Details

How to Make Computer Science Standards Fun with Laurie Guyon - 153
In this episode, educator Laurie Guyon joins to discuss how to make computer science standards fun in any classroom. You'll hear tools, activities, and strategies to incorporate computational thinking, STEAM, and coding with students of all ages and across subject areas!

Link to live show notes: https://classtechtips.com/2022/03/08/computer-science-153/

Introduction

Hello there and welcome to today's episode of the Easy EdTech Podcast! If we haven't met before, my name is Monica Burns. I'm a former NYC public school teacher and I've been out of the classroom for a few years leading professional development for teachers, and writing about all things EdTech on my blog ClassTechTips.com

A quick reminder — head to my website classtechtips.com/podcast for all of the show notes and resources from today's episode, and if you're listening to this episode on a podcast player like Apple Podcasts, Spotify, or Google Podcasts, you should see a link in the description that you can click on as you listen today with the show notes and all the resources mentioned in today's episode.

When you go to the podcast page on my website, ClassTechTips.com, don't forget to check out the "Free Stuff" section full of graphic organizers, ebooks, and more goodies you can download instantly.

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Today's Intro

This week's episode is titled: "How to Make Computer Science Standards Fun" and I am so excited to have Laurie join me on the podcast today. As you'll hear in our conversation, Laurie and I first As fellow Nearpod Pioneers we were both ambassadors to of the Nearpod program and connected on Twitter and have spent lots of time together at events especially in New York state including the nice gape conference one of my favorites to go to Every November and you'll hear the term NYSCATE brought up a couple times today this is the

New York ISTE affiliate Laurie's connected with them and I sat in on her session this past November all around the computer science standards. If you follow me on Twitter you might have seen me even tweeted out a few pictures from the session and I reached out to Laurie not too long ago and said can you join me for an episode of the podcast I wanna talk all about the activities and the ideas you shared because I know the idea of computer science and computer science standards can feel a little intimidating at times. And if you are someone who is in a coaching role or you're working with Educators who teach all different types of content areas, I am confident that this episode and this interview with Laurie will give you ideas to bring back to the Educators you support hopefully making computer science seem less intimidating and more accessible for them. And if you were in a classroom this year Laurie shares some great ideas especially around vocabulary use that can help connect to goals more generally around computer science. So really excited to jump in today before we do a quick reminder that you can access all of the links and everything that Laurie talks about in the show notes for today's episode. I have a feeling you're going to want to bookmark that page and come back to it over the course of the school year.

Episode Transcript

Monica Burns:

Welcome to the podcast today. I am so excited Laurie, to have you on to talk about this topic of making computer science standards fun. But before we jump in, can you share a little bit about your role in education? What does your day to day look like?

Laurie Guyon:

My name is Laurie and I am the coordinator for model schools at a BOCES, upstate New York. We cover five counties, , 31 school districts. And my role really is professional learning around integrating technology in the classroom.

Monica Burns:

Awesome. And, you know, as I mentioned in the intro, , we've known each other for a while now, the, through all sorts of New York things, whether it's nice gate, right, or, or New York events, and of course through work with near pod and, and other different groups. So, you know, I sat in on your session at nice gate in November, all around computer science. And so I'm so excited to have you come on today to chat about this top. It's not the first time we've talked about computer science on the podcast, but can you help us just unpack this a little bit? Right. What does the term computer science exactly mean? What does it encompass when we use this term?

Laurie Guyon:

Yeah. Computer science is kind of a big term. A lot of times people think of it just as coding, which is a part of it, but really computer science is the study of computers and anything that happens to be around computers. So it's algorithms, it's the hardware and the software. It's how you design different applications. And it even is the impacts of using the technology, how it fosters, you know, maybe learning or, or, , excitement for people. And even we have to think about some of the other sides of it too, that the not so great sides when we're talking about computer sciences, what are the impacts both positively and negatively. and really computer science does foster a lot of things that we really wanna see in the classroom, like problem solving, creativity, designing that critical thinking. , we really want our students to be actively creating. We don't want them to just be of technology and computer science really can encompass all of that.

