Megan
Good afternoon everyone, my name is Megan, I'm a marketing assistant here at PCS Edventures. And we're super thrilled to have you all here today. People are still kind of logging in so we're going to give them a few minutes to kind of get settled, and then we will shortly get started.

Alright I think we are ready to go

So first off, again, I want to say thank you all for joining us today for our 2020 STEAM Buying Guide, sponsored of course by PCS Edventures. Before we do get started, I want to go over a few housekeeping notes.

Today our webinar is going to be recorded and it will be shared within three days of the webinar. We're going to cover the video presentation, the slides, and of course any handouts that we have, those will be shared with you. Everyone today is going to be in listen-only mode, and then towards the end of our presentation we will have time for questions. If at any time you have a question you want to ask, feel free to use your panel on the side and submit those. I'll be keeping track throughout and when we get to our question time I will inform our panelists.

So as we kick off, a little bit about PCs adventures and who we are. We are a curriculum development company based in Boise, Idaho, and we've been around since around the 1980s. Originally known as Pat's Computer School, PCS for short.

We kind of started off as an after-school computer program and then eventually we grew to a network of learning centers throughout Idaho, Washington, and California. Today we offer solutions for learners in grades K - 12 in more than 7,000 sites around the world, and our learners are really involved with hands-on projects that fuel that passion for learning and a lifelong love of STEM.

Who we serve: we do serve K - 12 classroom educators, after-school and summer programs, libraries and maker spaces, and of course clubs and youth programs such as FAA, the Boys and Girls Clubs and 4H.

So for today's event, our moderator is going to be Sonia Galaviz. She is going to be an award-winning fifth-grade educator.She has worked with PCS Edventures as a curriculum consultant, and she is the In-District STEM coordinator as well. She is the recipient of the 2017 NEA Excellence in Education Award as well as a 2011 Culturally Responsive Teaching award.

Sonia, we are very honored to have you here today, and without further ado, I'll hand it over to you and I'll let you kick us off.

Sonia

Thank you so much. I'd like to welcome all the attendees to our webinar. I'm excited to be with you here today.

I'm an educator 17 years in public ed, and have been very fortunate to develop a great relationship with PCS.

The agenda for today: we're going to take a quick look at top-sellers from PCS, which all of the panelists here today, we have personal experience in using them so that's exciting that you'll get a first-hand account of what it's like using and the benefits of.

I'll introduce the amazing women that we have here today, and it's no mistake that we have female educators and female STEM coordinators here today so they bring a unique perspective in connection with PCS products. We'll talk a little bit about the importance of STEM and STEAM in our particular learning environments, and of course the larger context of STEAM education and what to look for in a quality esteem program and how PCS can support that.

And we will leave some time at the end to make sure we're answering questions from attendees and then we'll talk about the answers after we're all done here.

So, the Buying Guide -- the 2020 STEAM Buying Guide, they have added some new additions which I'm excited about. I am thrilled to hear about the new drones. I'm a fangirl of the PCS drones.

So here you see that BrickLAB, I think BrickLAB is something I first thought was like my gateway entry to PCS materials. So BrickLAB is a classic PCS. They have Enrichment Programs, their Discover series, and their Drones that I'm really excited to hear about from our panel today.

So the beginning, the first iteration of the drones programming was Ready, Set, Drone! all the way to the new program which is Drone Designers we'll hear about. And then of course the Discover Coding with Drones, which is really exciting.

Sorry it took a little bit for my slide. So I am thrilled to introduce our guest educator panel. Our first educator is Kim Turner, and she teaches 4th and 5th grade. She's a GATE teacher and Gifted and Talented teacher all the way from Missouri. She's online with us.

We also have Nikki Servatius -- did I pronounce that right, Nikki? Did I do it right? Ok thank you. She is a math and computer science teacher about 30 minutes away from Boise in Nampa, Idaho.

And then we also have with us Melanie Schrader, and she's also a GATE teacher, Gifted and Talented facilitator and leadership teacher in Hailey, Idaho, which is just north of us. A lot prettier than it is here right now! We're glad to have her with us as well.

So I will let each of the panelists give us a little bit more background and their connection to PCS.

Kim
Hey everyone, my name is Kim Turner, and I have been an educator since 1991, and so I'm closing in on -- getting close to a 30-year career which is really exciting. And I honestly still love it as much as I did the first day I started. I have been teaching 4th and 5th grade gifted since 2004. I've also taught in enrichment programs and in the regular classroom at the 4th and 5th grade level.

The way I stumbled upon PCS Edventures is we ended up competing in a STEM competition in Kansas City--which I have to say for a second we are in the Super Bowl, go Chiefs!

We were trying to find products because we had $10,000 to spend, and that's a lot of money in education. And I started just going out and just looking on the web and trying to get people's advice and what people have used, what's been successful, and I took a chance and invested a big chunk of money in PCS Edventures. And we are so ecstatic with everything we have purchased. It has just been an excellent addition to our STEAM lab that we were able to start, and we service 150 kids in our STEAM lab and it's the most engaging part of the day.

