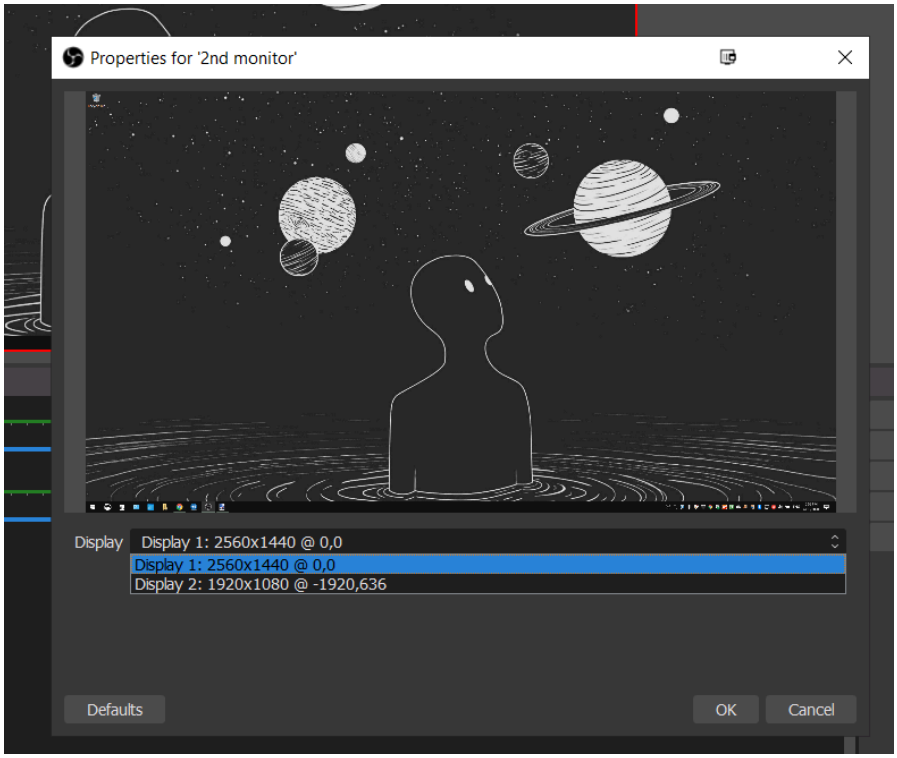
Just like adding a background and a microphone, go to the bottom of the **sources** section and click on the “+” icon, then select “Display Capture” in the list:



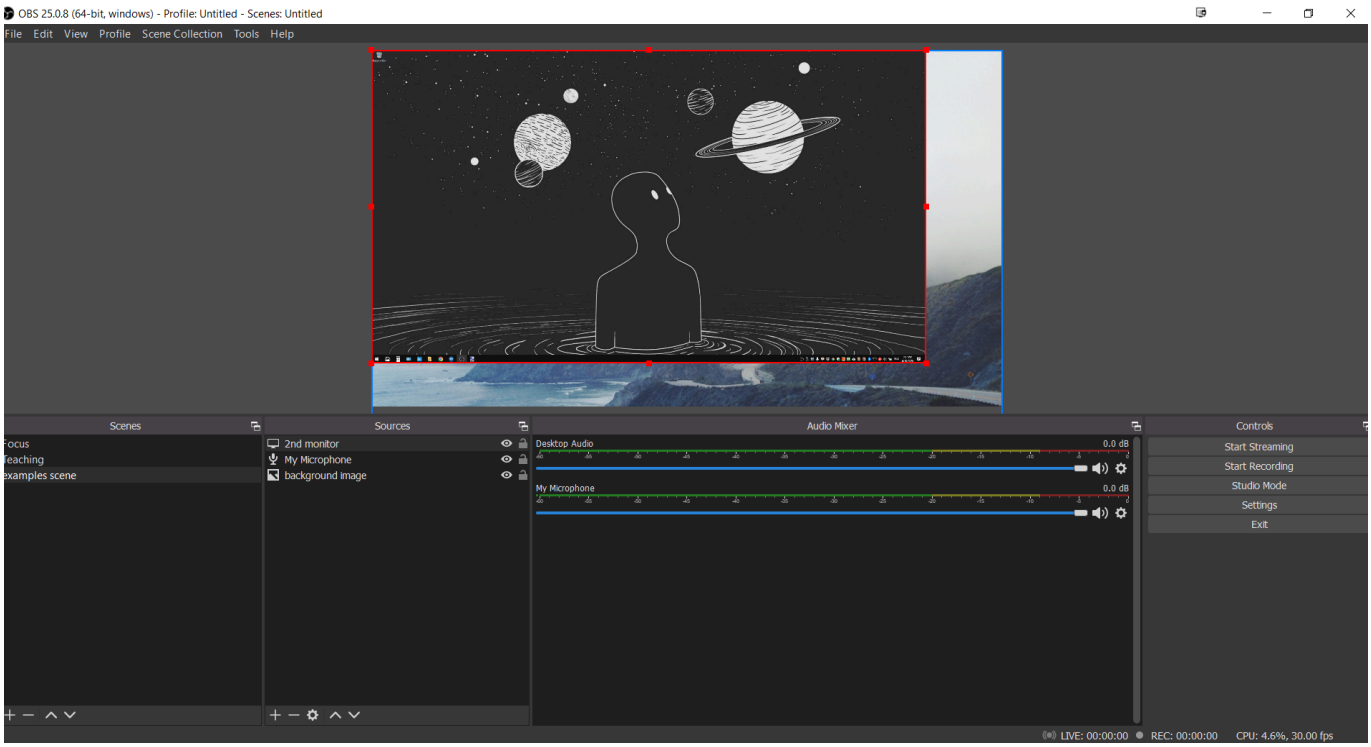
Create a name for your desktop source. Since I am using two monitors, I decided to call mine “2nd monitor”. Then, click “OK”:



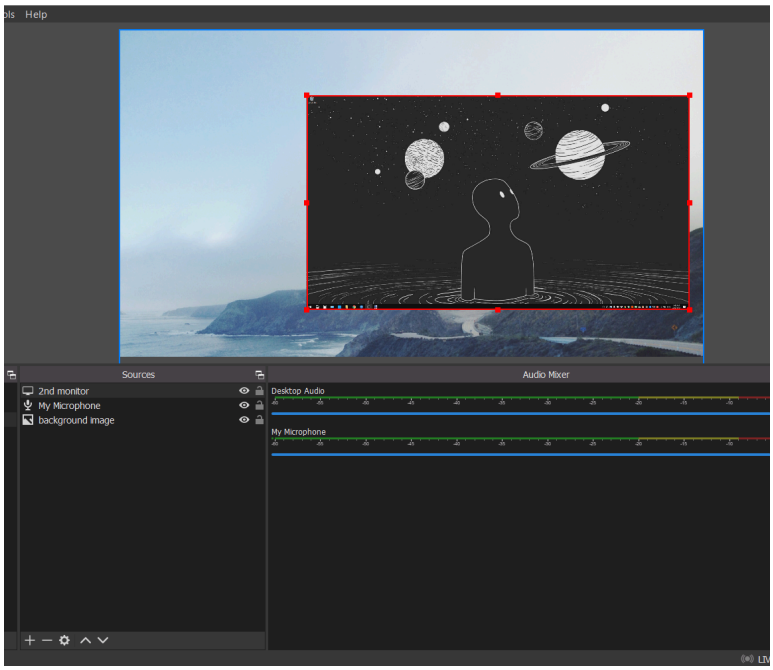
OBS will then ask which monitor you would like to use as the source. Here, I am selecting my 2nd monitor. You can also see a preview of the desktop you selected. When you are done, click “OK”:



You can see by the screenshot below that the desktop has been added into your layout. However, it's way too big right now! Much like your background image, you can click and hold the little red square in the bottom-right corner to shrink it down.

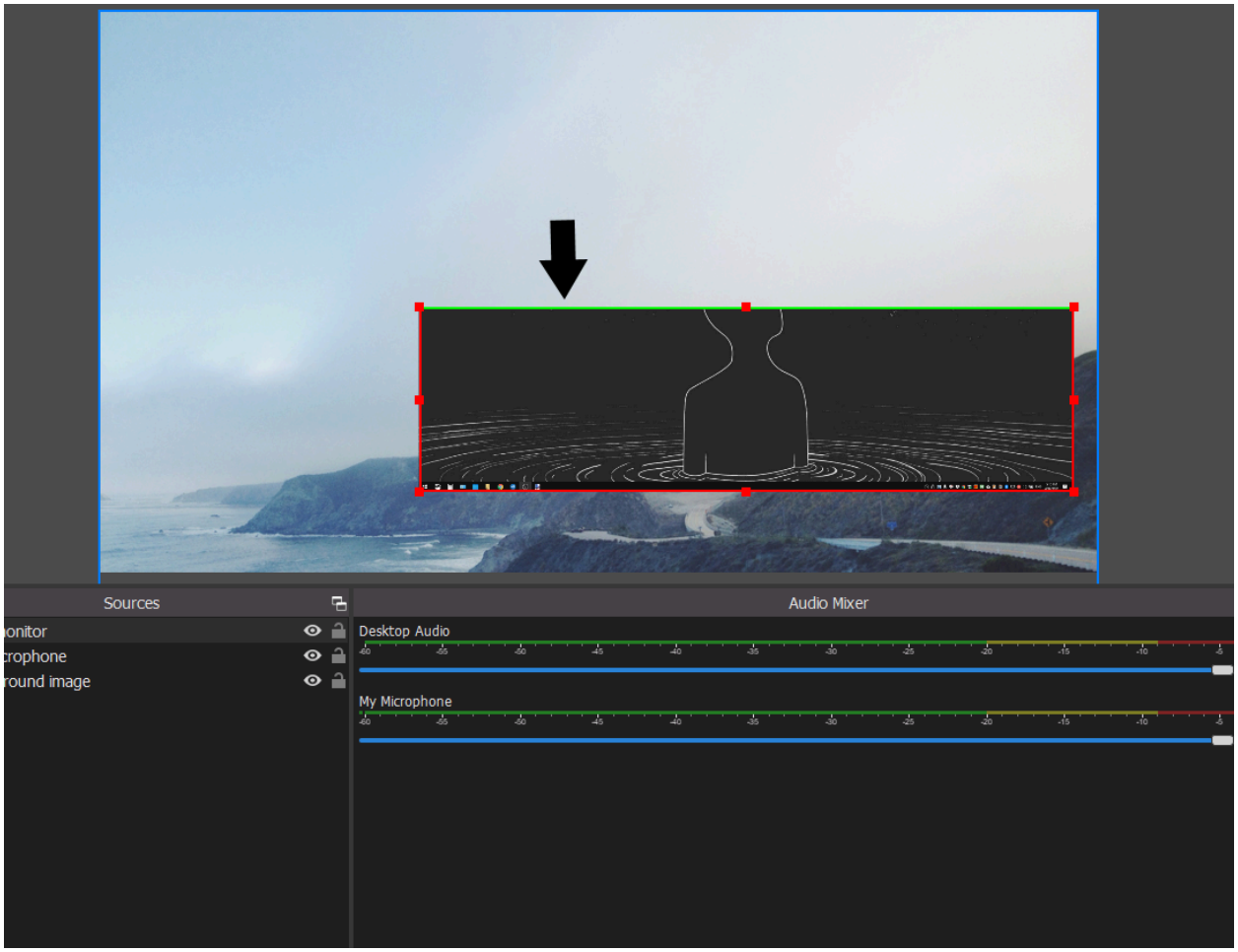


Also, you can click and hold the center of the desktop display to position it in different places on your layout. Here is how I have positioned mine:



This next step is completely optional but you can also change the dimensions of your desktop display; perhaps you only want part of your desktop seen during your video lecture. To change the dimensions of your desktop display, hover your mouse over any of the four sides. Then, hold down the alt key on your desktop as you click and drag the side.