Monica Burns:

And I think it's so important to consider those pieces. You mentioned, right around problem solving around creativity and, you know, and the algorithms or, or different types of sequences that you might find or patterns you might find in other parts. I know, you know, when it comes to knitting right, and you're following right. The different types of stitches and they're in an order for a reason. And if you, you know, skip a stitch or something happens, right. Just the same way we might think about coding. So I know, you know, when we talk about this idea of computer science, it can mean a lot of different things and a lot of different environments. And so knowing that there are computer science stand nerds, right. And jumping into this idea together of how to make computer science standards fun. Right. What exactly do the standards look like in computer science? Are these state based standards or national standards?

Laurie Guyon:

So there there's actually both, , there are some states in our, in our, in the, in the United States that have actual state standards, New York being one of them, there are, ones that are Countrywide, , with the CSTA, which is the computer science teachers association. They have their own set of standards. Their standards are more on the overall or are overarching thoughts of equity and professional growth. the design and how it looks in the classroom, the New York state standards, however, a little bit more granular. They're really looking at, , what it looks like in the day to day in our classrooms. , the New York standards have five concept areas that are broken down in the, into even more sub-concepts, but the five broad areas are impacts of computing. So you're thinking about what are the ethics, what is, what is the impact on society?

Laurie Guyon:

, what are the career opportunities with the impacts we're talking about computational thinking. That's really where we are talking about algorithms and coding and understanding sequencing. , we're talking about and systems design, where we're talking about the, , the way that computers have input and output, where is data stored cyber security, which is a huge one right now where we're talking really about, how it impacts us, you know, with using passwords and how to be safe online, and then the biggest other part or the biggest other part of computer science is the digital literacy thing where we're talking about how to be safe online, but from how we can be a global impact or how we can make a positive, , impact on how we are in our digital spaces. So, and, and it also has to do with our use of, of technology. What are we doing when we turn on the computer? What are we doing when we pick up our phone and how are we interacting with those devices? And that's really what the standards are looking to do is to really make sure that our students understand how to use technology appropriately, how to really use it, to make an, , a really positive impact and really to think about like how, how it, it impacts each other within the classroom and within the, in our world.

Monica Burns:

So, you know, all of these things are, are big, right, and broad and encompass a lot of pieces, which is why I'm, you know, when I sat in your session a few months ago, I was excited to see them broken down in a way that felt much more digestible, right? Even a term like cybersecurity is pretty massive, right? Let alone some of these other pieces on, of computing and digital literacy. There's just a lot there. And so, you know, I will, of course put a link out in the show notes so people can find these standards. Cuz you know, I grew up in New York and went to school in New York and taught school in New York. Right. But I live in New Jersey now and work in different many different states. So, you know, knowing that there's a great example of a state that has pretty robust standards, even if you're not in that state, it's always nice to know that you can access those resources and use them for your own planning and, and kind of thinking through what it might look like, you know, to put these in action. And so, you know, one of the things that I know has come up in conversations and I'm glad that it's more than just that first week in December. <laugh> when it's like the hour of code kind of week, right. Are the types of activities that you can do to really make computer science, fun and engaging and accessible for every student. So I'd love to hear about some activities that can help make computer science fun.

Laurie Guyon:

Sure. Yeah. I, I think it really, when you think about computer science, you wanna think about those key elements. You want it to be hands on, you can't teach computer science in a

traditional classroom. It really needs to be something that students are collaborating with. They're working together. They're not thinking about the failure because computer science really allows for that. I mean, think of debugging, for example, I used to teach sixth grade English and I would tell my students, we, we're not going to edit our essays. We're going to debug them because in order for the reader to understand it, they have to be able to make sure that the sentence structure or makes sense. And when you're talking about coding, coding sentence structures or the syntax is exactly the same is how we actually, , create our sentences. , there are some countries that actually use coding as a way to teach English because it does follow that same pattern where you have to have a subject and a predicate.

