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EDUCATIONAL DEVELOPMENT CENTER
SARAH MACGILLIVRAY
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CYBERLEARNING 2019 WEBCAST
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>> Good morning. Good morning, everyone.

(Music)

>> I would like to start out with an appreciation for our --
(Music overlapping speaker)

>> -- I don't know what you felt like I felt like there was so many ideas ask conversations.

(Music overlapping speaker)

>> And to ideas in the program. Thinking about concepts is easy. We have in the room to work with. And today is really organized to thinking about future research.

(Music overlapping speaker)

>> Think about those tensions.

>> We have a lot of activities --

(Music and talking in background.)

>> Every time we've done this meeting, we do an evaluation survey. It has helped so much in improving the quality of the meeting. We learned what's working. We can't be everywhere. We learn what's working and what we can improve. We use that information. That's how the meeting gets better. Please do the evaluation survey.

Okay. So we're going to start this morning with some introductions about funding opportunities. And we want you to learn about those funding opportunities, but also use this time to start thinking about the research questions you would want to explore to bring those to the surface. I'm going to bring up Sarita who will introduce our panel.

>> SARITA PILLAI: Good morning, everyone, bright and early. Hope you all had a great day yesterday and good evening. I will ask the panelists to make their way up on the podium and settle themselves so we can go right into their remarks. Just reminding you again, as Jeremy just did. We have this hashtag for Twitter and CL '19. We've seen wonderful pictures and texts from people. Keep that going. We're telling the arc of the story over the last two days, yesterday and today. Amy made it a point to mention all of the program officers who were involved with Cyberlearning yesterday.

If there NSF program officers in the room, if you could stand up, so people can know who you are and seek you out over the course of this morning and ask questions, that would be great. Thank you. It's my privilege to introduce this panel. As you listen to what they have to say about other funding opportunities and various agencies, think about what you heard yesterday, the conversations you had, ideas that came to you and think about where they might sit as you hear what everyone has to say. I'm pleased to introduce the panel. If you raise your hand as I say your name. We are joined by Evan Item who is representing the division of research and learning. Amy Baylor, the co-lead for Cyberlearning here to talk to us about AI. Erin Higgins. Tony Beck, national institute of general medical sciences. We thank them for being here.

They'll go through a five to seven minute presentation, no slides, just talking about the various opportunities that they're here to represent. When they're done at 8:45, we will have an

opportunity to go to tables. Each of them will go to a table where you can then join them to have conversations about anything you're interested in talking about and to learn more about what they're here to tell you about. So we won't necessarily do a Q&A after the session. We'll have about 45 minutes to have your questions answered at individual tables that they'll go to.

We are also expecting Henry Kautz, who I'm not sure is here yet. He will go last. You will know who he is because he will get to the table late. Evan I'll turn it over to you. Thank you.

>> I think Evan was going to give us the welcome.

>> EVAN HEIT: I'll go up here. That's okay. Okay. Good. Good morning, everybody. It's good to see everybody bright and early this morning. I'm here to welcome you on behalf of DRL, the division of research on learning. As you may know, DRL supports research and development in all areas of STEM learning and teaching in all different environments, formal settings, informal settings, online settings, for all age groups. We like to say pre-K to gray is our -- it's a broad division. I hope you'll have opportunities to hear about what sources of research we support in DRL. We're happy to be associated with the Cyberlearning program and first, I just want to thank the Cyberlearning PIs and everyone else for the great work that you're doing and express our appreciation for what you're doing. I personally enjoyed so much going to the poster session last night. I talked to some of you and snuck peeks at some of the other posters. We're proud to be associated with projects that are addressing the future of learning and the future of technology, which is so well embodied by Cyberlearning.

Now Cyberlearning, as you probably know, is a program that cuts across directors at NSF. It's a collaboration of the EHR director, the education resources, computer science at social behavioral and economic sciences and for us it's really a perfect example of a cross directorate program. So many of the programs gain multiple academic fields of study. It's a nice collaboration. Again, we're always really excited to hear about what you're doing.