If you do this correctly, you'll see that side turn from red to green. Now you'll be able to shrink/expand just that one side while the rest of the desktop display stays static:



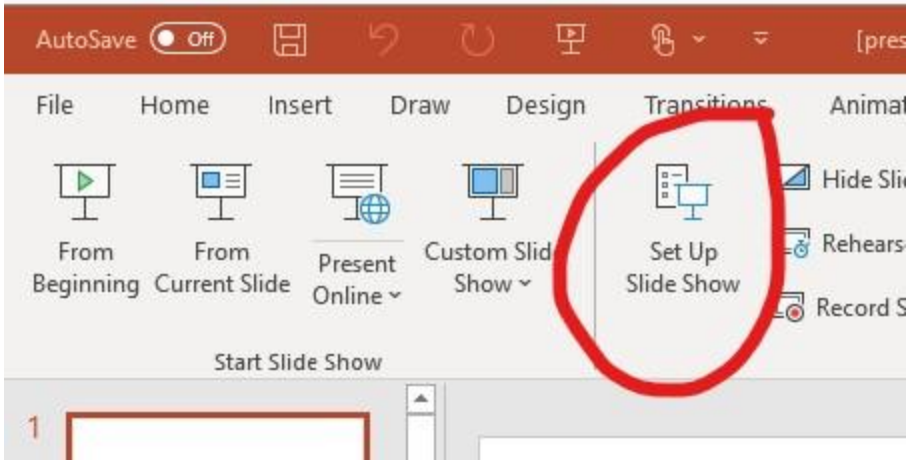
What if I only want to display a Powerpoint, not my entire desktop?

Video supplement for this section here: https://www.youtube.com/watch?v=eHjzPpltJkw

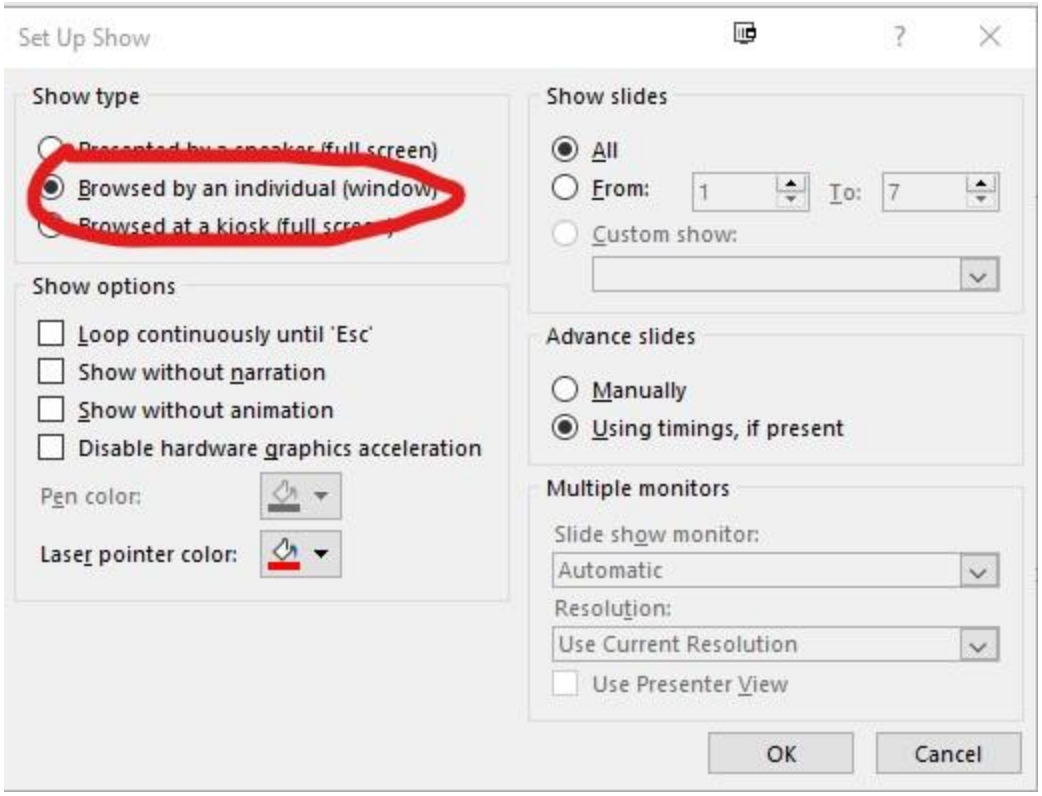
(This function was brought to my attention by reddit user u/histprofdave. I never knew that PowerPoint had this ability! Thanks so much for pointing this out.)

First, we need to set some things up in Powerpoint. Open the program and click the "Slide Show" tab at the top:

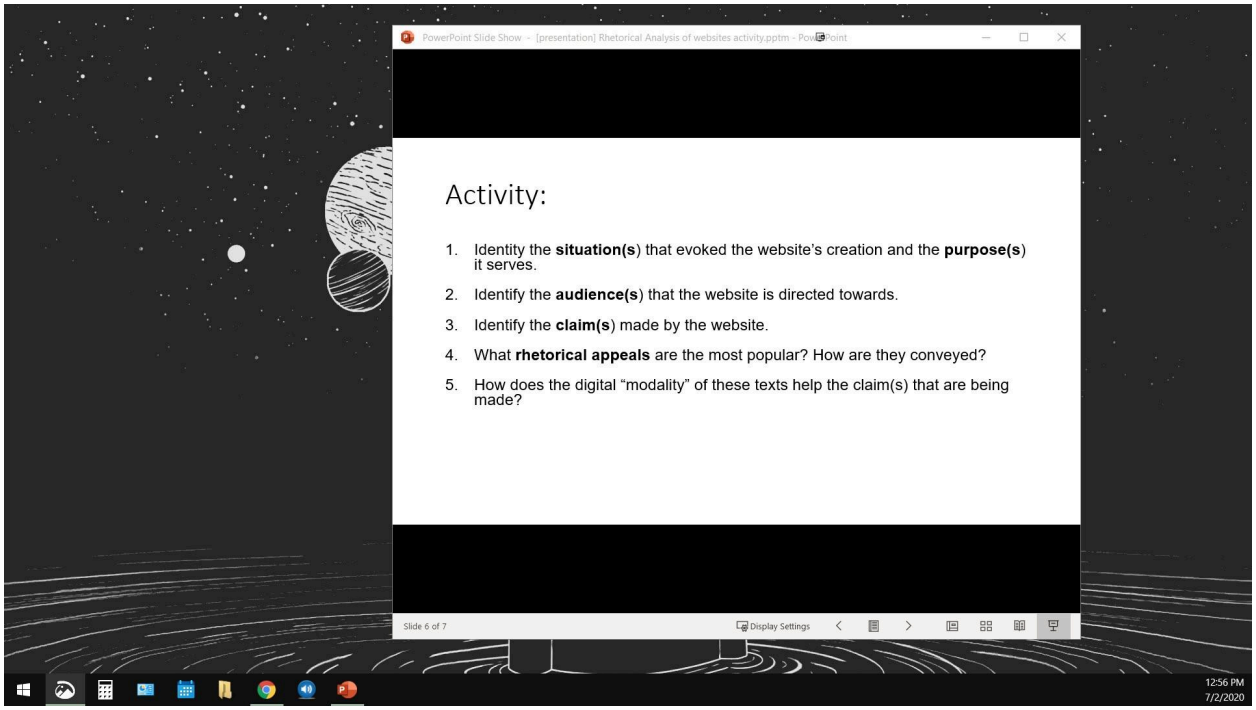
Next, in the list of options that pop up, select "Set up Slideshow"



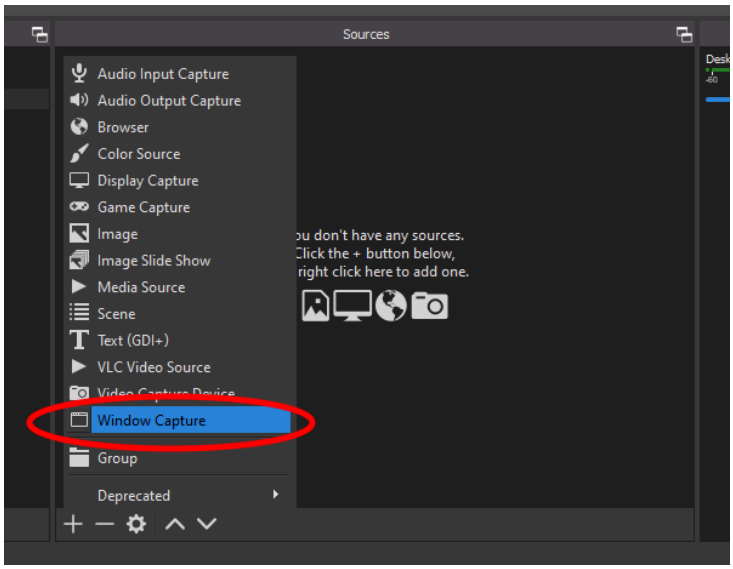
In the window that pops up, under "select show type," click the option for "browsed by an individual (window)." Then click “OK.”



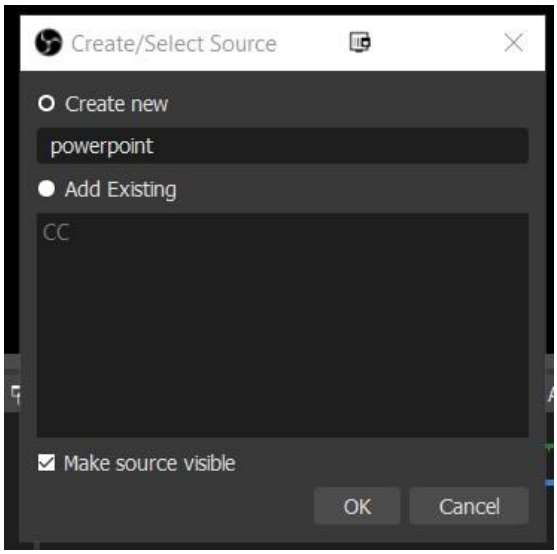
Now, put a PowerPoint in presentation mode as a test. Now, your presentation should not take up the entire monitor. Rather, it will be in its own separate window, like this:



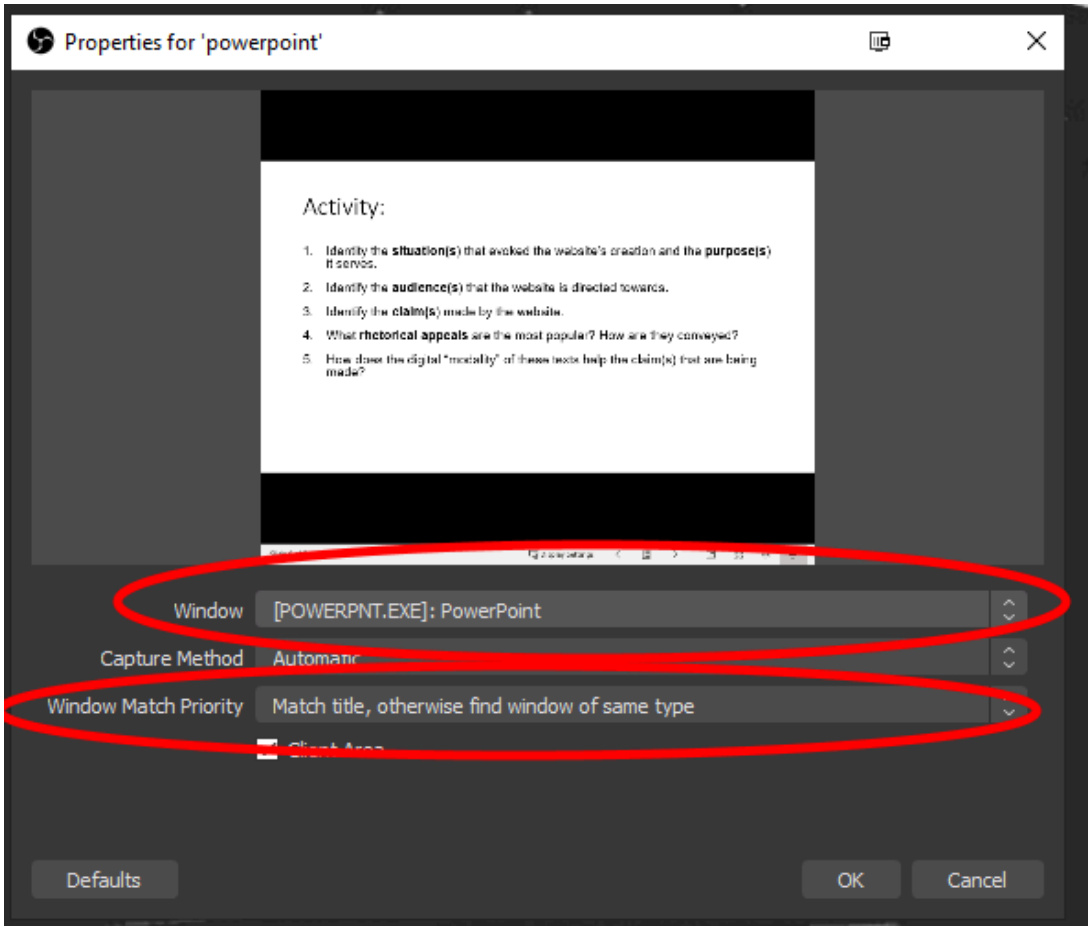
Once you have confirmed that PowerPoint presentations are now in a windowed format, head over to your OBS control panel. Go to the bottom of the **sources** section and click on the "+" icon, then select "Window Capture" in the list:



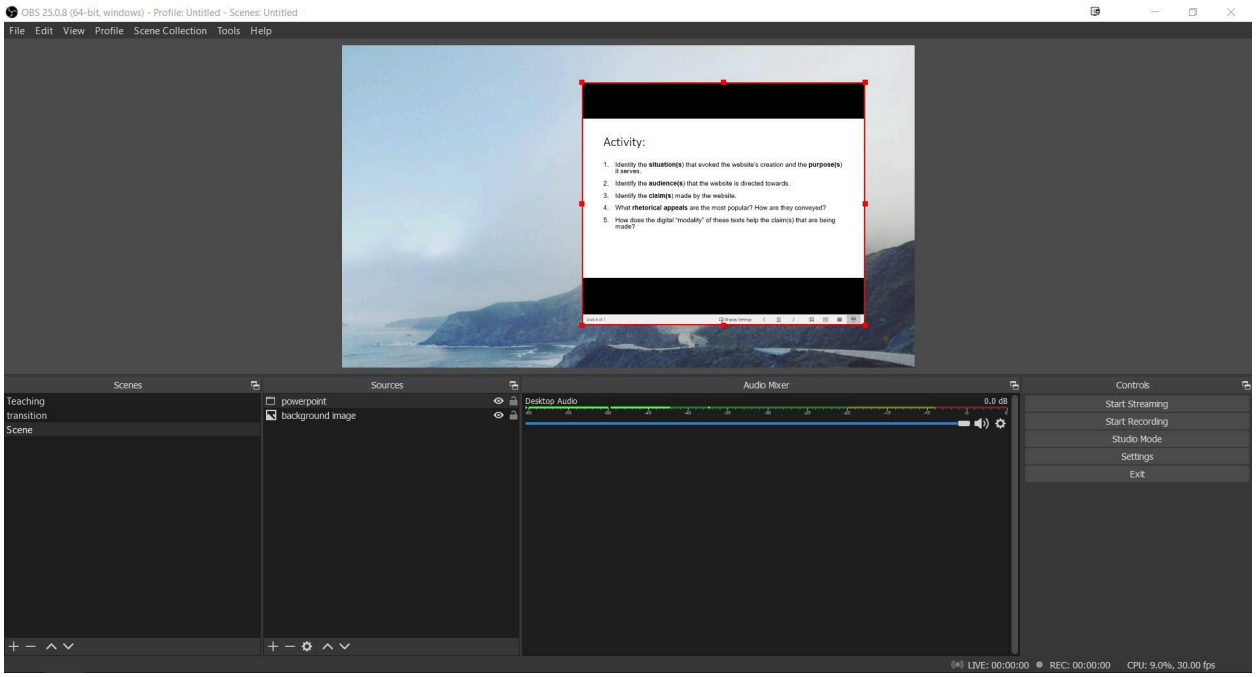
Create a name for this windowed source. I went with “powerpoint.” Then, click “OK”:



In the next box that pops us, make sure you select PowerPoint in the “Window” drop-down menu. You’ll notice a lot of different options in the drop-down but make sure you select the one that is referring to PowerPoint. Then, under the “Window Match Priority” drop-down menu, select “Match title, otherwise find window of same type.” Then, click “Ok”:

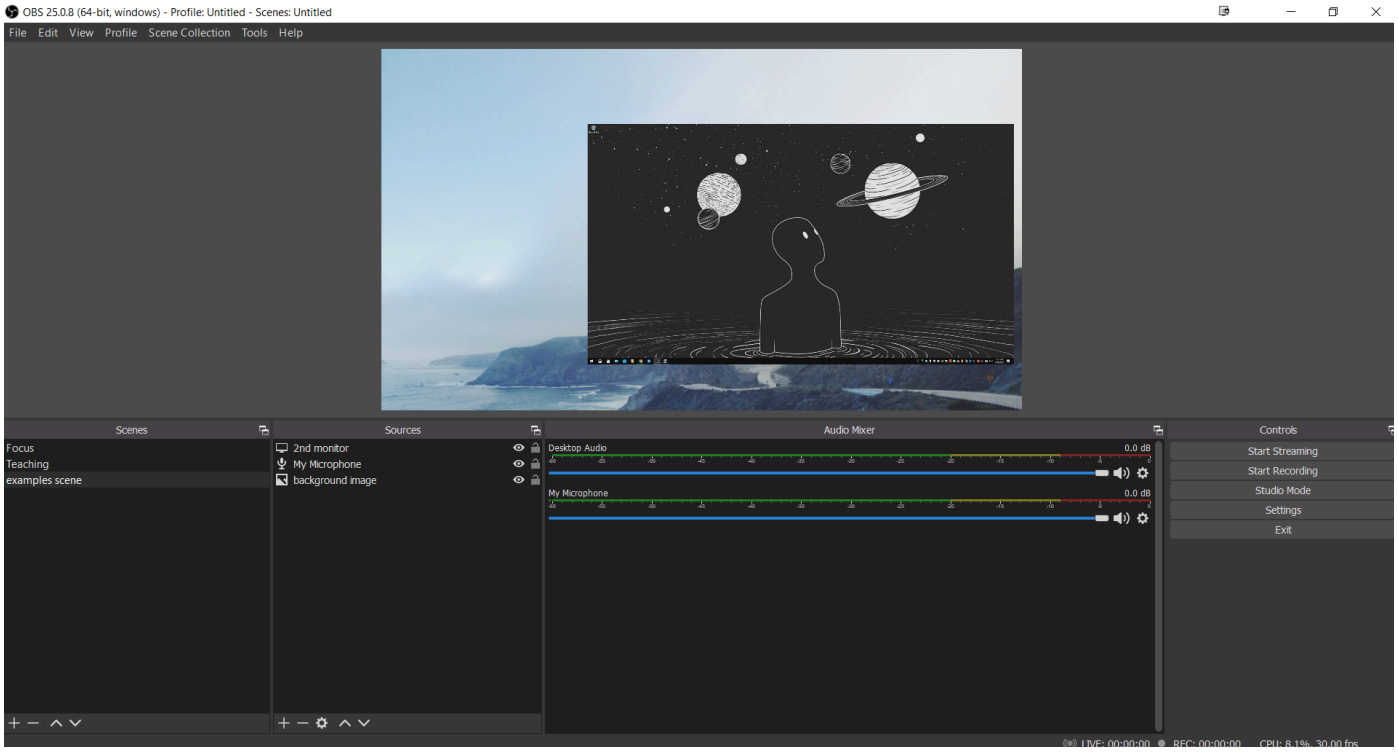


This will allow the Powerpoint to run in a windowed format (see screenshot below). You can also change the size of the PowerPoint window to your liking. With this feature, you will see that even though your PowerPoint is in presentation mode, you still have real estate on that monitor to have other programs and windows running; however, they will not be captured by your OBS. Basically, this frees up a lot of monitor real estate!



Midway Checkpoint!

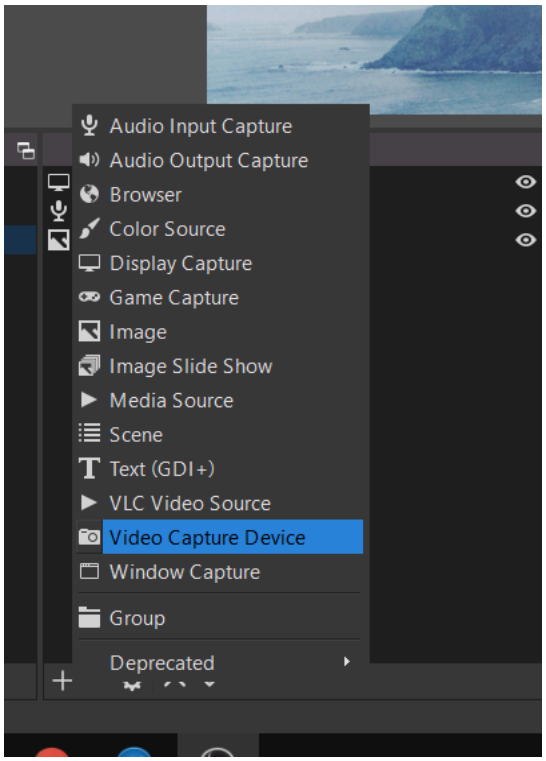
If you have been following this guide from the beginning, your OBS control panel and current video lecture layout should resemble something like this:



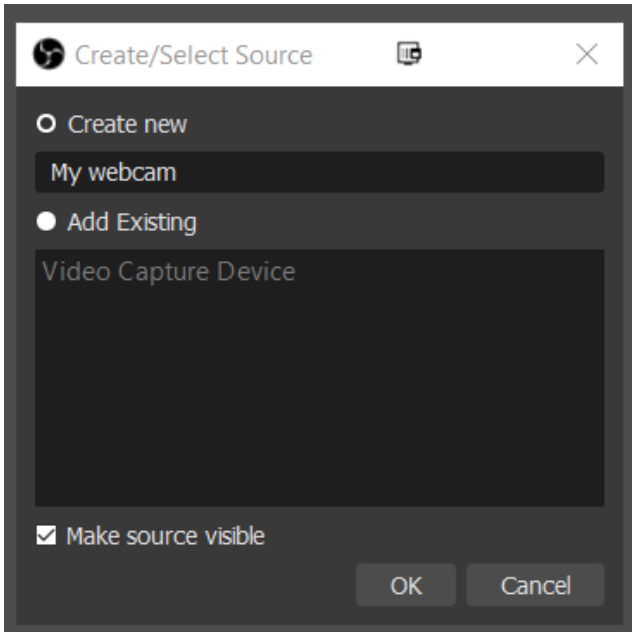
(Disregard the additional scenes listed in my **scenes** section; those are for other projects I am working on. If you have been following this guide, you should only have one scene listed in your **scenes** section.)

Adding your camera

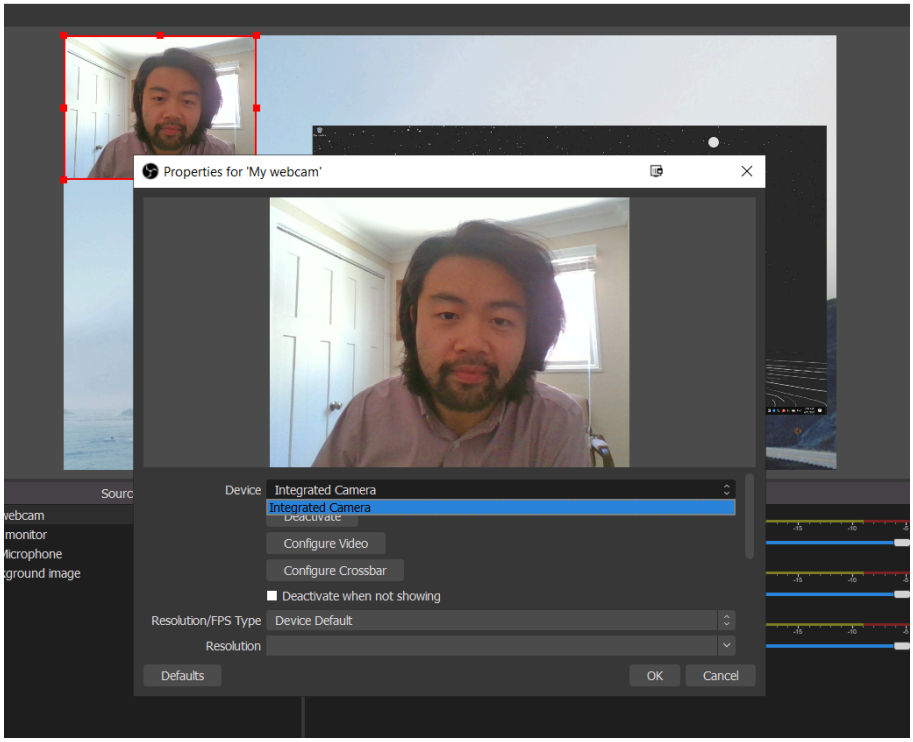
Go to the bottom of the **sources** section and click on the “+” icon, then select “Video Capture Device” in the list:



