Transcript from Teacher Chat:

Bringing Computer Science to High School

K. Gaier Evans: Welcome. We're excited to have Anne here today to talk a little bit more about the Computer Science Principles program and her experience. Unfortunately, we won't be joined by Maria today. She had a bit of a family emergency come up, so we're sad that she won't be able to join us, but excited to be here with Anne. Anne, if you don't mind sharing just a little bit about what you teach and a little bit about the type of school that you teach in.

Anne Trachsel: Hi, my name is Anne Trachsel. I teach at Reynoldsburg eSTEM Academy. Reynoldsburg is a suburb on the very far east side of Columbus, we're just outside 270. It's a mostly suburban location, bordering on some rural, but mostly suburban locations, with a really diverse population, which is one of the reasons that I like the school. We have students who are local, we have some international and a wide range of students in our school.

K. Gaier Evans: Excellent. Let's talk about how you're offering computer science to your students.

Anne Trachsel: I teach computer science both on a yearlong regular block, and I also offer it double block semester style.

Anne Trachsel: Can I say just one more thing about the academy situation? In Reynoldsburg, students choose one of four schools within a school and so that's where they will spend their high school. Now, next year that will change a little bit; the freshman will all be in the same place for a first-year experience and then they will go on to their other academies. My academy is eSTEM, which is an environmental flare for academy kinds of things.

Anne Trachsel: Our student body ranges from students who have learning struggles to students who are gifted and everything in between. It's a really diverse group of people.

K. Gaier Evans: Excellent. Then you talked a little bit about how you're offering computer science to your students. Can you talk a little bit about what Computer Science Principles in particular entails?

Anne Trachsel: Okay, so Computer Science Principles is one of my favorite classes to teach. It's a survey of a lot of computer science topics. We talk about how the internet works, we talk about how data is stored inside the computer, how an image is stored. Black and white, and color, and about compression with respect to prongs and grooving.

Anne Trachsel: There are two programming units and then there is a unit that talks about big data and security. We do a little cyber security, some kind of things about how you can be secure, how you can use different ciphers and things to keep that security up. The curriculum is wonderful, it's interactive. We do a lot of things with some very cool online tools and one of the others things that I really like about it is, based on what the students interest is, they have a lot of choice in their project of what they can put together.

K. Gaier Evans: Excellent. It sounds like it gives students a pretty broad understanding of all the different kind of sub-fields of computer science.

Anne Trachsel: Yeah. Computer science, a lot of people think of as just programing when they think of computer science, and programming is an important part of computer science, but it's not all of computer science. Even someone who works as a programmer probably spends a lot of their time doing other things. Talking with the customers, figuring out what the requirements are. This lets you have a little broad view of some of the things that are involved in computer science.

K. Gaier Evans: Awesome. What has been the most challenging part of implementing Computer Science Principles?

Anne Trachsel: I think with a lot of classes, the challenge is, you have a lot of different kinds of students who walk through your door and you want to give them all a really great experience. I have students who have never had a computer science class before and I have students who have had a few computer science classes before. You want to try to meet them all where they are and help them move forward.

Anne Trachsel: This curriculum really helps with that because it's so interactive. The lesson plans include extensions, so if there are students who come in with some different experiences already, it gives you some ideas of places you can go and ways that you can help them to learn new things, while you're still helping the students for whom it's still brand new, so that nobody feels lost and left out.

K. Gaier Evans: Awesome. Can you take a moment to step outside of your classroom a little bit and tell me a little bit about your background and what the professional learning program through Code.org was like for you?

Anne Trachsel: Okay. My background in a nutshell, my degrees are in computer science. I did work as a computer science programmer quite a while ago. I went back to school to get an integrated science teaching certificate, so that's my teaching certificate 7 through 12. But to teach Computer Science Principles, you do not have to have a computer science degree.