It also -- Cyberlearning is nicely connected to the NSF ten big ideas. I know you've been hearing about those as well. Right now in the title of the current Cyberlearning solicitation it refers to future of work at the human technology frontier, which is its own solicitation. You can expect more funding opportunities that are directly under that name. I would like to talk about future of work for a minute. This is just something that is in the news all the time.

There was just a Gallup poll that said that one half of American adults are experiencing something called skills anxiety. These are people that could be college graduates, they could be being people who haven't gone to college, essentially they're worried whether their skills will allow them to keep their current job. They are worried whether their skills will allow them to advance and get the job that they really want. And that is one of the reasons why the Cyberlearning program, the research you're doing and the research that you could do is so critically connected to the future of work because you all

have the potential in your project to address this need of adults.

Even if you haven't thought of yourself that works in this adult learning space, potentially you have the expertise. You could address what is such a growing global need. When people talk about the future of work, you want to think about it some more. I always recommend they go to the OECD reports has anyone seen that report? It is Googleable and in particular I recommend you go to chapter six of this report. The whole report is great but Chapter 6 talks about different learning systems. You have what you might think of as a traditional initial learning system, the K to 20 system that is well-established in this country but then the OECD report also talks about adult learning systems. What do you do after you've done through your K-16 or K through 20 or 24 or more, but then you find 10, 20 years later, you need to go back. You need more adult learning. There are some very good ideas there. I encourage you to take a look at that.

I should mention that just after I leave the podium here, I'm going to another PI meeting for the NSF convergence accelerator. Has anyone heard of this program? So the way I would put it is that future of work at NSF is more basic research oriented and convergence accelerator is like a Silicon Valley incubator or accelerator where we're trying to encourage our investigators to come up with products, say, within a two-year time span that would actually help workers help employers, something that could go to market. I encourage you to look out for other opportunities in the convergence accelerator. There's not something posted right now. I'm sure it will still be connected to what you're doing.

Let me quickly make a few thank yous. I jaunt to express as others have done, my appreciation to CIRCL for managing another really great meeting. And I also wanted to thank Amy and Tonya and all the program officers who have been associated with Cyberlearning. So we just did it, but we had a few more people walk in. So could people just raise their hand if they're currently a NSF program officer. Keep your hands up. Who's a former NSF program officer? A few more hands. So let me just say thank you, everybody.

(Applause)

>> EVAN HEIT: Let me say that being a program officer at NSF is a really nice opportunity to contribute to the field, to show national and international leadership for a scholarly field. It's a good working environment. You learn about the whole grants process and so on. It's a really good experience. In DRL, in the division of research of learning, we have two program officer opportunities. One is aimed at our DRK12 program. It's for someone who does K- 12 science or math education. The other is aimed at our informal program, someone who does STEM education in relation to the media, like film or television or online. These two programs are searching for program officers. Although DRK12 and AISL, you can imagine working in Cyberlearning or you can imagine these programs recruiting people who know something about Cyberlearning. If you're interested in working DRL, please contact me or any of the program officers here. Thank you.

(Applause)

>> HENRY KAUTZ: Hi, I'm Henry Kautz. I'm the division director for intelligent information systems, IIS. I'm very pleased to be here to welcome you. My own area is artificial intelligence, and I really look to you as people who are going to solve, help solve two massive problems. The way technology is used in K- 12 education is broken. I'm sure you're all aware of the many studies that show that when laptops and iPads have gone into classrooms, students understanding actually goes down. We need to really rethink how we use technology in K- 12. So that is not a matter of trying to save money through some shortcut but as a way to really deepen student's engagement and understanding. That requires fundamental research. And that's exactly what we do here in this NSF program.

Another place where education is fundamentally broken, as you're all aware, is college. The idea that everyone in the country should simply go from high school to spend four years at an elite college completely disengaged from real world work and then enter the workforce and never cross the threshold of an educational institution again is going to take a few years for most of the colleges and universities in this country to catch on to that message and a few on the basis of their name and their deep pockets will continue.