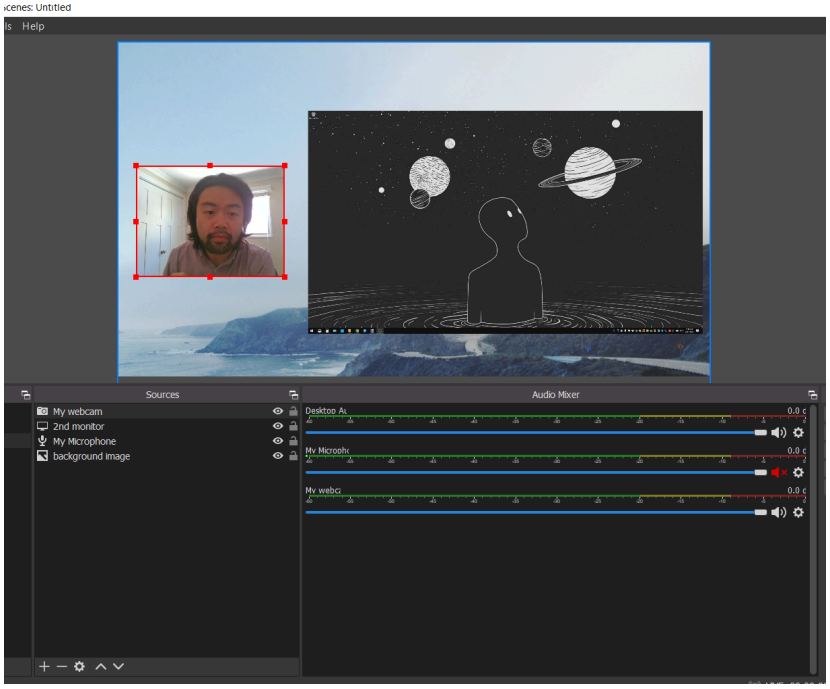
Give your source a name. I went with something simple, like “My webcam.” Then click “OK”:



In the preview box that pops up, select a device. I only have one camera (the camera that comes with my laptop), so that is my only option. At this point, you should also be able to see yourself on display. Then, click “OK”.



Just like your desktop display source, you can crop and reposition your camera display. Here is how I positioned mine in relationship to my desktop display:



At this point, you should have the basics in place on your layout. Your students will be able to see you talking via your camera; they'll be able to hear you talk via the microphone; and they'll be able to see your PowerPoint/notes via the desktop display. However, you may also want to add an important accessibility tool: closed captioning.

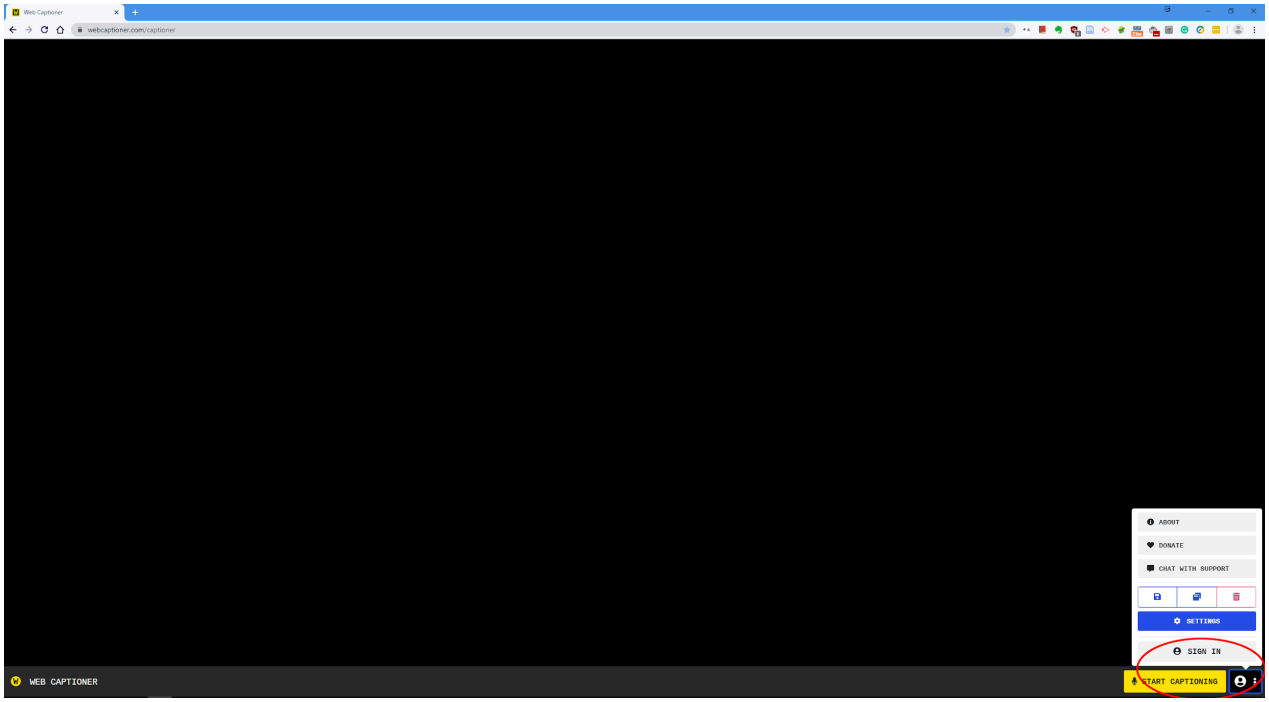
Adding closed captioning

I use the free Web Captioner to add real-time captions to my video lectures. So far, it's been one of the most accurate transcription tools I've ever used and I strongly recommend adding it to your video lecture layout. The website also has a donation link and I strongly recommend donating something to support such a great tool.

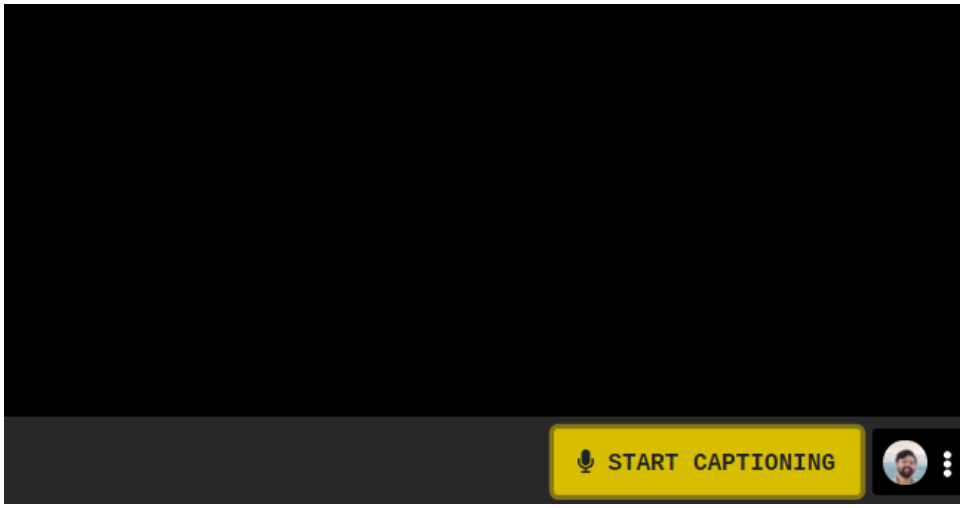
You can get to Web Captioner here: https://webcaptioner.com/captioner

Setting up closed captioning

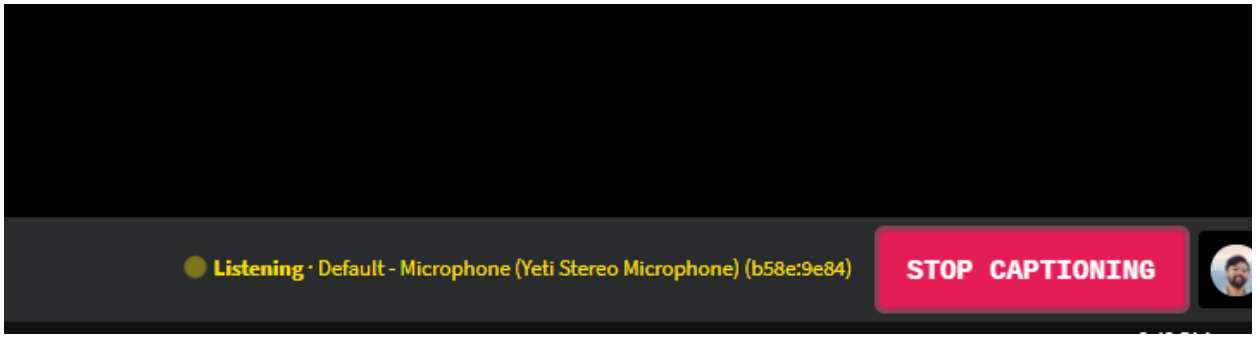
The first thing to do is create an account on the Web Captioner website. This will allow you to save your settings so you don't have to tweak it every time you access the site. To create an account, click on the little icon in the bottom right corner and click "Sign In":



Once you have logged in, click the yellow button labeled “Start Captioning”:



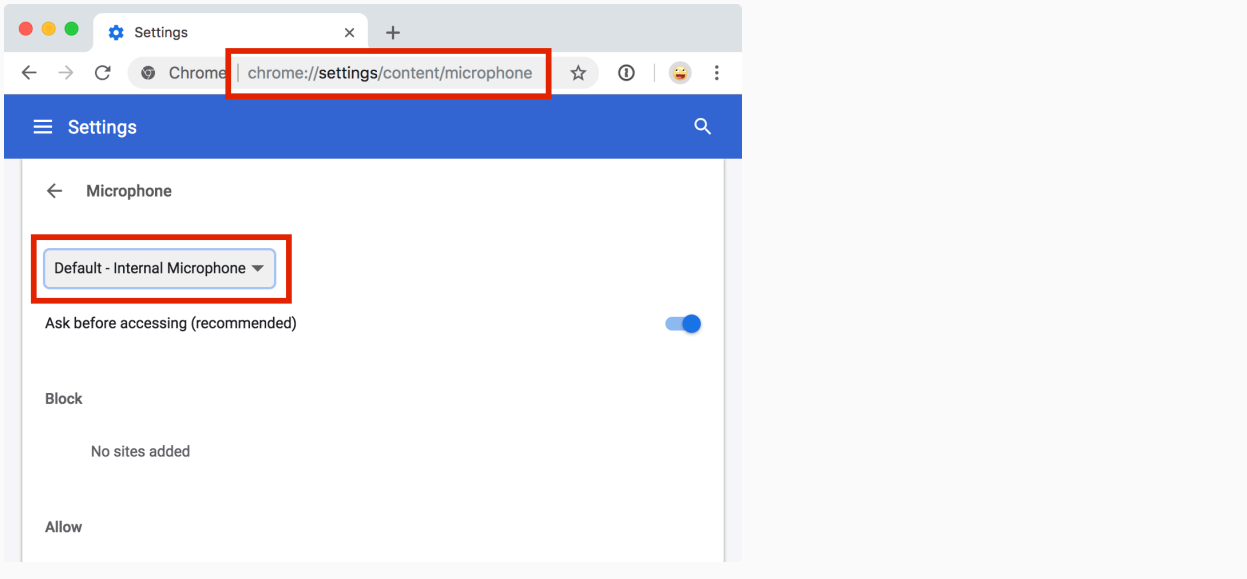
The yellow button will now turn red and a “listening” message will pop up. To stop recording, click the “Stop Recording” button:



By default, Web Captioner will choose the default microphone on your computer, but you can make it access a different microphone.

