

P2T Equation and Google Docs Tutorial

Hi, everybody. This is Allie Fuddy. I'm a teacher of the visually-impaired, Certified Orientation Mobility Instructor, and Certified Assistive Technology Instructional Specialist at the Vermont Association for the Blind and Visually Impaired. And today, I'd like to talk a little bit about the program EquatIO, and how it can be useful for your low-vision students.

Now, I'm specifically saying low-vision students here, because, as of the time of this recording, this is not a screen reader accessible experience. So this is really for those students who are doing things primarily visually on their computers. There have been some strongly-worded suggestions by a number of people in the field of text help that they really need to up their screen reader accessibility for this program, so that students who are totally blind screen reader users can have access to it as well, because I think it's really going to be a game changer for them as well. But they're not there yet.

So I'm making that little caveat. If you're looking for something for a student who's a screen reader user, this is not the experience for them, yet. Hopefully it will be in the future.

But I use EquatIO with a number of students. I find it really useful for those, especially academic high school low-vision students who are taking higher level math courses, where, now, all those super scripts and sub-scripts, and quadratic equations are just a little too small for them. Maybe they did fine visually up until Algebra 1, geometry, Algebra 2, pre-calculus, calculus-- doing math-- handwriting math and really accessing it visually. But now, at this point, they're just making those small errors based on visual perception issues, and not based on their conceptual knowledge. And obviously that can impact students' abilities to access things like the SAT, and score high in those upper-level math courses. So think about this program for those kids that I'm talking about, who are just missing those little things that become so small in math as they get older.

So EquatIO is a Chrome extension. It's also a web and a desktop app. It does a whole lot of different things. I'm going to be just talking about one, small piece of it today, which is its ability to work with Google Docs, as something that you can just do pretty immediately to kind of hit the ground running with the student, and then you can slowly learn more about the more premium features that are involved as well.

So EquatIO-- I have the website up here-- is a program that is made by the company Texthelp. You may be familiar with Texthelp because they also make Read Write which is very common in schools for students with reading learning disabilities. So it reads web pages, and articles, and things like that to students who have print disabilities. Generally not visual impairments, but I have seen some low-vision students who use it.

But this is their new program. It's maybe only about a year old, called EquatIO, which is a digital math editor. So one thing I just wanted to point out here on the website to you, is that if you scroll down a little ways down the page, there's actually a little part here that says, work in education? And this is really important, because if you're somebody who works for a school

district, or is a school-based teacher of the visually impaired, you can actually get a free account which has all the premium features for you to download at schools, for you to show students.

And the teacher side of things looks very similar to the student side of things. So the nice thing about the student version is it does come in a free version, which is what I'm actually going to be showing you today. So you can see what can actually do with the free version with a student if the school isn't going to purchase the license for it. But if you do want to just buy a single user license for a student, it's \$100 a year. So it's not a huge financial investment for the school. And I've had several schools just go ahead and buy it and really appreciate having those premium features.

So I'm just going to jump over here to a Google Doc. And actually, EquatIO was already up here on the bottom of my screen, but I just want to point out to you that once you've installed the Chrome extension-- so you just go to the Chrome store. If you're within the Chrome browser, you just search EquatIO, and you'll find the Chrome extension for EquatIO. So all my Chrome extensions are up here on the upper right-hand side next the address bar. And the EquatIO button is the little, blue diamond up here. So when I push it, it shows up, and when I push it again, it disappears.

So now that I've opened EquatIO, I'm just going to show you the different areas that you have here. So the first option you have is actually what they call their equation editor. And this allows you to type math directly into a Google Doc. So let's say y equals $2x$ plus 4 . OK, so you can also create multi-line-- like if students are working out multiple steps of a problem they're solving, you can actually hit Shift Enter, and you can go to the next line. And you can write whatever else you need to write. So $3x$ plus y equals 5 . And then if you come over here, you can actually insert the math.

So boom. My math is now in there. Maybe I should have put a 1 in front of that so that my teacher would know what I was doing. Oops. Just going to reinsert that in a second. There we go. So that's how you can digitally type math and it immediately shows up there.

You can also edit the math if you need to go back later, by just clicking on it, almost like you're clicking on a picture, and just coming down to this edit math button, here. So the other nice thing is that if you have the premium version, it actually will do prediction. So let's say you forget how to do a square root. If you just start typing square root, the little symbol for square root will show up and you can just click on it and then it gets inserted into your math.

I only have the free version here that I'm running, so you'd have to get the premium version for that. But if you come over here to the right, you'll also see that there's a lot of symbols that you can choose from. So if you need to do more advanced math concepts, and you don't have the premium version, you can just come over here and click.

So for example, here's the quadratic equation. If I had the premium version, and I just started typing quadratic equation, that would've just popped up and I could have hit Enter, or I could just come over here and click on it, and then enter in my individual values for these things. Click the 4 , 4 , 2 , 3 , 2 .

All right. So you can edit these equations. And I guess I should put parentheses here. I should have put parentheses here. But I'm not a math teacher. I'm a teacher of the visually-impaired. All right. So if I was solving the quadratic equation, a student could do that and then they just insert the math. And boom. There it is.