Laurie Guyon:

so really when you're thinking about those activities, you're thinking about what is, , what is important to making to make sure that our students are doing things that are hands on. some of my favorite when you're talking about even without any technology in the classroom, you mentioned knitting, that's a great one, any kind of thing where you're following a sequence and a pattern recipe building is big on that. origami is another great one, any type of sequence in games where you might have, , the students maybe line up in different ways in the, in the younger, with the younger grades where you say art, we're going to line up by color or by height or, you know, by birthday months or whatever, you're talking about building that sequence, any type of career exploration, bring back those days where we're bringing in experts from the field through Zoom, you could do this so easily where you have, , people come in and talk about what it is they do exposing our students to these opportunities.

Laurie Guyon:

there's a great, and you can, and we, we should put it in the resources. I hadn't thought of it, but, , Flipgrid has a great one. It's a, I think it's a thousand women in STEM is what it's called. And it would be a great one to, to, to take a look at because these are doing these amazing careers and they're done in these short little snippets to have students do exploration. So that's a really great, , activity. And then really any kinda building, I mean, if you have Legos or if you have, , straws or you have any kind of little bits, anything along those lines where you can have the students build and create where they're thinking about being inventors and creators, you can really teach the concept of, of computer science that way. as far as robotics, I'm a huge fan of Sphero.

Laurie Guyon:

I think those little Sphero balls, you know, the bolts are absolutely amazing because they can be used in any grade level. They're completely accessible. You can drop them, you can put 'em in water, you can paint with them. There's so much you can do, , for any age level. And then

now they have the Indy, which is for the littles, , which is also great because it's through colors and shapes that the, , that the students can think about how they're, , how you would put something in a sequence to make something happen. So I think, think those are the big things you have to think about. Is it, it's fun for students because it's hands on, it's fun for students because they get to explore and they get to, , spend time talking things out. There's less fear of failure, which I think is super important. So I think that computer science in and of itself can be fun. And, and I think it is very accessible for our littles.

Monica Burns:

I just, I really like too, the connection you made to English language arts classrooms, right? Even some of the language you might use over the course of the day, right? The debugging, as opposed to editing, right. Using some of those words inter interchangeably. So students can see the contexts of how you might bring in some of that computer science vocabulary and having someone pop in, right. For a Zoom call for 10 minutes with your class, right. To answer some questions just to let them know about what kinds of careers they might not think of that are encompassed in this kind of bigger, broader term of computer science is so interesting. And, you know, I'm sure Laurie, you've just heard. Cause I feel like, you know, once a week on a podcast, someone mentioned about, you know, careers in cyber security being such a needed area or growing area, or like that's what you should tell your high school child to look into.

Monica Burns:

Right. If they wanna have some job security themselves, right. Moving forward. Cause there'll be a lot of work happening around cyber security, you know, in the, for the next generation. So, you know, there's a lot of different angles that you can take here. And you, you mentioned as you were going through some of these pieces, , the younger students, right. And, and some of the different things that, that could look like, so how might, you know, how can we introduce these standards in the younger grades when kids might not be looking at a screen or coding something the same way we would think a middle school or a high school student might be.

Laurie Guyon:

Yeah. It, it's interesting. When you go into the younger grades, the students have less fear of failure. They really think that they can do it all. So if you go in and say, alright, inventors are alright, coders, they're ready. They're they think of them in the, they think of themselves in that way. I was just in a first grade, , class when we were introducing ScratchJr. And, , the teacher was very concerned that the students would really need handholding on how to use the program, how to understand how to do it. And, , you know, in just a couple minutes, I, I

looked at the students, I'm like, you're really getting this. Like they were moving faster than I expected them to. And they're like, oh yeah, we did this a little bit last year. And I it's having that exposure really helps them out.