But as we know, the world is changing in a way that education is a lifetime process. And that the idea that education is separate from doing is just wrong. And both in the area of STEM education where students learn about using computer technology as well as using computer technology for all forms of higher level education has to change. Again, you are the people who are going to help pioneer these new methods.

So thank you again for engaging with this program. I've been at NSF about a year and a half now, and I tend not to be a fan of faddish convergence research. I'm often the person in the room who's saying, no, we need this more core research. All this talk of convergence is nice, but it's -- it can be kind of superficial. But this is a program I really believe in. And this is a program where I think it's going to have the biggest impacts on our country. Thank you.

(Applause)

>> I think it's better to see it.

>> AMY BAYLOR: Hi, I'm Amy Baylor (Off Microphone) we had a discussion yesterday (Off Microphone) talk about it a lot. (Off Microphone) so -- I wasn't on. Wow.

(Laughter)

>> AMY BAYLOR: Scare myself. This big idea and as you know the Cyberlearning program has kind of had a theme in this big idea for the last two years on solicitation. The idea with it is to take a specific work context, a job, fire fighting, farming, manufacturing, teaching, right, and figure out what the future is going to look like in terms of the human technology system that that worker will be in. And all the learning that's around that, right. So you've got learning on the job, upskill, reskilling, lifelong learning, all related to

the job. So it's job specific. In this program we've funded some really great things. I think the nature, the fundamental -- what makes this program distinct is that it is convergent research. You generally have three or four projects happening at the same time together. You have social scientists, education researcher, technology, computer science engineer researcher, maybe an economist, maybe a sociologist, all working together converging, research together to look at the future of work. There's different ways to engage in this big idea. Right now there's not an active solicitation, but there's a lot of interest in this big idea.

In terms of what we did last year is we had planning grants as well as full grants. So it's something if you're interested in that, keep your eyes out. If there's an option, a planning grant is really important for a program like this so you can get to know each other and find your team. These are exciting, interdisciplinary projects, but they're hard. They take a lot of time. There are lot of conversations that have to happen to be successful. I was going to talk about real briefly about one of the projects we funded through this big idea a couple years ago was for teaching.

It was to develop sort of a cognitive assistant, an automated teaching assistant for teachers. The focus isn't on the learners here. Don't freak out. This is about work. How can we make teachers' jobs better, more efficient, more fun, have a better quality of life? In this project, the lead PI on it, it was an automated teaching assistant so this that it helped teachers to see what's going on in the classroom, like a dashboard that could walk around and it helped them orchestrate activities. You might have kids working on a project here and a kid here not paying attention, get that information. And the vision of it is it would be from automated to help the teacher to focus on things that might be best for him, her to do.

It's a great example of how to think about this big idea. The second thing I'm going to talk about. I can't talk about it as much as I wanted to talk about it. I will say this, there's a great interest as Henry mentioned in AI across the government. If you want to see what the government is doing with AI, there's a website called AI.gov. You'll see some sort of wide-ranging things that are happening across the government and government agencies.

We had a convening, there's a national AI research and development plan, again across government and whatnot. There was an update to that plan in June that basically said one of the key things we need is long-term investments in AI, long-term investments. Lots of other countries have strong plans in this area as well. We had a convening NSF that Henry sponsored and brought in industry people. We brought in other agencies and had a lot of discussion about what the future research of AI is, what might be some ways to work together and so on.

When I was participating in that, there was so much interest in A eye and education. The people couldn't all sit at the table. There's two ways I think about how our community can think about AI, very simply it's like how can we use AI in education to make education

better more personalized, more efficient, more engaging? The second is, the education in AI, how can we prepare the future workforce? Because there's a lot of people -- the people at that particular convening were like, Amy, we all need the same 1,000 people in our industries that have this training in AI to fill jobs. There's two ways to think about it, AI in education, education in AI and then stay tuned, watch your emails from NSF, there may be something that may happen.