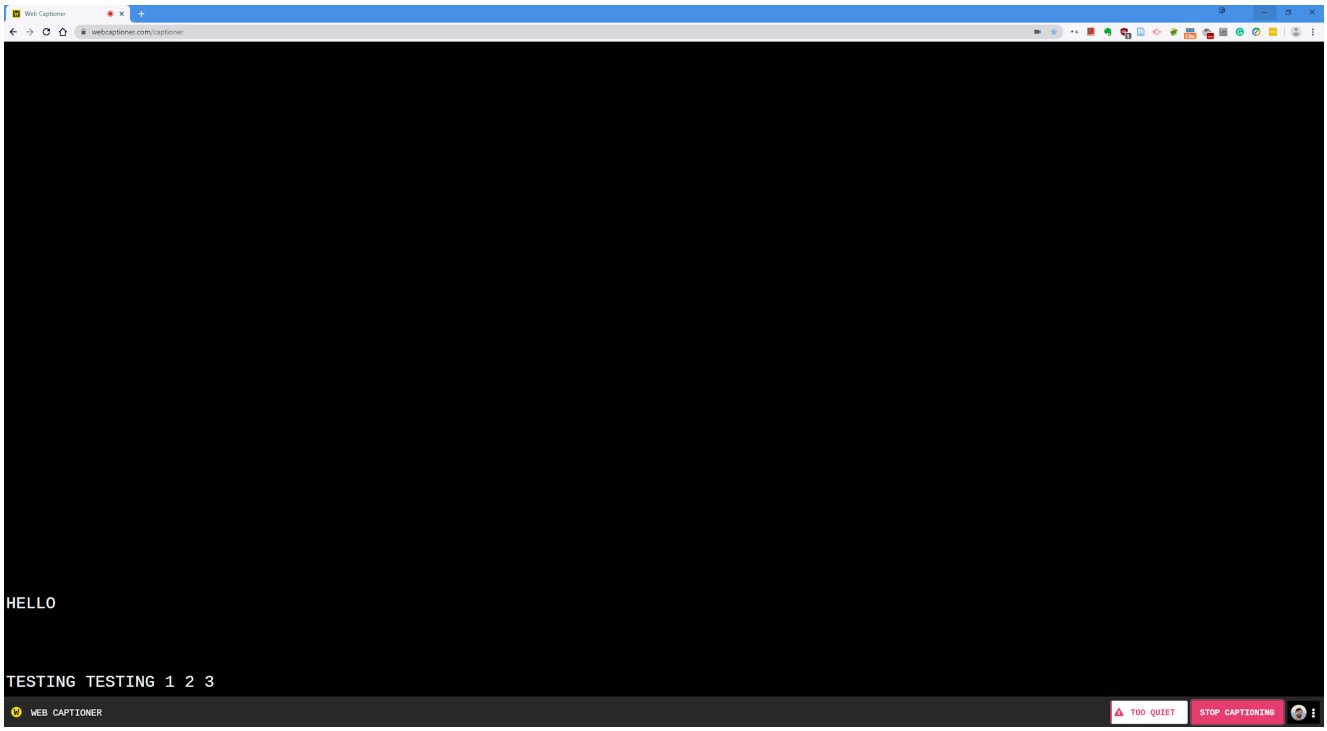
On my laptop, Web Captioner picks up my Yeti Microphone by default, which is what I want. However, this might not be the case in your situation. Here are Web Captioner’s instructions for switching to a different microphone:

“To make Web Captioner listen to a different audio input device, type chrome://settings/content/microphone into the address bar and select a different microphone.”



Unfortunately, I am not sure how to address this issue if you do not use Google Chrome as your browser.

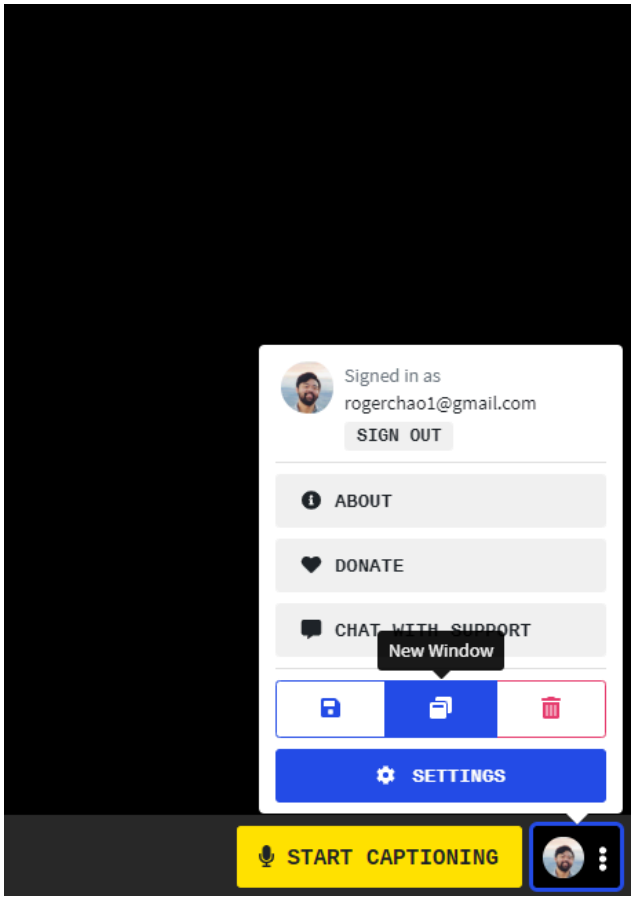
If your microphone is working, you can test out the captioner by talking. You should then see your words pop up on the black screen (see screenshot below):



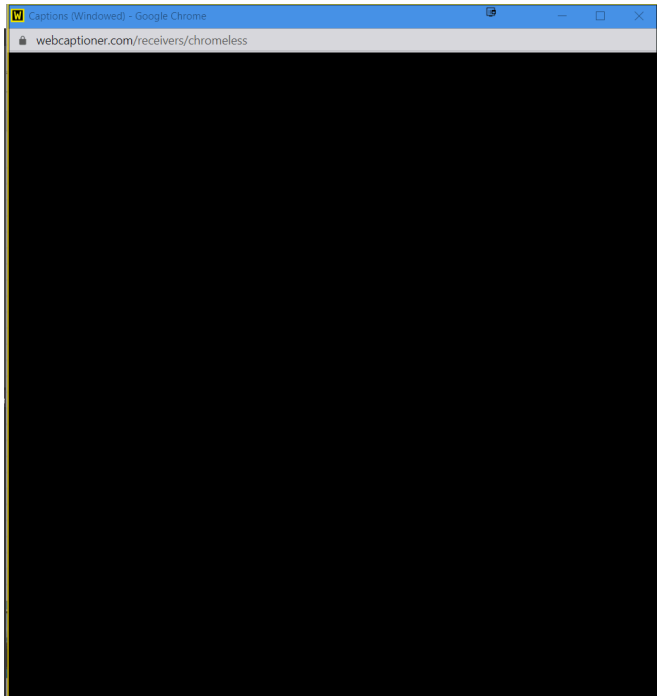
You will also see a bar appear in the bottom right hand corner that will tell you when you are being too loud or too quiet.

Adding Web Captioner to your OBS control panel

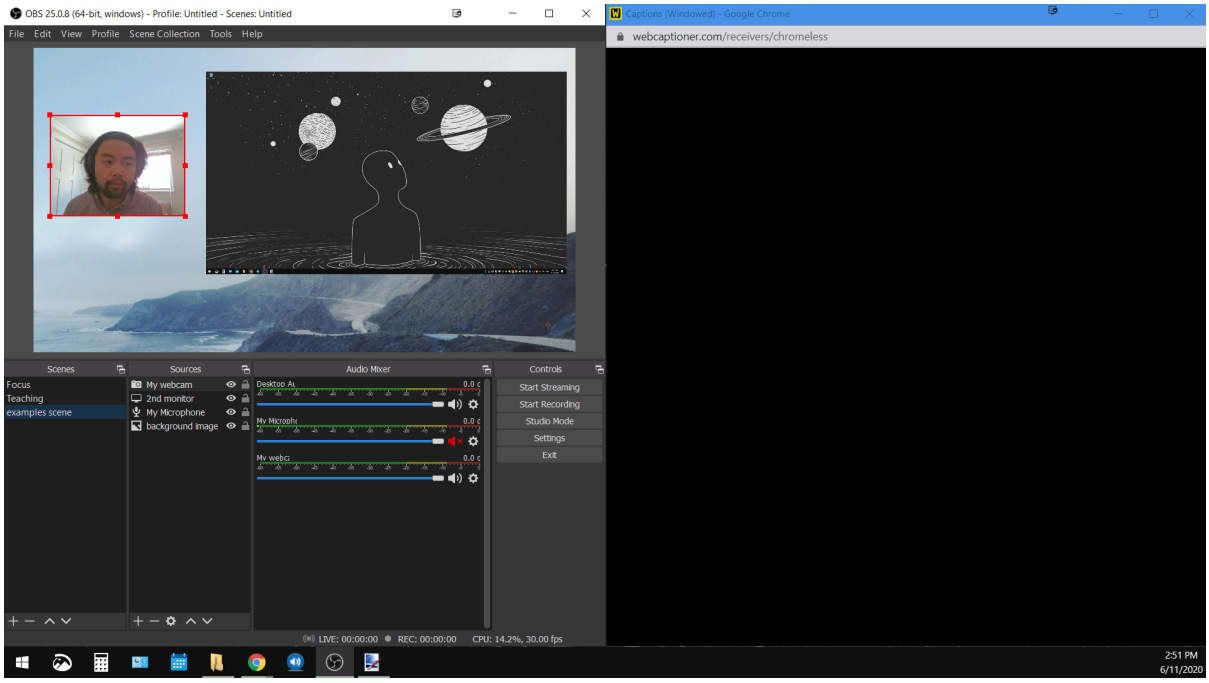
The first thing you'll need to do is to create a second, separate window for your web captioner. To do so, click on the icon in the the bottom right hand corner and select "New Window":



You should now see a second, smaller browser window appear - one that is strictly for the Web Captioner:

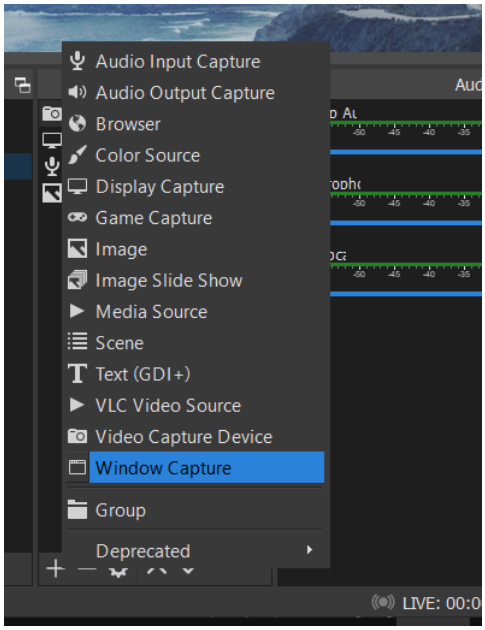


Here's the tricky thing about displaying your captions in your video lecture: this second browser window **must stay maximized on your computer**. If you try to minimize this browser window, OBS won't be able display your captions. I'm still looking for a workaround but at this stage, I cannot tell if that option is unavailable or I simply haven't found it yet. I currently have this Web Captioner window positioned in the same monitor that has my OBS control panel, like so:

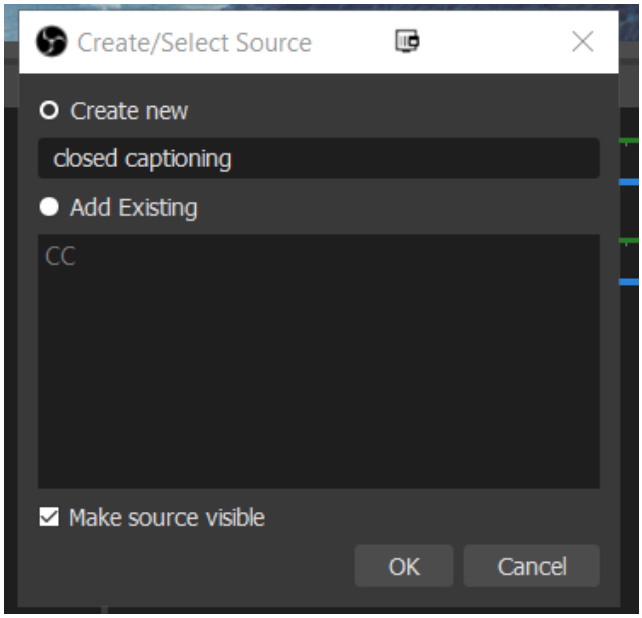


This will allow me to keep this window maximized.