So I'm excited to talk about the products just because I've used them and I've seen what really worked. And I look forward to hearing from the other panelists and hear what they've also used as well.

But I love, love STEM education and what it's doing for kids. I just see the engagement. In 30 years, just it's one of the best highlights that I've had in my career, offering that type of opportunity to my students.

Sonia
That's amazing, thank you Kim. Nikki, would you tell us a little bit about yourself?

Nikki
Sure, so I am an Idaho native and I went to the University of Idaho. I did not study education. I kind of stumbled upon education through my Peace Corps service in my early 20s, and I served and was a teacher in Tanzania and like a rural, all-girls school over there.

And we had like almost nothing as far as resources went, and so I used like inexpensive and locally available materials to teach my girls all their math and STEM.

And then I started traveling around the country and putting on science conferences and math conferences for both teachers and students and I fell in love with education, so when my service was over I came back to America and I got my teaching credential.

So now I teach secondary math in computer science at an alternative school -- an alternative high school. And my students are on the brink of dropping out, and STEAM has been what has saved them and captured them and makes them want to come to school and makes them want to learn.
So I was actually — when I came back for my Peace Corps service I was the director of PCS Edventures lab so we actually ran — I ran two labs in the Treasure Valley, that was an after-school program that used all PCS products and brought students in for engaging hands-on like lab time and exploration.

And I'm still working with PCS to this day. I love every product they come out with and I can't say enough good things about them.

And I've been recently implementing drones in my classroom and with my students, and it has taken off. Students are like knocking down my door trying to get in my classes and and try these drones out. So I'm excited to tell you guys more about those experiences.

Sonia
That's a great problem to have, kids knocking down your door for drones. Thank you. Melanie, will you tell us a little bit about you?

Melanie
I have been a teacher on and off since the year 2000. I started out my career teaching biology and chemistry for the West Ada school district. Then I moved to Japan where I taught English for three years. I came back and taught middle school science for the Nampa school district and then I moved to Hailey, where I did just substitute teaching for a while while coaching track and field.

I teach the Gifted and Talented program at my middle school. I'm in the technology department so all my classes are focussed on design and the iterative design process.

And for my leadership classes last semester, I piloted the Drone Designers and incorporated a drone performance into our winter dance.

So, the reason I got connected with that is because Erika did the curriculum development for that. She and I are best friends, she's a former colleague of mine who is now at PCS Edventures.

Sonia
Thank you. Well I hope she tells us more about the winter dance, that sounded pretty cool.

So we have a very accomplished and well versed panel here today, so please send your questions and if you have something directly to ask them about a program that they run ... just send those questions in and we'll get to them at the end.

So our first question for the panel is: Why STEM? Why STEAM? Right, that's a big broad question but really looking at like what are the benefits of a STEM or STEAM program? What are those advantages, and specifically how has the how has PCS programming or materials helped you meet the demands of your particular STEM or STEAM program.

So we'll start with Kim, would you mind talking to us a little bit about that?

Kim
Yeah so when teaching in a gifted program we obviously are looking for things that are different than the regular classroom and rigor. I mean that's a word what is depth like what we want the kids to always go deeper and make it worth their while, because we are a pullout program and they leave their classroom one day a week.

And one of the things we were missing in our program was an ability to tap into the kids interests and gifts in their own talents. So we felt like we were doing a really good job in research and a really good job in hard hard math, but when it came to some of finding out what they were interested in and what they loved, we didn't — we couldn't really identify in conversation like what are their gifts and talents.

So we decided we needed to step back and really take a big look at our program and we decided that STEAM — and we do STEAM lab, we definitely add the Arts in there — would be a way to really engage our students and find out what they're interested in and allow them to explore an area of interest.

It's high engagement. When kids come in in the class first thing in the morning it's "What time is STEAM lab?" and "When we start STEAM lab?" and we go 60, 65 minutes, they literally blink and say "we've only been doing this for ten minutes" and it's been over an hour. So you think they're really just absorbed into what they're doing.

And the one thing that we really try because we want that depth and rigor is we want them to stick with one STEAM topic for a semester. So we have 30 choices and if they're gonna work in BrickLAB Physics they are delving in and they're working in it the entire semester. If they're going to work in Discover Engineering, they're in that topic for the entire semester just learning.

And then at the end they get toshowcase what they know. It's hands-on, there's a connection to the real world. I think PCS Edventures has done an amazing job trying to show the connection to the real world. So if you're learning something and Discover Engineering then you're seeing where it is in the world, and I think kids really like that. They like to be able to see what am I

learning, how does it apply to me, where am I going to see it and what am I going to do with it? And I feel like the STEAM education is taking care of that for us.

And as I said, it's just engaging. I mean, I've never had so many kids just run into class and just be like "When do we do STEAM lab?" and when we don't do it because we have an assembly or something special, it's the low of the day and we hear about it quite loudly. Yeah it's really amazing what it offers.

Sonia
Hey, Kim, before you go would you mind telling us a little bit about how that choice how student choice and their own accountability for their learning with the PCS programming and products what's that look like?