(Laughter)

(Applause)

>> ERIN HIGGINS: Good morning. We're going to shift gears and talk about nonNSF government funding opportunities. So I am from the US Department of Education and specifically I'm from the institute of education sciences. How many people have heard of the institute of education sciences. Great. Sometimes I come to events like this and it's like a couple people in the front. Wonderful. I'm glad so many of you have heard of us. For those of you who have not, we're the research arm of the US Department of Education. We're independent and nonpartisan by law. Our agency is separated from offices in the rest of the department intentionally so we can provide objective information to help guide policy decisions and improve practice. We're organized into four centers. National certainty for education statistics is the part of our agencies to describe the state of education across the United States using large data sets.

And then we have the national center for education evaluation which is our center that focuses on evaluations of federal programs as well as does part of our knowledge utilization work. If you've heard of the what works clearinghouse they work on getting research out there and tries to put it out in a way that practitioners can understand it. And then finally we have two research center, the national center for education research and the national center for special education research.

I sit in the national center for education research. In those two centers our goal is to do extra grant funding. The we fund folks like you to work on new and innovative ways to solve educational practice for students in pre-K up through 12 as well as post-secondary and adult education. And then the special education research focuses on infants and toddlers up through adulthood focusing on students with disabilities. Typically our grants programs are on a yearly cycle. For example, the last round of applications was due in late August. Those applicants will probably find out more about whether they're funded no later than July 1st of next year. Sometime next spring of 2020 we'll be releasing applications for our next round. That's the timeline we've been working off of. It's subject to change. Keep that in mind.

Our website has the most updated funding information. For you all, I think there are a couple programs I wanted to highlight today that I think are going to be of interest to you. So we have what I would call our flagship grants program. It's been around a long time. Called our education research grants program. We have two topics that

are of interest. One is the education technology topic which is focused on supporting research, trying to figure out how existing forms as well as technologies new advanced technologies can be applied in education to improve practice. The second topic I think is of interest is the cognition of student learning program which is a program seeks to improve developmental psychological to guide curricula development and revision and develop new tools for instruction and study.

We also have the special education research grant, the program which has similar topics, so if you're interested in students with disabilities, you have similar opportunities under that program.

The final program that I think that is of interest has a slightly different timeline. It's our small business innovation program. This program is focused on innovative product development, research and commercialization of products for small businesses. That program, like I said, has a slightly different schedule. Typically the requester proposals come out in the winter with a quick turnaround time to find out if you're funded. Keep that in mind. You can find that on our website. IES.ed.gov and then from there you should be able to navigate to those pieces of information.

I will say just a couple things that kind of differentiate us from the NSF programs you've heard about because I think it's useful to think about the fact that we do overlap in some ways in the kinds of stuff we fund. There are clear distinctions. One of them at IES we need to focus on formal education settings. So these are, you know, schools, classrooms, we are not funding work in museums, we're not funding works for parents and children at home unless it's intersecting with what's going on in the school. That also means that the kinds of outcomes that we're focused on are those outcomes that are important to teachers and students, right.

So reading, writing, and STEM, achievement outcomes that are typically used in school settings. Keep in that mind when you're thinking in putting something together for us how to situate your work within IES versus NSF which I think is a little bit more open about what you can come in with. I'll stop there. Thank you.

(Applause)

>> TONY BECK: Well, good morning. I'm Tony Beck, I'm a program officer at one of the other agencies called the NIH, National Institutes of Health. I'm with the national institute of general medical sciences, it's the fourth largest which is important for the second part of my presentation. But I'm pleased to be here.