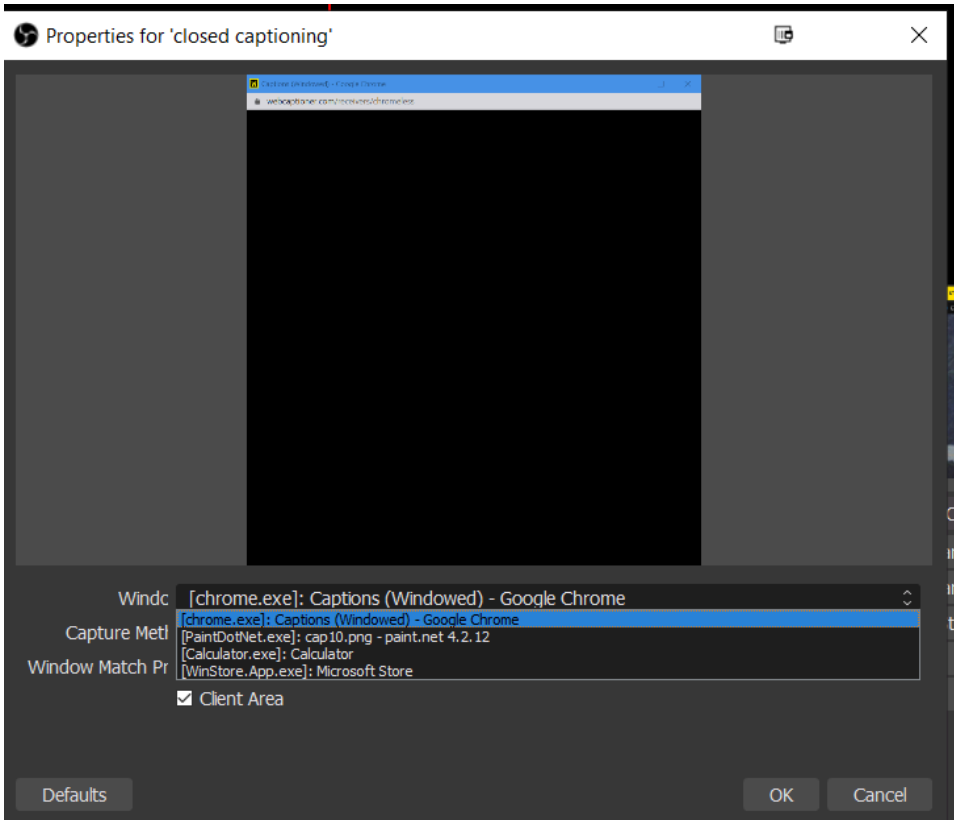
Now, go to the bottom of the **sources** section and click on the “+” icon, and then select “Window Capture” in the list:



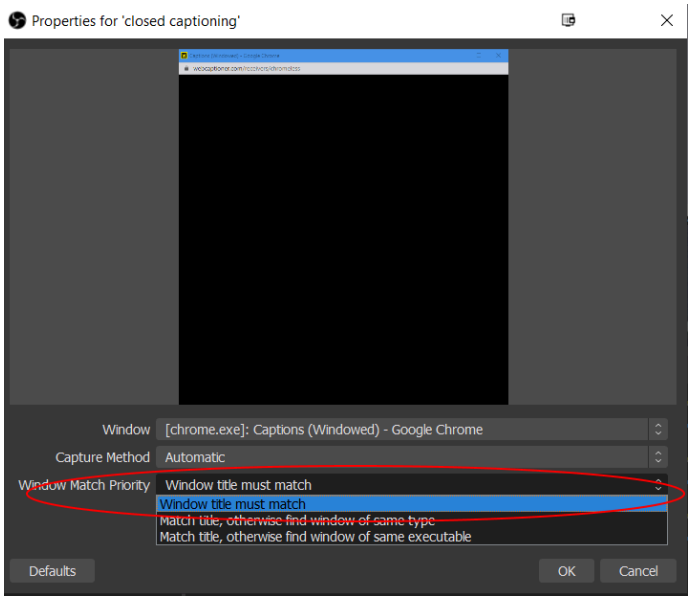
Give this source a name. I called mine “closed captioning.” Then, click “OK”:



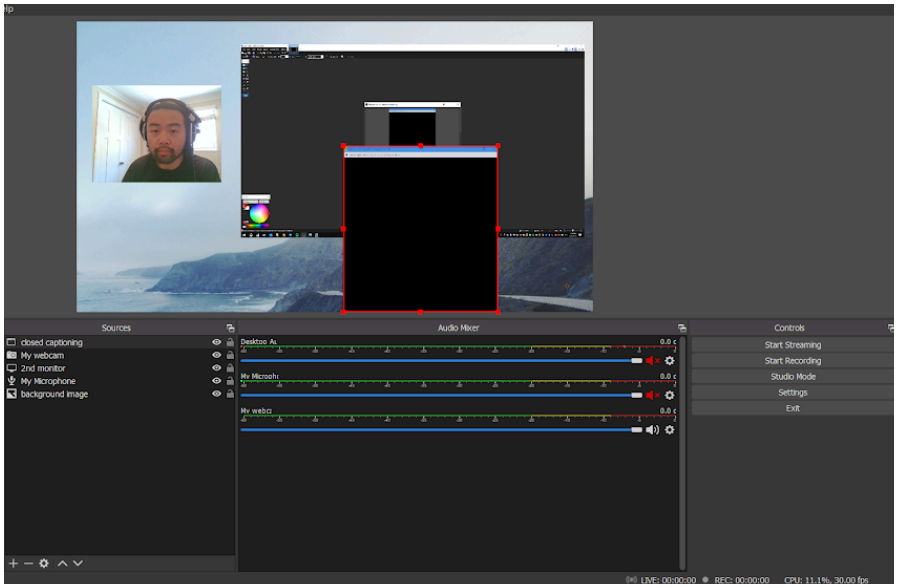
In the next screen that pops up, click on the first drop-down menu and find that separate browser window you just created for the Web Captioner:



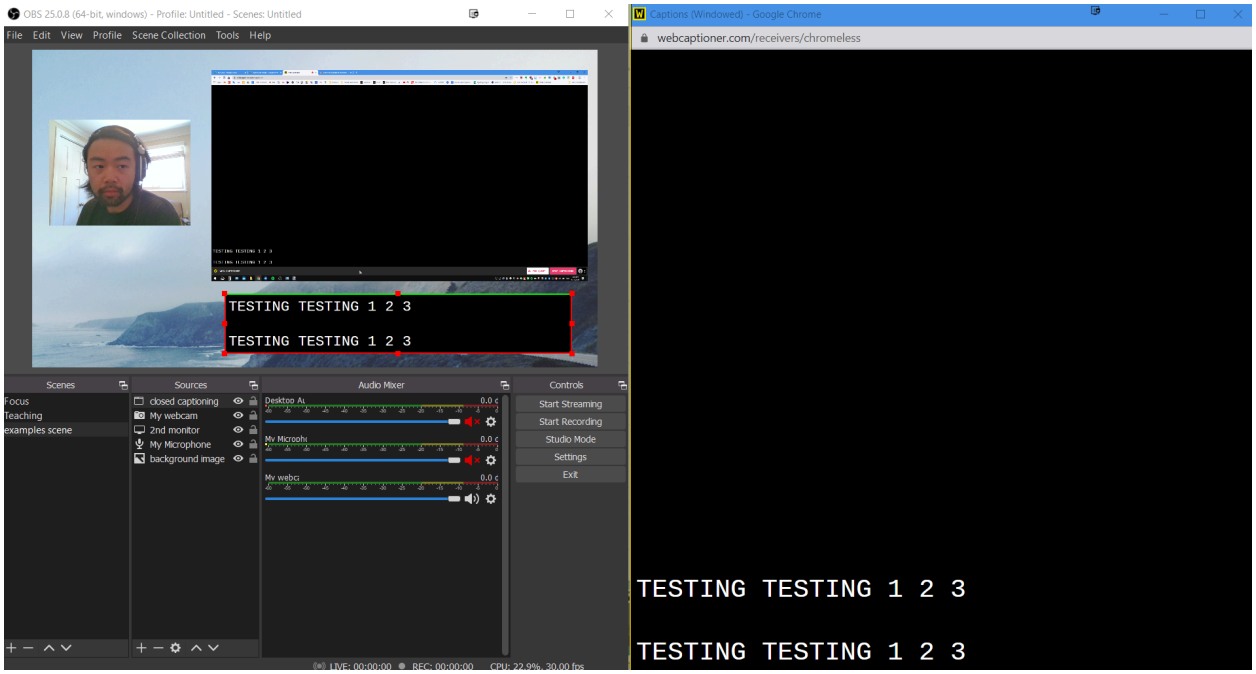
Then, in the section “Window Match Priority”, select “Windows title must match” from the drop-down menu. Then, click “OK”:



Your Web Captioner window should now appear on your layout as a source. But it's size is a bit of a problem (see screenshot below):



To change the dimensions of your Web Captioner display, hover your mouse over any of the four sides. Then, hold down the alt key on your desktop as you click and drag the side. Then reposition it to the desired position on your layout. I positioned mine right underneath my desktop display:

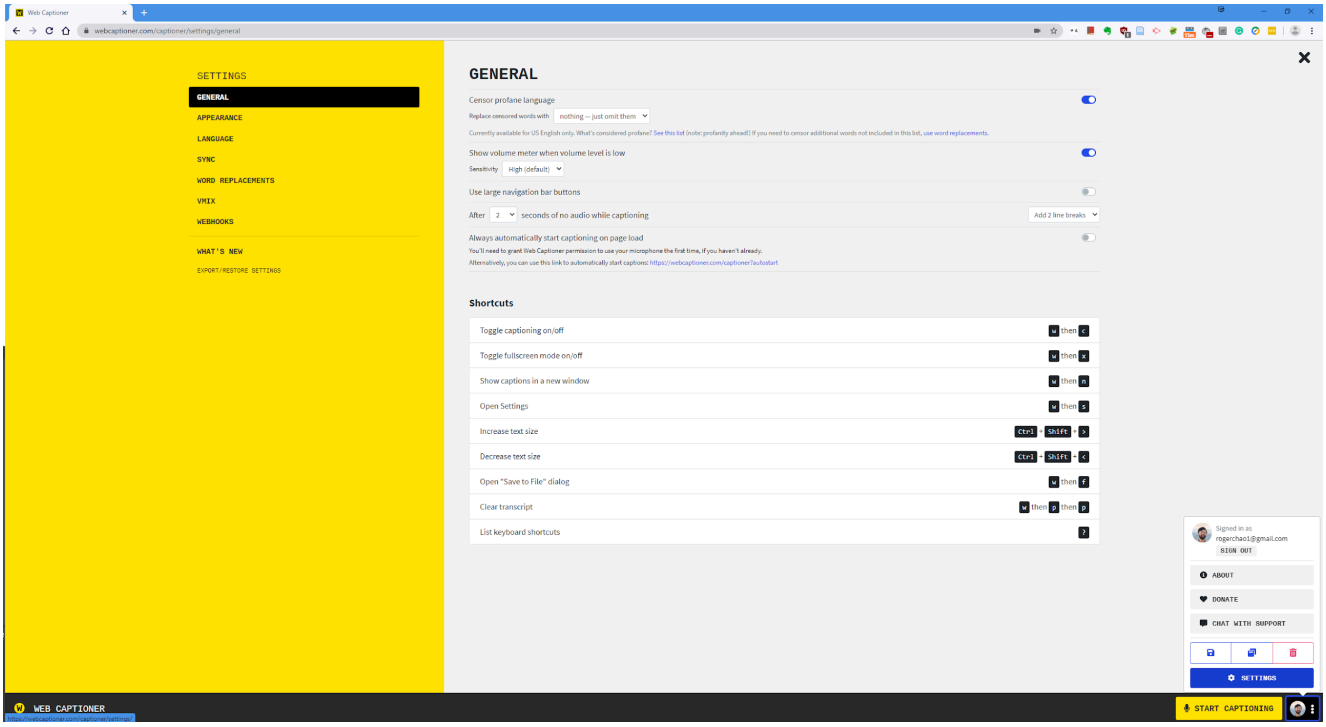


The above screenshot is what I see on my side monitor: My OBS control panel is visible, as well as the opened secondary Web Captioner window. You can also see in this screenshot that my audio is being captured by Web Captioner, then displayed in the secondary window, which is then captured by my OBS source.