Kim
Yeah, sure. So we have a menu. And actually today was selection day for second semester and we have over 30 choices every semester. We add new choices and we actually give them a little description. It'll say you know BrickLAB Engineering it'll give a sentence this is what you're gonna do, if you were doing BrickLAB Physics this is what you're going to do, Hue Animation this is what you're going to do, and then we actually made a page with video links of previous kids' products and projects and they can click on it and see: oh if I'm doing Hue Animation or Discover Engineering or if I'm going to do — we've added CAD, if I'm doing the human science, if I'm doing Traveling Artists this is what I'll be doing.

And so we give them an hour to click on all the links explore. When they select we they get four choices we give them one, so they say their top four. They come back the next week and then we have taken what PCS Edventures has done and we have like a little menu or direction sheet that will say you know, read page seven, journal about this, build this, and so we try to walk them through it so it's more independent learning. And that way — I have three of us in our program — we can run fifteen to sixteen choices at a time.

And every day is different it's just really exciting to see. I mean, the kids take ownership, there is no off-task behavior. Your toughest kids, I mean kids that are just really having difficult times and not making it in the regular classroom, are engaged. And we can say you know, we don't see their behaviors here and it's because they are so engaged in what they're doing.

So they have the menu selection time and then we have just like a little sheet kind of looks like this that they go through and check off as they finish and complete assignments, and then we have checkpoints where we say now we want you to reflect, we want you to extrapolate out and tell us where it applies to the real world.

And so we try to just really make that connection and show them how important it is to have this firm basis and STEAM education.

Sonia
That's awesome, one last question on that, because I know I'm here with the panel as a moderator but I'm also as a teacher processing what you're saying. So do you find that the PCS materials and curriculum are still adaptable to what you're doing? Like you can update it or make changes to make it your own?

Kim
Yes and so well for instance, like CAD we bought that and it's computer-aided design. That was such a good choice for our 4th and 5th graders because we teach 2nd through 5th even though I only teach 4th and 5th. During STEAM lab, I could have a 2nd grader I could have a 3rd grader.

We we take the instructions and we do we try to just make it more like — it's very independent, but if we feel like they're going to have some trouble maybe with some difficult language, we defined some words or we break it down a little bit more.

But what I will say what I love the most about PCS Edventures is that it gives you 15 weeks. Like we can take one topic and for 15 weeks the kids can be working through that that subject area and then we have to do little work on our part to make a just more of a menu of a checklist of saying you know make sure that you -- especially Discover Engineering you've done your pulley build, you've done your lever build, you've learned about the worm gear and we just walk them through that.

And so we've been super pleased with how well the kids have been able to be independent and that's when we can run so many choices.

Sonia
Sure that's amazing, thank you, Kim. Nikki, do you mind talking to us about the benefit system or your STEAM program, and particularly because you teach a more vulnerable population. You're at an alternative school and how maybe that looks different than a GATE program, a Gifted and Talented program, or how is this similar and the PCS products or programs that you're using.

Nikki
Absolutely, so I am primarily using Ready, Set, Drone! in my classroom. I also have been using some like Ready, Set, Code! and I actually have a lot of the same thing to say as Kim.

My students are the behavior students, they were the ones that got kicked out for behavior or went to jail because of their behaviors. And I don't have classroom management issues when we are doing our STEAM programming. When they are coding, when they have the drones out, behaviors aren't an issue.

I love it because it teaches my students how to be successful in any job that they pursue. A

lot of my students are not college bound, but it doesn't mean that they don't need to know problem-solving skills and the resiliency and how to fail and learn from that failure. And that's what I think that STEAM programming really brings into the classroom, is that ability to try, and get it wrong, and then that's okay and you can try again.

And it also allows that open-endedness and that ability to differentiate. My students are all over the map when it comes to ability level, and I've noticed that the PCS material is very accessible regardless of where they're at and where their gaps are at in knowledge. So I really really enjoyed that.

And similarly, it gives them a why. My students are high schoolers and they're just trying to get through high school, and so I get it asked all the time especially as a math teacher: Why do I need to know this? Why do I need to know that? And STEM gives them the reason why, where am I going to see this in the world world, and where am I going to use it and how is it going to be helpful for me in my future.

So also using drones, drones tend to be like, I tell them that their drones are expensive. The Tellos aren't super expensive, but I tell them that they're an expensive product and they treat them with respect, they treat each other's with respect when the drones are out, because they know if they break that we don't get any more. So it's teaching them those soft skills of like how do I work in a team and how do I show respect for myself and others. So they get that time with the drone.

Sonia
Nikki, because you're teaching high school and because you're teaching you know, kiddos that may not have been successful in like a standard gen ed or high school or program, how have you found that the drones for example, either the Ready, Set, Drone! or the coding, is it sparking like an interest for career choice? Do you see them making any connections to like what they could do with those skills? That yes, it's super cool and engaging right this moment, but it can transfer in the real world?