Anne Trachsel: Professional learning was marvelous. The Code.org professional learning is such a great, fun experience. It's very supportive. You get a chance to see how the system works because the facilitators first will show you how to teach some of the lessons using the curriculum. Then over time, then you'll get a chance to teach the lessons themselves. Part of the time you're acting the role as student, which can be fun because you get to experience the courses from the perspective of the student, and we really can have fun with that when we're the teachers in class being students. Then you get to work with another group of students to teach parts of a lesson together using the curriculum. All the while, there are facilitators there to kind of guide you through that process and then afterwards, you debrief. You say, “Okay, this is how we do this with our room of adults. How would I need to adjust this for my set of students? What could I take away from this for my group of students?"

K. Gaier Evans: It really, I believe, emphasizes when you're doing some of those debriefings, thinking about your class of students and how do we make sure that we're creating equitable experiences for all the students in our class?

Anne Trachsel: Yeah. Equity and inquiry are a big part of what we do. Even from the way the curriculum is structured. Computer Science Principles unit 1 is the internet, and that's intentional because a lot of times if students have had a computer science class before it's been a programming class. By starting with the internet, we start with a topic that more students are unfamiliar with, so it's kind of more of an equalizer. Everybody is more in the same boat.

Anne Trachsel: We do a lot of really interactive activities. Code.org curriculum includes a lot of online widgets. There's your internet simulator, which is scaffolded. When you first start it's very simple. Then as we work with the students on the different concepts, the internet simulator also gets a little more complicated. The students are really engaged because there's the interactive activity. We'll talk about an activity first and then we will talk about the concepts, and then we might bring in the technical vocabulary. It's a more equitable thing. That way, students say, “Okay I understand what this is," before you then throw terminology at them that might of otherwise have intimidated them.

K. Gaier Evans: Excellent. You mentioned your experience with the professional learning program. Your background is in computer science, but that there are a lot of teachers that come through that don't have that same background. How do you think those teachers would manage the workload of both a regular classroom, responsibilities, we know that that teachers are very busy, while also completing the professional learning program?

Anne Trachsel: Well, I've talked to several of them because I was curious about that and you can end up taking the role of, "Lead learner," as you're going through this curriculum. It's designed for the teacher to be more a facilitator. You're a leader learner. Part of the curriculum is new to you as the teacher. It's fine. It's set up for you to be learning along with the students. As far as managing the workload, the lesson plans are very complete. If you wanted to, you could follow the lessons plans exactly through the curriculum and you would not have to do a lot of developing of things on your own. It includes assessments. It's matched to standards, so it's really useful that way as well.

K. Gaier Evans: Excellent. Then finally, what advice do would you have for a teacher and/or a principal who was considering offering this to their students next year?

Anne Trachsel: [00:09:00] I would tell them, "Please, go ahead and do this." It is a great opportunity. The curriculum through Code.org, and the professional learning that goes through Code.org is a lot of fun. It's a very warm and supportive environment. You will get to work through a lot of the curriculum. You'll get to see a lot of the really cool videos.

Anne Trachsel: One of the things, with respect to equity in the videos with Code.org, they've made a real emphasis in making sure that the people in the videos look like the people that we hope are in the classes. Everybody who's watching the video should see someone who looks like them in the videos at some point, and the tools being interactive is really helpful too. There are usually places where you can get a little tutorial if you need to, but if you don't, you can keep on moving forward.

Anne Trachsel: I would also tell them to not be concerned if you don't have a CS background because there's a lot of support there. It's not just a week in the summer. You also have four Saturdays during the year and those are set up to help you at different points in the curriculum. We hope that when you see the teachers, right about the time that they're teaching a certain unit, that's the time they'll come in on a Saturday and get their questions answered, and we'll still get to see some of the information.

K. Gaier Evans: Excellent. Computer Science Principles can be offered as an AP course, and we encourage teachers to offer it. It can also be an introduction course. Teachers do have a choice, especially if you're at a school who doesn't typically offer AP courses. What is the AP experience like for you and your students?

Anne Trachsel: I actually teach students who are taking this for AP and students who are not taking this for AP within the same classroom, so we have both. It works pretty well, it works very well for both kinds of students. Typically, we will cover the same material. Students who are taking it for AP, they need a different sort of rubrics, for example, than the students who aren't. Is your question how students react to the AP or I'm not sure if that's what you want me-

K. Gaier Evans: No, I think that's wonderful. Also, maybe elaborating a little bit on what the AP exam looks like for them.

Anne Trachsel: Okay, sure. For Computer Science Principles, it's pretty unique. There is a 74 question multiple choice, two hour exam, and that's the one that's on May 10th this year. In addition, students do two projects ahead of time. One is a programming project called, "Create," where they're going to design, debug, and write about a small programming project that they do. The other is a mini research project called, "Explore," where they will explore a computing innovation, how does it work with data, what are some advantages and disadvantages, and also answer props that go with that.

Anne Trachsel: Those two sets of responses then are put in a digital portfolio. Whereas some AP exams have a multiple choice part and also a short answer part, this one has a multiple choice part on the exam day and then the two other pieces that are done ahead of time. Which I really like because it gives the students a little less pressured situation to show what they know for the programming project and for the research project.

K. Gaier Evans: Excellent. Thank you. Then earlier, you mentioned the videos, etc., showed a lot diverse role models for students and one of Code.org goals, and in our partnership with Mattel, is to get computer science out to all students, but especially those that are traditionally underrepresented in computer science, so females, underrepresented minorities, etc. What does your student recruitment look like? How do you recruit students into your class?

Anne Trachsel: Okay, so our classroom is, we have a pretty diverse classroom, which, as I said, is one of things that I like. We have students in different pathways. Some students will come into my class because they've chosen a digital pathway and it's a course there. I also had students who've heard that it's class that's fun and so they'll say, "Mrs. Trachsel, I'm signed up for AP Computer Science Principles next year." I would say, "Hooray."

Anne Trachsel: Because of the interactive nature, as I said, there's a lot of cool widgets the Code.org has put together, and in the App Lab itself students, can program either in text mode or in block mode. Which is a big advantage, if someone is learning, that they might be a little bit intimidated by the syntax. They might be able to do the computational thinking, they might be able to put their algorithms together, but if they can work in block mode, then they don't have think about the syntax right away. Then I have other students who will say, "Okay, I really like to work in text mode," and then they can do that as well.

Anne Trachsel: I know I kind of got off your question but I get really excited about this because it's such a cool class to teach.

K. Gaier Evans: No. I think that that's a wonderful example of how you can differentiate based upon the previous experiences that students have in a way to create equitable learning experiences for students.

Anne Trachsel: Exactly. Exactly. We want to try to differentiate. This is set up really well to differentiate for all of our students.

K. Gaier Evans: Excellent. Anything else you want to share before we wrap up our 20 minute teacher chat?

Anne Trachsel: I would just encourage people to go ahead and sign up for the summer Code.org seminar for Computer Science Principles. If you're in high school or in computer science discoveries, if you're looking more through an aged grade 6-10, whereas Computer Science Principles in 9 through 12, come on, sign up. Have some fun. We have a good time in the summer. You'll learn a lot, your students will learn a lot, and as we know, computer science is a part of just about any interest area, so go ahead and join us. It's a lot of fun.

K. Gaier Evans: Excellent. I'll follow that by saying, if you know a teacher or a school that this would be a good fit for, please feel free to nominate that teacher or school. You can go to www.osln, stands for the Ohio STEM Learning Network, so www.osln.org/code.

K. Gaier Evans: With that, thank you so much Anne. I really appreciate your time today. If you have any questions, please don't hesitate to reach out to us. Thank you.

Anne Trachsel: Thank you. I love talking about it.