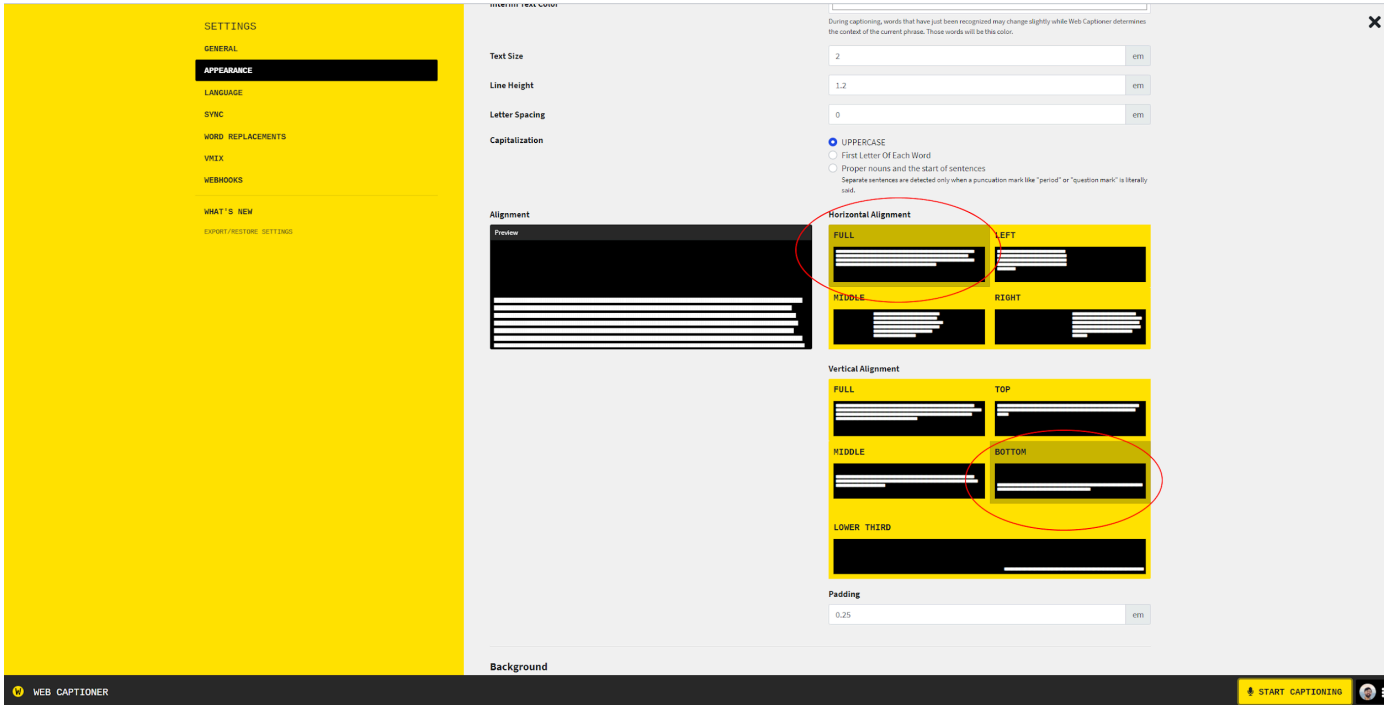
Configuring your captions

As you can tell from the above screenshot, my captions are located in the bottom left hand corner of the secondary Web Captioner window. That is because the bottom left hand corner is what is ultimately being captured by the source that I just created in OBS. Since I manipulated the dimensions of that source, there are areas of the secondary Web Captioner window that are cut out. Therefore, if I locate the captions in another part of the window, the words will be either cut out or not appear at all on my video layout.

To configure where your captions appear in the window, go to the bottom right-hand corner of the main Web Captioner browser window and click “Settings.” The following screen will appear:



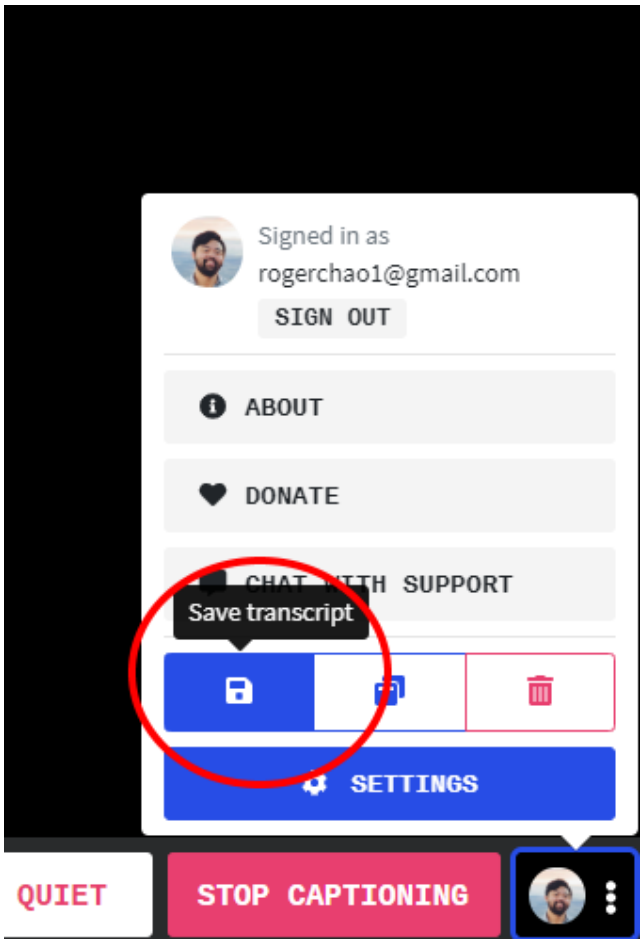
In the left column, select “Appearance.” Scroll down and make sure you select “Full” under Horizontal Alignment and “Bottom” under Vertical Alignment:



You may have to tweak and play around with these features + the dimensions of your Web Captioner source on your OBS control panel to ensure that your captions are showing up correctly.

Downloading your captions

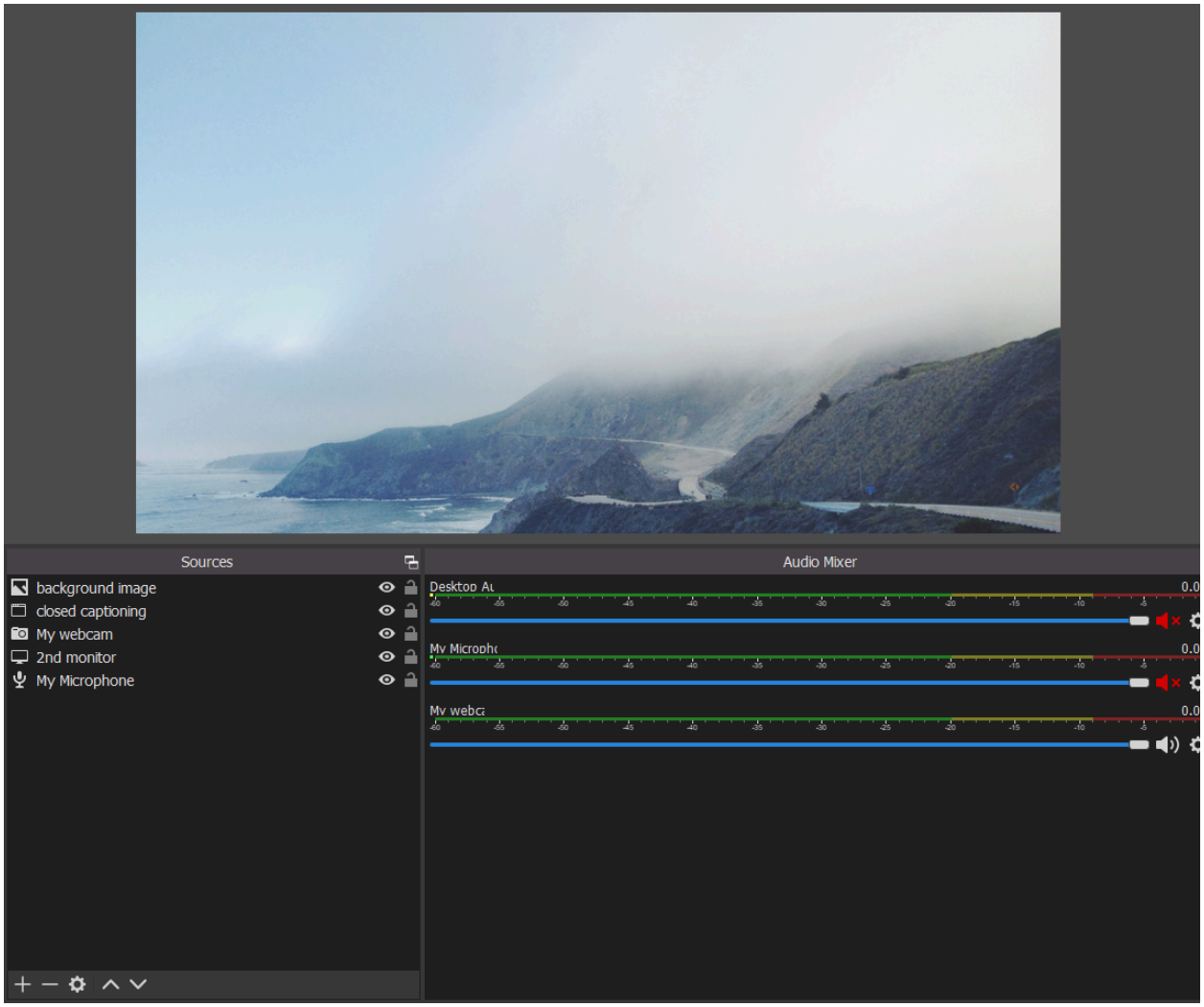
Finally, Web Captioner allows you to save all of your captions. To access and download them, go to the bottom right-hand corner of the main Web Captioner browser window and click “Save Transcript.” You will then be prompted with either a .txt option or a .doc option.



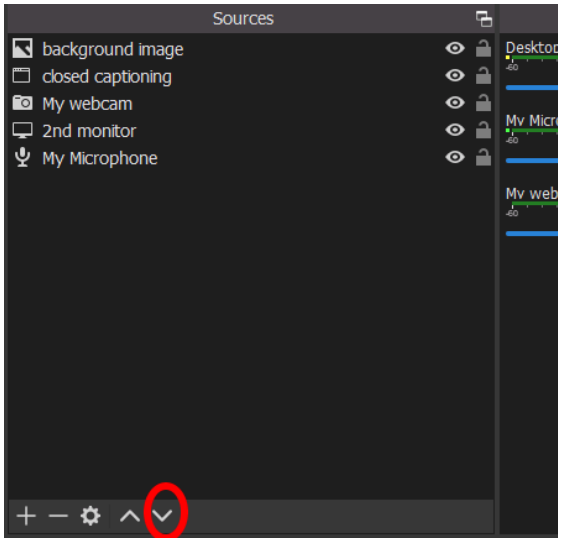
Organizing your sources

At this point, you should have a number of different sources listed in the sources section of your OBS control panel. However, the order they appear in this section dictates how your final video layout looks.

The main thing to remember is you need to make sure your background image **is not at the top of the list**. If it’s at the top, it’ll cover and hide all of your other sources and your layout will end up looking like this:

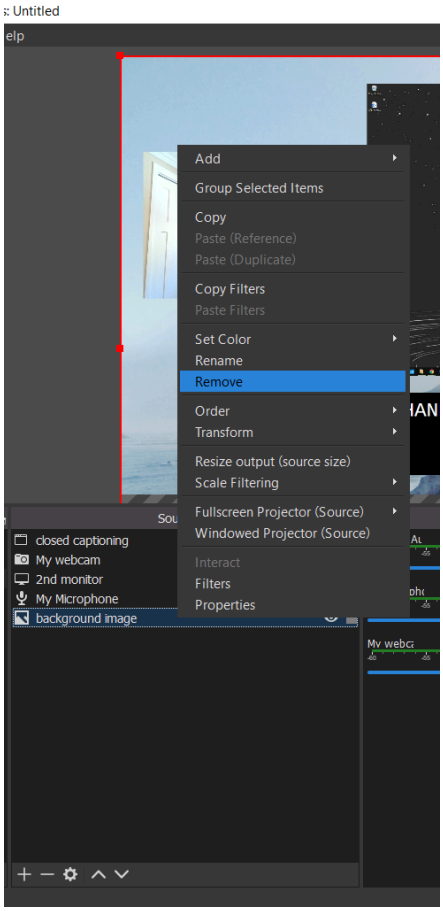


I recommend having your background image at the bottom of your list. To move the background image source down, select it on the list, and then click the Down arrow at the bottom:



Editing or removing your sources

If you want to rename or remove any of your sources from your sources section, right click and select either “rename” or “remove” from the list that pop up. Note: when you remove a source, you’ll need to go through the entire process (coming up with a name, selecting the device, configuring its position and/or dimension on the layout, etc.) all over again:



Doing a test recording

Now that you have your video lecture layout set up, it’s time to do a test recording.