Nikki
Absolutely, so the great thing about Ready, Set, Code! is that they are actually coding, they're not just learning like piloting skills but they're learning how to code and program the drones to fly. And I have a computer science teaching endorsement and so we talk about careers in computer science and in coding and in programming and they don't realize that they're creating algorithms and looking thinking through logic. It like masks the math, because they've all been told that they are not great at math or they believe they're not great at math. And then they code an extensive algorithm with loops and and conditionals and don't even know that that's all math.

So yeah it's it's opened their eyes to what careers are available and that they can code. So these careers that they, I think, always thought that their doors were closed for them

and that those weren't options for them, they were starting to see what is out there and what they're capable of. And they're starting to get excited about, oh maybe I could go to college, or maybe I could go to a technical school and learn something about IT or cybersecurity or things of that nature.

Sonia
Excellent, that warms my educator heart that they're speaking the language of possibility, right, through something that they find engaging, something that
they're being successful with that it does transfer. That's incredible. Thank
you Nikki.

Also on the drones, I'd love to hear from Melanie and how she's using drones in her setting, and I'm still wanting to hear how it tied into a dance, a winter dance. So can we hear from Melanie?

Yes yes, I'm just dying to know about the dance, but yes tell us why STEM.

Melanie
I think that students can tend to compartmentalize things too much, like we do English only in English class, and we do math only in math class.

And when you are actually doing science or tech or engineering and math, you really see how they all connect together. And the students then see how they all connect because they're using them all.

And so much of STEM projects are like these real-world, hands-on things that are very highly engaging, so what Kim and Nikki said, it's like ditto, that's my experience with it as well.

Even though I'm a Gifted and Talented facilitator, I serve any student who signs up for my class. So my classes are open to anyone who wants that challenge. And so I think they have behavior issues sometimes, but they tend not to be behaviors in mine because they're so highly engaged in what they're doing.

And I love that they're really career oriented, because I think too many times in the American education system, we're teaching content without the context of where is this useful in my real life. So what can I do with this. So I think there are a lot of benefits.

Additionally, when you're doing STEM projects, you're learning about how to manage a big, open-ended, complex project, and the soft skills of teamwork, communicating with others, managing yourself, being able to do conflict resolution, all of those things that researchers have found are more important for students to be successful in life than actual mastery of content.

Megan
Ladies, so we are actually getting feedback that we can't really hear.

(They work to fix the audio issues)

Melanie
Then there's a big focus with 21st century skills of critical thinking, developing creativity and skills with others. And I just find them to be open-ended, that they really challenge your highest level students and easily able to differentiate and scaffold them for those that need more support. And so not only was I always very engaged by those projects when I was going through school, I just, I have a passion for science and engineering and love bringing that in anytime I can.

Sonia
I want to make sure this sounds good. It's like magic, Melanie and I were by each other the whole time.

Yeah so from the attendees I want to make sure sound is good. Melanie and I have no problem cozying up to each other to make this happen. Sounds like everybody can hear so thanks for rolling with it.

I know Melanie's in the Sonia Galavis screen but she has her own identity still.

So, what I heard from the panelists, all of them, is that no matter what age or ability level, there's a career focus and a real world connection. I also heard that the PCS materials and programs are allowed to differentiate according to the needs of their kids. Engaging, I heard that again and again that you're having less management problems, you don't have check-out because everyone is really motivated and engaged. And then it allows to build skills not only real hard skills in computer science or with the science of even the BrickLAB but also those soft skills those 21st century skills that are going to transfer to the job in their career choices.

So that's really incredible. So I'd like to have another question to the panel. And given that context we were just talking about, career readiness, differentiate, engagement, ability to use the skills of the students and meet them where they are and beyond.

What do you look for, ladies, in a quality STEAM program? What is it, because that's a broad swathe to talk about, like I want a program that meets all of those so what are those characteristics of what you look for and maybe how PCS has met some of those needs. Let's start with Kim.

Kim
So when I was first setting out to look for good-quality programming, I wanted things that were scaffolded, so that our students, because we do like to differentiate. Kids come in all different

learning styles that there could be a basic tree, and then it could get harder and harder for students that really wanted additional challenges.

A good example would be the Discover Cubelets, they do a really good job of you know, you're gonna build this you're gonna try something on your own and then use your knowledge, and now we want you to do something completely different with that knowledge. And so I really, really like that. And that's one of the things we were looking for, was that there would be something for everyone.

Obviously, we've mentioned the connection to the real world that is so important, and they do an excellent job in the BrickLAB Architecture and then the BrickLAB Math, just saying "Where would we see this?" "Why would I even need to figure an area of a triangle?" and "Where would that apply in the world?" And so that is super important, especially for gifted kids who are meaning-motivated, and if they don't see a lot of meaning in it, they don't really want to do it. And so that was one thing we were looking for as well.

Bloom's Taxonomy is something we use in the gifted classroom. And once again that's looking at levels of thinking, and so do we have a knowledge base, do we have an understanding, and then we want you to go all the way up and be able to evaluate and create. And that is something that PCS Edventures has brought to us and has well has brought it well like it is, it's done with excellence.

We looked at sustainability of product. So when you have 150 kids every week touching your products, you need to make sure that they can withstand that type of -- those hands. And so we have been really happy with how well our products have sustained.

We wanted to know how many students could use it at once, and BrickLAB is a great one, you could literally do that with an entire class, you could do it with a small group. So we were looking for things that we could do more whole group, or we could bring it down. And like today we had someone sign up for Discover Engineering, BrickLAB Physics, BrickLAB Math, and those are going to be individual groups. But we wanted to make sure that if we wanted to it could address a whole class.

And then the other thing, and this is one thing I really want to emphasize, the independent learning versus teacher-directed. The directions are written so well that kids can go through and do more independent learning than having the teacher have to lead them through everything.

And I love and I think Nikki talked about this, about some of the soft skills. This is one thing we talked a lot about, is the socio-emotional side of STEAM is that we need to know how to deal with frustrations. Because when you work with technology, you are going to have frustrations. And so we talked a lot about what are we doing to work through those frustrations, and actually that's really helped the kid recognize "I don't have to be perfect." Because gifted kids often times

are perfectionists. I can try something, it's not going to work I'm gonna have to try something again.

The other piece of this is I think they've seen their teachers, we do a lot of problem-solving, because sometimes things don't work and we have to trust and try it again. And we figure it out with them and that's another piece. I mean like I'm learning with them. I by no means am an expert on 30 topics, there's no way I could be. And so it's just it shows the kids that, models for them that they are we're learning and showing them that it's OK that to not to know everything. So those are some of the things we were looking for. And we have felt like we have found.

And once — and so the exciting news for us is that we won $10,000 again. So after our first 10,000 we have another 10,000 we're just getting our check this week. And so we're going to be able to purchase more materials and this is like on top of our list. And I know people who are tuning in I mean this is we're not being paid to say this. This is the real deal, like this is, they are a good product.

Sonia
That's incredible. Thank You, Kim, I appreciate you guys. I was listening to you and things you look for in a program and I saw Nikki and Melanie and I nodding, because we've all been there, right? We're in that boat where we need to get the most bang for our buck, right. Because $10,000, that's an incredible grant, a lot of money as you said in education, but we have to make it last. We have to make that money stretch in that quality product that you can still make it my own, that is still has opportunity for kids to really drive their learning but that it builds that community of learners was what I heard you saying. So thank you so much.

So Nicky, I'll ask you the same question. What are you looking for in a great program and how has PCS helped you with that?

Nikki
Absolutely, so I have to make sure that I'm hitting my standards, first and foremost, like as a math teacher. and I love that PCS products are aligned to standards. It makes my job very easy as an educator, and it gives me the confidence to know that I'm not just giving them like something willy-nilly, I know exactly what the objectives are and what they should be getting out of the program. And so as a teacher that's really really important to me.

I love that they have their comprehensive in teacher and student materials. A lot like what Kim was saying. Sometimes as a teacher we're pretty timid about buying curriculum for our classrooms because we are not experts, and as teachers we feel like we need to be an expert if we're going to be like teaching something. So having a really solid like instructor manual and materials that are guiding students through their own learning is huge, and PCS does a great job of writing to a student's level that allows them to access all of the material. And yeah it’s like

learn by themselves and like teach themselves and get through the stuff. So it's been really that's been really really great.

Again, the differentiation, like I need to make sure that all of the material is accessible for a large like a really wide range of skills. And everything has had a pretty soft entry that I've tried with my students, it kind of goes in assuming that they don't know how to what programming is they, don't know what a drone is, so they start off like what is a drone and what makes a drone different than a computer and that kind of stuff. So it's been, that has been phenomenal.

Robust physical material, a lot like Kim said. I have to make sure that if I'm going to spend money on curriculum that it's not a one-and-done, that I can use it year after year, semester after semester. On drones, props break. That that's something you know like there are places that have to be — there are pieces that have to be replaced, and we PCS goes into their curriculum knowing that and send you the extra pieces and parts as well. And they also make it really easy to get replaced parts.

Number of students served with materials is important. PCS is great about putting out like, this serves about 24 students and because you have 24 handouts and 24 pairs of scissors and they make it try to make it comprehensive for a whole classroom and that there's enough materials for a whole classroom.

And then again that connection to a real-world application. It's always every lesson and all the content always ties back to how are you going to use this the why why do I care.

Sonia
Right and so just connecting to what Nikki is saying, and also Kim, the the quality of the curriculum like the written, the lessons and the scaffolding. You can tell that PCS has their current curriculum written by educators and vetted by educators, so when you open it up like an educator knows like oh a teacher wrote this you know. Where because it's so transporting transparent there is the differentiation built in, there is the extensions built in, there is the real world connection. So I think I appreciate that PCS hears teachers, and they take the feedback really seriously from educators and people who are running these programs. Like this is what I want this is what I need, and they are continuing improve upon their curriculum and their programs to meet our needs. So your voice is really important. So what you're looking for and they're doing everyday everything they can to meet those needs.

So in the last Melanie will you tell us what the what you're looking for in a quality STEAM program?

Melanie
Sure. First, I should say that most the time I just make my own things, because the curriculum that comes from textbook companies and things like that, I don't find it going high enough on

Bloom's Taxonomy for instance, I don't find it to be engaging and challenging enough. So ever since my first year of teaching, and I've taken all those things and then just build new things out of it. And I haven't found a lot of value in just buying a program, because I always have to tweak so much about it.

But I look for really engaging relevant things but then I have a lot of freedom to do something with. But when I piloted Drone Designers, Erika was like well PCS tries to just give you the whole package deal and make it so any teacher can use it. I am — I had zero experience with drones before that. Besides like I did a lip sync last year for the school and we got someone to fly a drone and film a scene. And I knew that they are used for different things but I had no personal experience with drones and a little bit of experience with coding, but I was just like hey let's do it it should be fun and it sounds like it would be cool to have a performance.

And it didn't matter that I didn't have a ton of background in drones because there was so much background information that you know, you learn it. You get the background information you need to deliver the lessons.

I was excited to play with the drones and program them, and I haven't been a huge fan of programming in the past, but I like programming something and then having it be tactile right there flying doing what I've told it to do or not doing what I thought I told it to do.

Programming, there were some quirks to figure out. I love that thinking and puzzle-solving aspect with it. But the the PCS Edventures the Drone Designers was really comprehensive and very very strongly aligned with disciplinary literacy, which my school district has been talking a lot about.

And it's something I saw a lot in gifted education, which I believe every student needs to be taught in the model of gifted ed. A part of that is that you are doing the work of the people in that discipline, you're trying to do it the way they do it, you're accessing the vocabulary and technology or looking at people who are masters in the field and trying to mimic and do things the way they do.

And I love that about Drone Designers, it was so strong when it came to that and really showed them directly we're modeling what they're doing in the real world and you're seeing the experts and how they do it. And then you're doing the exact same thing, you know not to the skill level that they are, but I thought that was really really cool.

So it was really complete, ready to go, had everything you need to pull off a lesson is included with the kit and that was really nice

But something, it just has to be engaging, real world applicable, tied to learning about careers so kids can see where they can go with it. And I just I'm so used to adapting everything, I like

freedom to adjust and tailor things. And Drone Designers was I think designed for twelve 60-minute lessons, and I felt that that was crammed. I could have gone into depth with the extensions and things like that, I could have done that over an 8-week period and really delving deep with it on more into the programming.

I started watching videos on my own free time to learn how to like code the drone to do different things and it was cool and interesting for me. But I want there to be a lot of access points for a lot of different kinds of students, like a leadership class which is where I piloted that class.

Typically I'd say probably have affordable ratio of girls to boys, and what I loved about doing the drone unit with them is that because we were turning it into a dance, and designing costumes for the drones and having them be coded to music, that hooks girls. Most of the girls and one student who never was hooked from it because she just hates technology, apparently, but all the rest were eager about it.

And and I didn't know how the choreography part of it would go, and there are a couple lessons I'm like, uhh, but we did it and it went so well, I was shocked. And it went so smoothly but it was really really good.

And I could I could easily take that down to the 4th-grade level push it up even higher than a 7th or 8th grade. But I thought it gave a really good challenge to the teams and those are things that are really important to me as an educator.

Sonia
That's incredible to hear about the dance, I want to see a costumed drone.

You know, one thing I heard all of the panelists talking about is the comprehensive nature of the curriculum, where it allows us as the educator and facilitator in the room to take risks. And if we're to take risks, because there's another background knowledge provided and the materials are provided then our kids are willing to take risks. They'll model it as well saying "hey we're going to figure this out together."

And that ability to be flexible and make it our own. I heard everybody say that we felt comfortable adapting the program to you know, to what it is that we need. And as well for me where I've used PCS in my classroom, I used it in my STEM camps. I've used it when training teachers it just — it seems to meet everybody where they're at, but push, right. So it's very zone proximal development. Like everybody can find a little bit of challenge to stretch yourself but still comfortable enough so you can build successes. Because you want to be successful in what and what you're doing.

Because we have a few minutes before we take questions, I really loved that Melanie shared about the you know choreography and letting the girls you know really design something to do

with the drone dance. Can I hear from maybe Kim what was one way that your kids your students made it their own was able to take something from the curriculum and build it into something designed by them?

Kim
Yeah well, I'm looking through what and we've actually we've used quite a bit of the enrichment camps with the BrickLAB and the Discover. And I would say one of them that stood out to me, I mean the kids love the Claymation. And they would go through the lessons, they would do all the you know, like sending the clay into the changing room coming out doing all of that.

And then when it came to doing their own they were so elaborate in designing storyboards, and they used scrapbook paper for scenes from Hawaii and they just really were developing their clay character. And so we saw a lot of creativity with that one in particular.

I would say computer-aided design is another one where kids were just able to just do so many things that I had no background knowledge, I mean I had never done anything like that on the computer. And just to see once they would go through the curriculum what they were able to do on their own and develop.

We do do a open house or a showcase at the end, we ask parents to come in during the day and they see all the kids and their STEAM areas and their expertise and talking, and we give them little lanyards that say techsperts, and they are they're techsperts. I mean they really are able to showcase.

So one of the things we do in the beginning is also think of the end in mind. Alright, we're going to showcase something, we're going to be learning all our skills throughout and then what can we do with it at the end. And they have a lot of fun trying to design their own personal project to share and display.

Sonia
That's incredible, thank you. Nikki, how about you, how do your kids make it our own?

Nikki
So when I did a drone class this summer, same kind of thing when you get to like the summative part at the end the project piece, I brought in tons and tons of just like scrap materials and allowed my students to build their own like drone racing obstacle course throughout the school. So they were flying through hula hoops, under desks, over desks, around lights. So they had to build their own track and then they had to program their drone to fly through it without hitting any of the obstacles. And they were doing flips throughout but they had to measure distances they had to figure out turns and and yaws and it was it was pretty incredible.

So they've like practice just flying at first and then then they had to they had to program it to fly those paths autonomously. Some ones that push go their code had to have to run and get them from A to B so.

Sonia
That's so awesome, thank you so much. Well this is I mean as educators hopefully we're thinking of what else can I do with you know with this. Because I know educators are thinking, they're listening to all of these programs being done in the curriculum. In like one or two sentences, could you give your best suggestion of finding grants and funding to be able to get this. So Kim's talking about "hey I was awarded $10,000 grant" and because when you're talking about comprehensive material and curriculum, it's an investment.

It's an investment but every one of the educators on this panel, including me, is talking about the quality and the sustainability of the PCS materials and curriculum. And that is not a one-and-done, is something that it's not a consumable and you use it again and again.

So can we give a quick quick tip of where some funding for these products might be? Kim, do you want to start?

Kim
Sure, we've had success and we've entered contests STEM contests and we have won three different contests. We've also we have a very generous foundation in our school district that's separate from the district and we submit a lot of student proposals through video, and have invite them in to come see what we're doing and we've secured funding that way.

We are out looking for other ways because we realize how amazing this is and we want to keep bringing new products in. So I would say just looking or in your community and seeing who supports STEM. It's such a big area and especially girls in STEM these are looking. I just saw recently that AMC Theatres was was having something where you could submit an application, so we just put our names in. And look get lots of junk email okay we want to see contests that we can enter applications, we can apply for money and that's what we're doing.

Sonia
Awesome, thank you, Kim. Nikki, what do you do?

Nikki
I primarily in Idaho we are very blessed, Sonia I know you know about this, the STEM Action Center based here in Boise, so the Idaho STEM Action Center is amazing. They constantly have grant programs available for different types of STEM materials and STEM programming for schools and so they've been my primary source for applying for different types of materials.

Melanie

So okay and I'm gonna be taking their advice because um I have not spent that much on material. As soon as Drone Designers ended I was like, alright I've gotta figure out how I can get it some money right, because it is spendy but it's it's really cool and very comprehensive.

And so I started googling and found things from the STEM Action Center. I'm planning on applying for some of the grounds they have. We have a local Education Foundation. I belong to a couple organizations for gifted students that provide funding our PTA, so I'm just gonna start looking and see where I can get bring in some money generated.

Sonia
And that's really, as the STEM coordinator for my building, I can continually looking for there where the sources of money so your school's foundation. If you are a member of your teacher association, they often have grants for like within your teachers union. At the national level the National Education Foundation has grants, if you have a local state-run STEM Action Center many states have like a STEM action center or a resource for that.

Local industry is also really important too, I have no problem cold-calling like you know, computer science and asking them you know or micron, the local tech company, just saying like hey can you fund this specific thing. I find that when you're really specific with your ask like hey "I'm going to do an after school program with drones ,here's a price tag for what it costs would you mind being you know an in part or an in-kind funder for this endeavor?" and Kim's right for girls there's more grants out there and if you're working with an underrepresented population, if you're working with you know ethnic minority students or low-income, there is some additional funding out there as well.

So don't give up, do some Google searches, get your name on you know lists like Kim's talking about. You know, be willing to filter through it because the investment is really worth it.

So we have just a few minutes left of our webinar and I want to make sure we address any questions that came through, so quickly before we answer that, we do the buying guide for PCS is available online. You can see the link there and it gives detailed product descriptions. You can load it and take a look at it, it is really organized it's very teacher friendly in the way that it's organized where you can search for what you're looking for covering, different aspects of STEAM.

And the PCS team that's here in Boise, it's like a family here, so when you email with questions you're going to get a response from like a person, not a canned response. You're welcome to call, they'll walk you through, they'll connect you also with educators who are using these programs. I know here the panel and myself we would be happy to feel the question with a different curriculum the programs that we've used.

We believe in it, and I think Kim mentioned like we're not paid to be here. We we are here promoting PCS the programs and curriculum because we a have used it and believe in it and

we know that it works for the variety of populations we're serving. So please reach out to us and PCS for any questions you have.

Megan
Okay, alrighty, so at this time hopefully everyone can hear me okay. You should be good.