This is a very exciting area of learning. Clearly the current generation of kids from pre-K to high school, put them in a classroom with an outdated book and a teacher with not a lot of teaching skills, it's going to be tough. I want to talk about two programs. One targets pre-K to grade 12. Both classroom, the formal, informal, outside the classroom. And the other part which was added in the mid '90s is science and museum projects. How many of you are working pre-K to grade 12. Think of what you could do in five years with \$1.3 million. That's what the award was. The program was started in 1991 by the

NIH because they realized there was no diversity in the workforce. We realized that -- workforce diversity equals creativity. They created the program. It's fun because the subject matter is anything NIH funds. A decade ago there was this line in the sand, NIH and science. Now it's very vague. We fund nano technology and so on. The subject matter as I mentioned is very broad and the target audience is pre-K to grade 12. We're doing earlier student learning.

And the folks were very nice. They let me put some shameless marketing out. Out at the registration desk I have my business guard. The SEPA program has about 100 projects. It has a dot org website. Look around, talk to people. Once it's published it's been evaluated by rigorous evaluation. There's a book bark. There's also a list of the class of 2019. You can see the kinds of things we fund. It's an eclectic group.

I thank Erin for getting it started small business innovative research. How many of you are familiar with that? This is the -- this is interesting when you look back at the chart in the early '80s it said Congress wants the federal agencies to fund things too risky for venture capitals. They get 10X and once in awhile they're happy. The nice thing about this is it's, again, if you're designing a game, think what you could create in two and a half years with \$1.7 million. The SBIR, phase one is proof of principal then phase 2. There's an SSTR which is leveraging technology for universities. That's less money.

But the thing that's really important about this is that remember GM has a very large budget \$2.8 billion. The checkbook each year for SBIRs is \$91 million. We have a very good pay line. The other part of this is really important is that within the SBIR program, IES has their own. There's something called the omnibus solicitation. It covers a lot of agencies. It has September, April -- September, January, April. But the SEPA program. About ten years ago we had school stuff to teach kids about organic chemistry. I pestered management. They let me do a pilot. We have a SEPA SBIR SSTR. I have a listing of the current portfolio. It's 25. When you realize the entire investment precollege STEM is 0.006% of its budget. I have my business cards with me out there.

The next receipt date for the SEPA program. Remember this is pre-K to grade 12 is June or July of next year. The program I always tell folks go to the website look at it and get ideas. We can talk about ideas. We're not prescriptive but we steer you in the right direction. I appreciate this audience. This is an exciting area of science. One of the awardees say in ten years using games for learning, we won't have classrooms we won't have exams. This is the way kids learn. It addresses the kids that don't function well in a classroom. Thanks, again, very much.

(Applause)

>> SARITA PILLAI: Thank you again to our panelists. You've given us a lot of food for thought, a lot of opportunities for people want to consider. As I've said as you spent the day yesterday and probably overnight ruminating about the sessions you were in and ideas

that may be percolating for you, think where those ideas might fit. I will ask our panelists stay up here now. Our panelists will go to a table where you can join them and have conversations and ask questions. Unfortunately Evan Heit can't stay with us. The others will be at tables Evan is headed back to NSF fort convergence meeting which is happening at the same time today. We are grateful that he was able to squeeze us in today. Thanks to our panelists. I will have sherry explain what we're going to do next.

>> Okay. So we're going to have you engage with some future research issues and funding opportunities now as Sarita mentioned. Our panelists can actually take their table tents, they're going to select a table. They're going to disperse themselves among the audience. You can self-select who you would like to speak to. Our NSF program officers in the audience who raised their hands earlier, they're also going to be given table tents and they're available for you to go to and speak to. This is a great opportunity to generate research questions inspired by everything that you've heard and learned about so far. It's a great opportunity to kind of talk with the program officers about the potential research questions and what might be a good fit for what you would like to research.

After that, at about 9:15, 9:20 we're going to do a poll everywhere. So that question that we want you to keep in mind at 9:15, 9:20 will be what is a priority research issue for this research community over the next five years. We'll be putting that up around 9:15, 9:20 and give people a chance to come up with one or two at your tables to vote on. So just keep that in mind as you guys all discuss at your tables

(End of session.)

(Webcast session concluded at 7:45 AM CT)

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