Before you hit the record button, there are a couple things you want to double check:

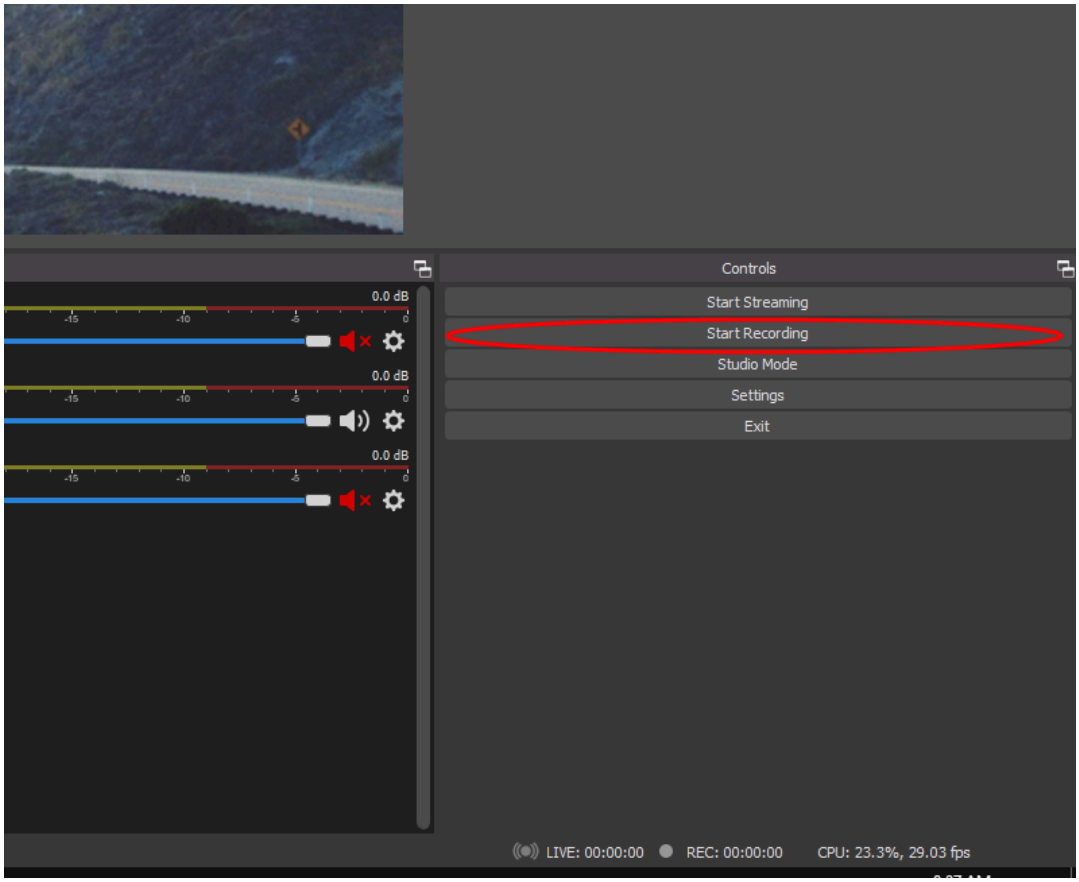
- Are all your sources visible on the layout?
- Are they positioned in the correct places on your layout?

- Finally, and this is what I think is the most important: Is your microphone active and acting as the only source picking up audio?

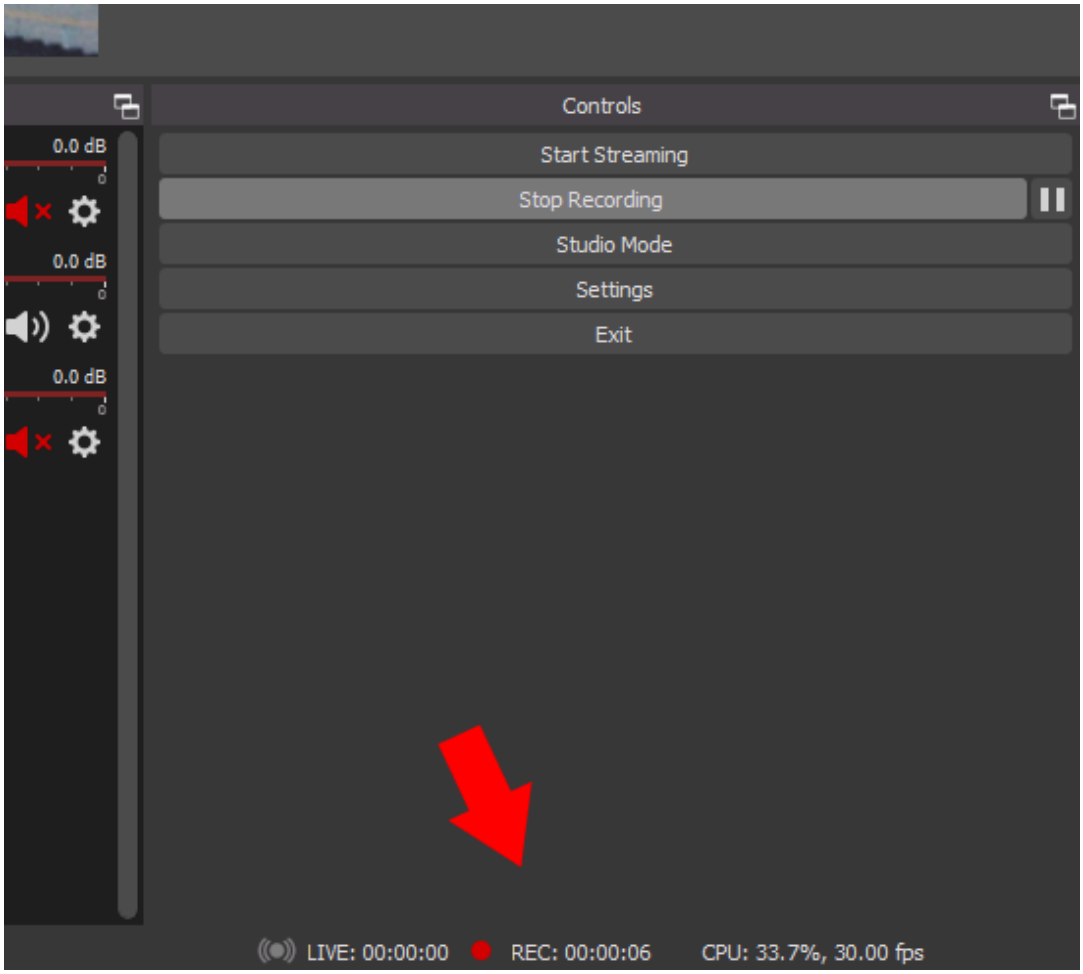
  If you have multiple sources picking up audio, your eventual recording will contain a lot of random distracting sounds and noises. For example, OBS, by default, will pick up your desktop audio (e.g., the sound from a video that you're playing on YouTube), even if you're already talking into the microphone:

  If you are not planning on showing your audience a video, I would recommend muting everything in your audio mixer section that is not your microphone, to ensure that nothing else can pick up sounds:

To start recording, go to the **controls** section on the right side of your OBS control panel and click “Start Recording”:



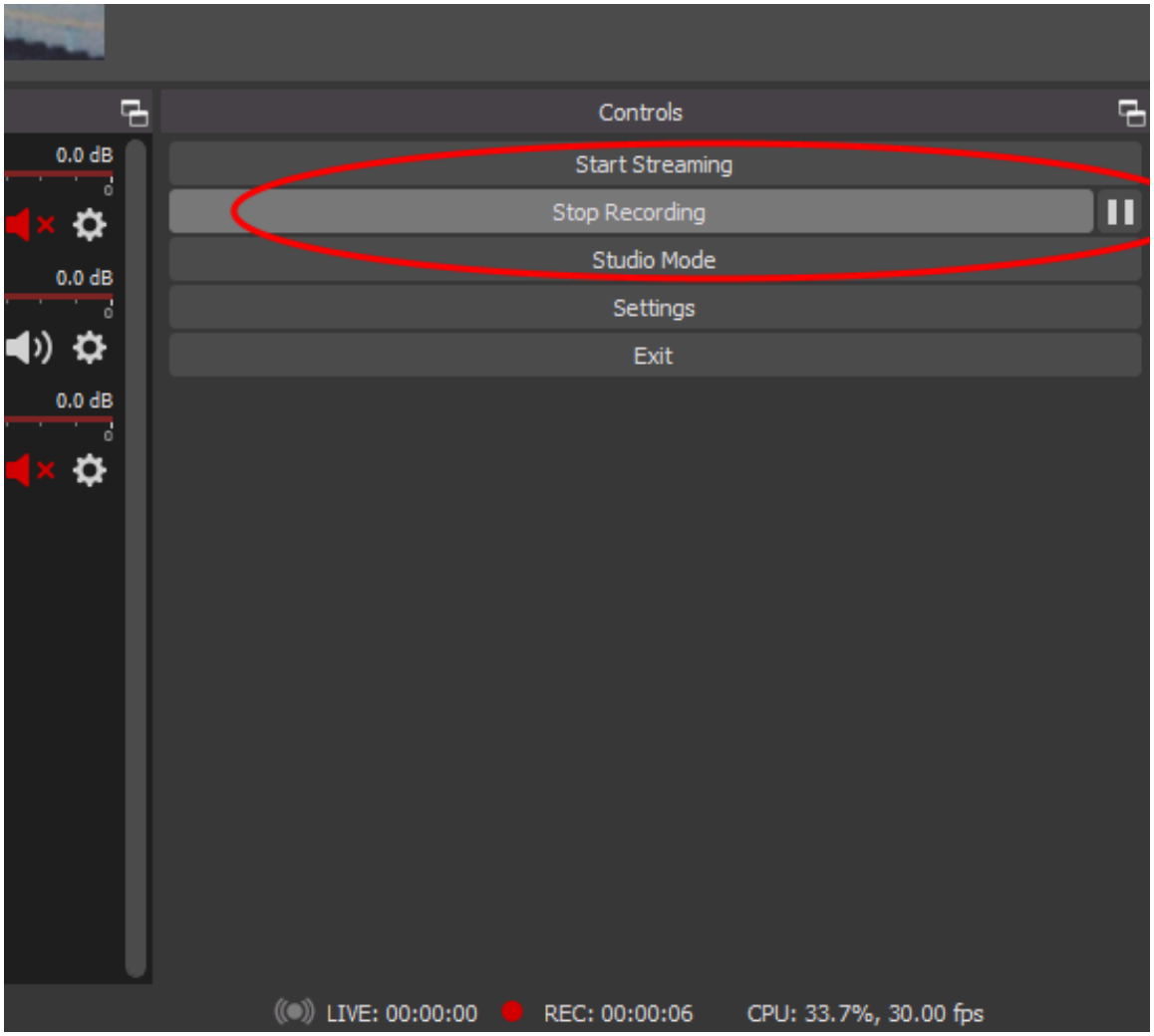
When the recording starts, you'll be able to see the seconds progress by underneath the **controls** section. You should also see the CPU percentage and the FPS rates constantly changing:



During your test recording, check the following:

- Is the recording capturing my video image?
- Does the audio mixer section in OBS indicate that the microphone is picking up my voice?
- Are my words being captured and displayed properly by the Web Captioner?
- Is the recording capturing my desktop, and can I display a PowerPoint on it?

To stop the recording, click “Stop Recording.” You can also pause the recording momentarily and then start it up again by using the pause icon to the right of the “Stop Recording” button:



By default, OBS will save any completed recordings to the primary video folder on your computer. However, you can change this by clicking on the “Settings” button in the controls section, and then jumping down to the “Output” category on the left side. There, you can see your “Recording Path”, aka where all recordings will be saved. Click “Browse” on the right to change the location. Then click “OK” at the bottom to save: