TEACHING PROGRAMMING PRODUCTS FOR STUDENTS

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ANNOTATION

Online tutoring is a great side hustle next to your day job. You get paid to teach what you love, and can even learn new things. During the pandemic, most of my tutoring gigs have moved from face-to-face sessions to fully remote assignments.

Key words: Teaching programming online effectively, body language feedback

Teaching programming online effectively can be quite a struggle. Unstable video connection, wonky screen sharing, no body language feedback from your student, heck even making a quick drawing is a hassle. However, I've found a combination of tools that have enabled me to provide quality tutoring sessions that are on par with my face-to-face sessions. Perhaps they can help you out as well?

Video conferencing software

Without video and voice to interact with your student, it's pretty hard to teach online. Nowadays, plenty of video conferencing software exists and it's more a matter of taste which one you choose. I'm using Google Meet; Google's replacement for Hangout. The free tier offers up to 24-hour video calls for one-to-one and group sessions up to one hour,

which often is enough for a single session. Other options are Zoom or Microsoft Teams but I found the free tiers to be less generous. Going full open source is also an option with Jitsi.

Don't you just hate it when people in calls sound like their computer might explode at any given moment? Having crappy audio sucks. Big time. The best way to improve upon your audio is by investing in a quality headset for your calls. They can be quite costly, but there's plenty of options that don't entirely break the bank.

I'm using the Sony WH-1000XM3 headset ($225 on Amazon). Its killer feature for me is ambient sound: it amplifies sounds in your environment through the microphone, so you hear the same background noise as your students. This is great, as you'll immediately notice something distracting and do something about it.

Visual Studio Code Live Share

I think one of the biggest innovations in IDE's the past couple of years is live code sharing: editing code alongside another programmer in your IDE, Google Docs style. Microsoft's Visual Studio Live Share was one of the firsts and it's gotten very good over the past years.

With Live Share, you can set up a coding session and instantly share your project with another developer. It's a real augmentation over screen sharing: each developer has access to the full file tree, can make changes, run in debug mode, etc. — all in real-time.

For online tutoring, it's an absolute game-changer. Before, I had to

share my screen and have a student just watch me write the code. While helpful, it's way better for students to write code and experiment themselves. With Live Share, you can take your students with you in your environment and write code together, providing them with a better learning experience. On the flip side, they can also share their environment if they're stuck.

You can immediately make use of VSCode Live Share, all you need is to install the extension and log in with either a Microsoft or Github account. Other editors such as Atom and SublimeText now also offer this, but at the time of writing, I didn't find them as good as Live Share.

Git(hub)

Real-time collaborative coding is great during a session, but you'll want to have some track record of what you wrote together. A shared git repository gives your students access to the code to reflect and study the material on their own. It's also great to provide homework exercises; students make commits and pull requests which you review and give feedback on. I use Github to host my repositories, but other providers such as Gitlab also offer generous free tiers with private and public repositories.

Online whiteboarding app

Sometimes you'll want something extra than code to explain complex concepts. When teaching I'll often grab a piece of paper and jot

down a quick doodle or diagram to visualize the material. Online, your whiteboarding app replaces paper. You'll want a tool that's accurate for freehand drawing and supports multiple artists sketching in real-time.

I'm using Google's Jamboard during my sessions, as it's free and integrates nicely with the rest of the Google suite. It doesn't offer unlimited canvas but divides your drawings up into slides similar to Powerpoint. I've found this works well to provide your student with reference slides they can use to study. Other great options are Miro and Limnu.

Tablet with stylus

Drawing shapes with a mouse (barely) works but quickly becomes cumbersome. A tablet with a stylus from which you can control your whiteboard works wonders. You can open your code editor, video conference tool on your laptop while opening a shared whiteboard on your tablet. That way you can seamlessly switch between programming together, reviewing slide material, and explaining concepts on the whiteboard.

I'm using the Apple iPad with the Apple Pencil with the Jamboard app, which works very well. You can get one nowadays for less than $500, refurbished even less.

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