So I guess the first question will come in it's from John, and his question is for Kim. So he wants to know basically about the menu that you produced for your students. So I guess his question really revolves around, do you involve your students in the products that you provide on the menu? And if so how do they give you feedback on what they want to see in the next semester? And things like that. So how do you produce this menu, do you incorporate them?

Kim
So the first we both, this will be our fourth semester, so this is our -- we've used the menu this is our fourth time and we have updated it constantly. So the first time, there was really no student input. I did my research I talked to people. This is how I stumbled on PCS Edventures. I mean I just, we just put together what we thought were a good variety of choices for the students.

We found that we were really heavy in technology and engineering and we didn't really have a lot of science and art, and so the kids gave us feedback. And so we went ahead and wrote some science, so we have like a chemistry and a microbiology that is separate from PCS Edventures. We wanted more math and so we went with Discover Math, and we also did the BrickLAB Math to add.

So we do accept some you know student feedback, if someone comes to us, like someone came to me today and said "I would love if you would do some computer programming with" and I'm not sure I'm pronouncing it but CANoe, I'm not familiar with it, and I said I would look into it.

So we do accept student feedback of course, because we want to put on the menu what they're interested in. But the first roll out was just from our research.

And I tried to make sure that I had two recommendations for anything I purchased so that I knew that at least somebody out there had used it and liked it before I invested money. And that's how we operated.

I'm happy to share the menu if someone wants to email me I can share that, or they could share that at the end and just show you like what an overview of a menu looks like.

Megan
Alright perfect, thank you so much, Kim. Nikki, this question is for you, one of our attendees would like to know, so you kind of talked a lot about drones, and they want to know how you really brought that kind of technology to your students. Like maybe the steps, what made

you decide to go that route? Things like that. They just kind of want to know "Why drones?"

Nikki
I was looking for something incredibly hands-on and something that I think is like a buzz word to students right now. So drones are incredibly popular in a lot of different careers, and high schoolers when you say drones they they automatically like their eyes light up and they they want to learn more. And so that's why I that's why I chose to to most incorporate drones into my high school classroom, is that is that addressing the question?

Megan
Yeah definitely, seems so. Let's see we do have a question coming in from Cheryl. Thank you, Cheryl. So this question um I want to say is going to be addressed from Melanie. Melanie, Cheryl wants to know can drones be used again after they're decorated? In Drone Designers.

Melanie
The costumes are made with paper materials and take it on with masking tape. And you don't put them on the drone itself, you put him on a cage. So I was only doing it with one class, but it would probably be easier to do it with multiple classes for each group to just have their own different cage that you can easily pull on and off a drone. I don't know how they're gonna package the PCS Drone Designers, but that's how I personally would think it would be the easiest. If you're doing it with multiple classes throughout the day, is not having to take the costumes off, but they can they can be taken off because it's paper materials.

Megan
Alright, and then there is one of more question coming, and this is going to be about the drones. So the drones, do use them in the gym or in the classroom? Nikki, I know you also have some experience with drones as well, so maybe you and Melanie can kind of tag team this question and then we can start wrapping this up.

Melanie
We were just doing some standard things learning how it can move right or left or forward or back in yaw, and we did simple things like that first in the classroom. And then there were days where I just went to the cafeteria, because that's where dances are held, and then practicing the performance we would use either the cafeteria or the gym. Or sometimes we'd go into a hallway and practice as well. For some of them, like things that go up
or go further, because my classroom wasn't a big enough space for what we were going to be doing.

Megan
Nikki, how about you?

Nikki

Yeah so that the Tellos are the smaller drones, they're in like Ready, Set, Drone! and Ready, Set, Code! and the Drone Designers, and they are intended to be in an indoor space. Which is wonderful, it means you can use them all year long. I agree with Melanie, I like to go to an out -- or like a bigger space like a gym or a hallway. Something that has a little bit higher ceilings, because I don't have high ceilings in my classroom either.

But if you're doing anything with the Rubi-Q drone, which is -- it's a larger drone, then that is intended to be flown outside. But anything in the Ready, Set, Drone! Ready, Set, Code! is all small enough drones to be flown indoor. As well as Drone Designers goes, it's a Tello drone, it's supposed to be indoors.

Sonia
So just a quick reminder that and you will get a survey about tell us you know what you saw and if this was useful to you and what topics you'd like PCS to cover in the future. And then each attendant participant today is going to receive an email notification with a link for the entire video, so they recorded it so you'll be able to come back to it. And if you have any follow-up questions please feel free to send them in and they'll get them to us and it will have a checklist panelists the -- panelists are experts in their fields and so it will summarize what everyone has said. It sounds like Kim is willing to share that menu, because I know I want a copy of the menu, so maybe PCS can attach that to the email, and then end with their programs and curriculum so all those links will be there for you.

And again, if you have questions or suggestions for us, we're always available. That sales@edventures.com are down there and in one of the footers of the info@edventures.com as well. So we're all here for you I mean we are a community of learners for STEM and STEAM appreciate your time with us this afternoon, and hope you have a great week. Thank you.