Laurie Guyon:

Plus it's intuitive. It really helps them, , kind of figure it out. They're ready to explore. They're ready to try it out. You don't need that guided lesson as much when you're doing things like this, where you can just say, you know what, we're going to, , practice what are loops today. Here's, , some, you know, two minutes on what a loop is to have that discussion and then set them free to explore it and they'll figure it out. They really, they really wanna help each other, , you know, in a computer science type of classroom or when you're doing computer science activities, especially with the littles, you're going to find that the students get really excited very quickly. They're, they're not going to stay in their seats and that's okay. They they're helping each other out. They're, , they're getting up and, and exploring what somebody else did, , and they wanna showcase what they did and you can create so super fast.

Laurie Guyon:

They can have very quickly success, which is wonderful too. so yeah, ScratchJr, definitely a great one. , I worked with, , young with first graders with Indy. I just, I walked into the classroom, I handed the mats to them and, and I said, here's how you turn on the robot. Figure it out. That's the only direction I did. And again, within 10 minutes they had created their own mazes. They had discovered what each of the different colors did. They were able to explain how the sensors worked on the robot. It just was an incredible experience because the students were able to do all of the work. again, going back to, , having them design something like, , a, a playground or I have a, a group of students right now that are working on building an outdoor classroom. And they're, they're starting at kindergarten to start to think about that design.

Laurie Guyon:

And they're, , they're building different objects with paper and, you know, with construction paper and cardboard, and then they're going to 3d print the different pieces, and then they're going to be able to bring it to life. Those types of things can be done when you're talking about that process at the younger grades. So, yeah, and, and I mean, a real simple one is having the students. We always give out jobs to our students, right. They have the line leader, the paper collector, and all of those things have a textbook, have somebody that that's in charge of when not working. Right. I'm gonna ask this person first, before I ask the teacher, it's a great way for them to start to think about how to troubleshoot and problem solve, which is totally computer science. Yeah.

Monica Burns:

And I think, you know, just as you were talking, I was imagining right. All the students on the floor with their maps. Right. All of those pieces, right. Talking things out, working together. Right. And you know, this year, especially, there's been a lot of emphasis in a great way, right. Around social, emotional learning and making sure students have that FaceTime right. With their peers that they're, you know, going through these different decision making processes and all the things we would look at at the CASEL framework for social, emotional learning. And, you know, that's something that happens when provide these hands on learning experiences. So I'm, I'm so glad that you mentioned that. And, you know, as we think about standards, there's probably people listening in today that have a list of standards that they're working off of already. Right. They might look at the ISTE standards. If they're in a technology focused role, they might have state level curriculum standards for their math or ELA classroom. So if someone's listening in today and is thinking, I can't take on one more thing right. Or, or feeling a little bit like, you know, they've got a lot going on, how can they use the computer science standards we're talking about today in cross-curricular learning experiences, you've mentioned a couple, but would love to hear a few more ideas to add to our list.

Laurie Guyon:

Absolutely. I think when I first took, took a look at the standards and as they were being developed, the big thing I noticed was it's the vocabulary it's building that common. That's going to be the foundation. So doing things like saying we're going to debug instead of edit, help, helping the students understand, what the vocabulary is. So instead of saying, we're going to line up, you say our algorithm today. So it's starting with those, those foundations, , is really going to help, but really teachers are already doing a lot of what computer science is in the classroom. We are already do sequencing activities. We have students take polls and build charts and look at data. We do compare and contrast activities. We have them edit. We have them, , look at their sentence structures. We, we, , have them break down, math problems like right.

Laurie Guyon:

We decompose them. And then we rebuild them. We, we do games like Madlibs, which is to abstraction. So you're already doing those computer science terms on a very regular basis. , in dance class or in music class, you can have them choreograph a dance. That's an algorithm, , creating your storyboards. That's a, that's building that sequencing of coding. , anything along those lines, pattern recognition. We, we all often talk about the patterns of the or snowflakes or, , butterfly wings. Those kind of things can, , really talk about that pattern

recognition, which is totally computer science. There's just so much you already are doing, , in the classroom that this isn't a bigger, it's not another thing it's just maybe changing the vocabulary around it so that students are seeing that potential. And maybe, , instead of doing a research project on, , animal habitats, mm-hmm, <affirmative>, it might be research project on animal habitats and, , looking at how we can use virtual reality or artificial intelligence to support the needs of those, the, that habitat or those animals.

