Web Development Lesson Plan

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| Session: 1-2 weeks after open observation so it is not too fresh | Topic: Intro to virtual environments | Day: |

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| Lesson Objective:  This exercise will:   * Teach students about virtual environments and their benefits to web development.   The purpose of this lesson is also that   * Students can create their own virtual environment. |
| Materials Needed:   * VS Code |
| Agenda:   1. What is a virtual environment (5 minutes) 2. Why virtual environments are important |
| Procedure:  Student can do this fully independently by reading the instructions, or someone can read the instructions to make sure the task is understood before doing the activity. The reflection part can be done with guided instructions, or in pairs with other students if available to compare notes. |
| Assessment/Check for learning:   * Students can identify concrete things that they missed in their observation (note that this is not a bad thing, the purpose of this lesson is to realize that intentionally looking for information comes with the ‘penalty’ of reduced attention to other things. |

What if:

* Student has already shown proficiency in that skill?
  + Pick a movie or episode in which a lot of things are happening, so that there are more things for the student to keep track of.
* Student is having a hard day and needs special accommodations?
  + Pick a movie or episode in which only a few things are happening, so that there are less things for the student to keep track of.
  + Instead of writing, the student can also take spoken notes with an audio recorder. This will be a bit trickier in the second part but audio in the movie can be supported with subtitles.

NOTES:

* Duration is approximately 50 minutes; can be adjusted by shortening the duration of the film clip. Less than 10 minutes is not recommended unless really necessary.

**Instructions**

**What is a virtual environment (5 minutes)**

Step 1:

In any type of programming such as web development or mobile app development, it is useful to have a closed workspace that does not interfere with other app projects on your computer. Typically, a programming project will require certain versions of development tools. Having many projects that require different versions of the same development tool can drive you insane. Constantly switching between versions is time consuming and difficult. Thankfully, virtual environments exist. A virtual environment is basically a container for your projects. It allows you to install specific versions of development tools for a single project. For example, you could have two versions of Python for two projects. Virtual environments offer great flexibility when it comes to any type of development.

**Why virtual environments are important (5 minutes)**

Step 1:

Imaging having 10 development projects. Each project requires a certain version of Python. It is possible to install 10 different versions of Python on your computer. Downloading all these versions may take you around 30 minutes, with a decent internet connection. Then you would have to run the installation program for all 10 versions. This may take longer, around 45-60 minutes. You have spent about 1 hour on setting up just one development tool, it is typical to use 20+ development tools in a single project. If you still have 19 more development tools to install, then you would spend at least 2 days just installing. That is not even the worst part. Now your computer is confused with all these different versions for a single tool. You will need to tell your computer what version you want to use each time you are working on a project. These instructions can be confusing, even experienced developers struggle with this. Essentially, it becomes an insane task to manage all these projects.

Step 2:

Virtual environments get rid of this problem. They can install and setup specific versions of tools at a faster rate than doing it on your own. They also keep all these versions separate to not confuse your computer. Changing environments is as easy as running one single command. All this saves you time and frustration. Virtual environments are the way to go!

In the next lesson you will setup your own virtual environment.