So that's where you can actually type math. The next thing is the log text editor. Your student is not going to need this, unless they're just an extreme math nerd and have been using math editors for years. But this is really something that maybe the math teacher will use, because they're used to old school math editors where this is how you have to input things. But just pretty much tell your student-- your average high school, middle school, high school student-- they can just ignore that button.

The next piece is something that I particularly like, which is actually a graphing calculator. So this is generated by Desmos. So you may know Desmos because they have a really accessible, awesome web app-- also an iPad app-- that is voiceover accessible-- screen reader accessible. It also does some really nice sonifications. So you can actually hear, like, for example, a parabola would make a sound like, woo, to show kind of what the actual curve of a parabola would look like. Or whoop, depending on which direction the parabola is going in.

So this though, is just really visual that you've got going on right here. But it's nice, because if you've got those low-vision students who struggle with using graphing calculators, this is a way that they can do graphic calculators and immediately insert their answer into a Google Doc. So I just typed a little equation there. And if you're not familiar with Desmos, you definitely need to go check it out.

So I just hit Insert Math, and boom. There's my graph that's my next answer for my problem. All right. The next option here is actually handwriting. So if you have a student that's using a touchscreen device, like a-- if you have a student that's using a device that they can hand-write on, for example, a Chromebook that's touch screen, or a Surface Pro, or something like that, you can actually-- you can write directly on here, or you can use your mouse. It really doesn't work as well with the mouse. As you can see it's not super accurate. But if you're using a stylus it's much more accurate.

You can just go over here though and fix any issues that you might be having. Delete whatever you need to delete, and then go ahead and insert your math. So if you have a student that really is not going to type math, they're not going to give up that handwriting piece, and they have a touchscreen device like a touchscreen Chromebook, or a touchscreen PC, they could just go ahead and hand-write directly onto the screen.

I just want to make a note that this is not available as an iPad app. So this is something that's happening on the computer. But the nice thing about it is that there is a way, with a premium feature which I can't demonstrate right now, so you can actually go into Safari on an iPad or an iPhone and use that as your touch screen.

So if your student doesn't have access to a touch screen on their computer, they can actually come in here, either type in this link right here into their phone, or they can also-- if they've got a

QR scanner-- they can just scan this QR code, here, and it'll take them right to the website. And they can actually, as they write on the screen of their iPad or their iPhone with their finger or with a stylus, it automatically shows up in the Google Doc. So they can just push it over from their iPhone or iPad into the Google Doc. Which is really cool. And students really like doing that. So with the free feature, you only get two handwriting options a day. So if you have a student who's really going to be primarily handwriting, they're going to need the premium version.

All right. And then we also have the speech, here. So I'm going to give it a try. I'm not sure if it's going to work while I'm screen casting, if it'll pick up my voice or not. But basically, this allows students to speak their math into the computer, and then it renders that into digital math. So let me try this. Y equals $3x$ minus $4y$. OK. So you can see that that showed up right over here, y equals $3x$ minus $4y$. And I can just insert that there. So boom. There it is.

All right. So the other nice thing is that your student, even though they can increase the font size, obviously, but they can also use their built-in accessible features. So if they're using Zoom on a Mac computer, or they're using a program like ZoomText on their Windows machine, they can zoom in on things and look at them as closely they need to get that visual access.

And the other nice thing as well is-- I can't show you this because I don't have Read Write, but you can actually have Read Write read you the math that you've typed. So you actually can get that auditory piece of things if you can visually go up and click on a play button, it will actually read it through to you so that you can kind of check it to make sure you're not making any visual errors. So I'll insert a video of that below this tutorial, just so that you can see kind of how that works as well. But it's a really nice feature for, again, those students who just need the auditory confirmation that they've typed everything correctly. But again, have the vision to be able to go up and click on a button at the top of the screen.

So that's kind of the down and dirty, quick, getting started with using EquatIO in a Google Doc. What I've found is that this experience is most successful if the math teacher is willing to generate the document using EquatIO first, and then share it with the student, and then have the students input their answers. It works, the way that I did it, which is essentially like writing down your answers and then you can share the Google Doc with your teacher. But the issue with not having the questions written into the document already is that the student then, is going to have to be going back and forth, either between tabs, or they work should be in large print, or under a CCTV, or something like that. And that's just a little bit more work for the student.

So from the teacher side of things, you could go through and generate a worksheet for the student. And then they could just go in and just type their answers so that they don't have to do so much going back and forth. So I have found EquatIO really useful. Again, especially for my kind of high flying, high school students with low-vision, who think that they're seeing everything that everybody else is seeing. And guess what? They're really not. And they're making little computational errors they have nothing to do with their conceptual understanding, but just have to do with their visual access in the math classroom, which often has even more visual demands than other classes.

A lot of these students look like they're doing fine in their English language arts class and things like that, but all of a sudden you put them in the math classroom and they're just making these little errors that you can only really boil down to, oh, they're not seeing it. So thank you for checking this out today. If you have any questions, please do insert them below. I hope this quick, easy tutorial was helpful.