Monica Burns:

Oh, I love that idea of layering on these pieces to those foundation. That's already I else, right. In the classroom to the things that are already part of the commitment when we're looking at just curriculum goals and, you know, Laurie, this is so helpful and I'm gonna link out to a lot of resources for listeners so that they can learn more about all of these pieces that we've talked about today, but where can people connect with you? Where can they learn more about your work?

Laurie Guyon:

Yeah. So I'm very active on Twitter. I'm @SmileLearning. That's probably the easiest way. I'll share my email with, with everyone as well. I would definitely check out the, , if you're in New York, there are free courses that are available on NYSCATE, that are for computer science and digital fluency. I created those courses. You can get 25 CTLE credits if you take them, they're free. , for anyone in New York, we actually NFT is actually looking to put together an event in June on the standards. So it's something to keep an eye on, on their website for information on that, there is a website that's been put together for these standards, , that a bunch of us around around the state have put together. It's called CSforny.org. That website has a lot of resources, activities, and ideas. And I've been putting together these books on Book Creator for computer science and digital fluency. And I've fortunately, I've gotten some others to help you as well. , so it's become a collaborative statewide project on, you can do in your classroom to try to make these standards pretty accessible, and those are live documents. So, , you'll have access to them. And then if you ever have questions, all of my information is in the books as well.

Monica Burns:

Perfect. Well, thank you so much, Laurie, for your time today, I'll link out to everything so everyone can find these resources and help make computer science standards fun this year.

Laurie Guyon:

Thanks. So.

It was so much fun chatting with Laurie today, let's finish up this episode like we always do…

So let's make this EdTech easy…

First, review your local computer science standards.

Next, reflect on how you're already addressing these standards.

Then, introduce a hands-on activity.

Finally, include computer science vocabulary in your next lesson.

Remember, you can find the shownotes and the full list of resources from this episode including all of the ways to connect with Laurie Guyon on classtechtips.com/podcast and finding today's episode #153!

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Outro

If you have a moment to leave a review I would super appreciate it! I read every single review that comes through on the different podcast platforms. I keep my eyes peeled for any questions that come in there, too. So if you have a moment please leave a star rating or type in a quick review. Not only do I appreciate it so much, but it also helps boost the podcast in search engines meaning other educators will find it when they search for EdTech tips.

Episode Resources

- Connect with Laurie Guyon on Twitter
- Check out Laurie Guyon's NY CS/DF Books (Activities and resources for the new NYSED digital fluency and computer science standards)
- Free for NY Educators NYSCATE Asynchronous courses
- Computer Science Standards for New York

- BOCES of New York State
- Computer Science Teaching Association (CSTA)
- ISTE Standards | The Leader in Edtech Standards
- CASEL (Collaborative for Academic Social and Emotional Learning)
- NYSCATE (The New York State Association for Computers and Technologies in Education)
- Nearpod (Student engagement tool)
- Flipgrid (Video discussion tool)
- Sphero Education (STEAM resource)
- ScratchJR (Coding tool for young kids)
- CASEL (Collaborative for Academic Social and Emotional Learning)
- How to Incorporate Computational Thinking in Any Subject with Jorge Valenzuela (Podcast Episode)
- How to Bring Coding Activities Into Any Classroom (Blog Post)
- Teach Coding to Elementary Students with an Adventure Course (Blog Post)
- Cyber Robotics Curriculum for Coding and STEM Skill-building (Blog Post)
- KOOV Trial Kit for Hands-On Classroom Coding, Robotics, and Design (Blog Post)
- Coding in the Classroom with Avokiddo Apps for Kids (Blog Post)
- From Screen to Robot: Engaging Students with Interactive STEM Education (Blog Post)