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BEYOND REOPENING: A LEAPFROG MOMENT TO TRANSFORM EDUCATION

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Opening Remarks

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Former Prime Minister of Greece
President, Socialist International

Panel: Strategies for Building Resilient Education Systems

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DAVID SENGEH
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KEVIN WATKINS
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Presentation

EMILIANA VEGAS
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Panel -- Realizing the Promise: How Can Education Technology Improve Learning for All?

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P R O C E E D I N G S

MS. WINTHROP: Welcome everybody. Hello. Can you guys hear me? Okay, we're all good. Welcome everyone who is joining from near and far. Thank you for being with us. My name is Rebecca Winthrop. I'm a senior fellow at the Brookings Institution and co-director, along with my colleague Emiliana Vegas, of the Center for Universal Education. We're really happy you could spend some time with us today. We are talking about what happens after schools reopen today in two sessions.

The first session will be looking at what possible strategies have emerged out of response to the pandemic that should be sustained medium to long term that could build more resilient education systems. And the second session will dive much more deeply on educational technology and looking at what really works to transform teaching and learning, and how that can inform thinking about strategies beyond reopening schools and transformed education.

I want to, before we dive right in, say many thanks to a range of people. First and foremost, we have a great group of speakers who are all incredibly busy movers and shakers, in their own right, and we're very grateful that they have spent a couple hours with us today. I also want to thank our wonderful supporters and donors, Lego Foundation, BHP Foundation, Hewlett Packard, who are wonderful allies in this work. And last, but not least, perhaps most importantly everyone at Brookings and the Center for Universal Education team who has pulled this event together, particularly Lorena Maysonet (phonetic) and Katie Portnoy.

If you are of the tweeting kind or on social media, please do share and send your questions in today at #transformingedu. We'll be taking questions by Twitter or if you prefer to email questions, because they're much longer and more complex than what Twitter allows perhaps. You can email them in at events@brookings.edu. And we have gotten a number of questions, which is great. And we're not probably going to be able to get to all of them today, so we will do a Twitter Q&A tomorrow morning at 9:00 a.m. to continue the discussion. So, please feel free to continue tweeting as the event goes along.

So, our topic today is one that's really important, especially on the eve of the UN General Assembly meeting on the eve of, in many countries around the world, schools reopening and hard choices and big debates being had around how and when and if. And some schools have opened and

reshutdown in some places. So, we wanted to lift-up a little bit in this session and think sort of medium to long term.

And I can think of no better person to kick us off with that than former Prime Minister of Greece George Papandreou who not only being prime minister, but, you know, near and dear to our hearts is also a former minister of education. Thinks a lot about education, takes the long view and in the green room on Zoom when we were chatting, he had Mount Olympus behind him. And he always is insightful and helps us sort of think through the day-to-day, you know, difficulties to try to see where there could be positive direction and outcomes. So, I'm very grateful, Mr. Prime Minister, for you to join us and I am going to turn this over to you to kick us off. You're on mute. George, you're on mute. You have to unmute yourself, yeah.

MR. PAPANDREOU: Mute.

MS. WINTHROP: There you are.

MR. PAPANDREOU: Okay, is that better? Very good.

MS. WINTHROP: Perfect.

MR. PAPANDREOU: Well, thank you very much, Rebecca. And I hope to be able to contribute, and if you hear any funny noises, maybe it's someone of the gods from Mount Olympus visiting our webinar here. I'll start with three questions. Do we need a leapfrog moment? The other one is, is this a leapfrog moment which we're living? And the third is, how do we turn it into a transformative moment for education?

On the first, is it necessary to have a leapfrog moment? And I would say that because of what the pandemic has actually highlighted, revealed as problems in our society, it is a necessary change we have in front of us. Inequities in health and education, wealth and technology, a class and race issue has been highlighted, you know, the inequalities. Frontline heroism we have undervalued frontline workers. The environment, a huge impact on our wellbeing and notwithstanding the weather changes from fires to floods. We have seen a new dimension with this pandemic of how the environment has really impacted us.

Technology, how do we use technology? How do we access it? But how is it not to be abused? We want to trace it for health, but it's used for tracing wealth of corporations, tracing AI and

racial profiling, tracing to stifle or influence opposition in authoritarian regimes. And, of course, we have the transition to more online work, telework, which is speeding up and that's transforming and challenging us.

But is this one a leapfrog moment? I would say, yes, because this is the first time in human history that we all have immediate and similar experiences, live, synchronous. We are all able to partake in these experiences globally. Our emotions, tears, laughter, empathy, singing, fear, they're shared. So, we're witnessing a fountain of volunteerism and newfound sense of community. Theoretically, this is the moment where leaders can tap into the well of empathy and solidarity, but also leverage this new awareness of societal problems and highlight the need to work cooperatively, locally, and globally for deep transformation.

But the third question is where I want to put my emphasis. How do we turn it into a transformative moment for education? So, leaders are challenged today. People have a deep sense of insecurity and uncertainty about how the world will be shaped. So, what are the possible leadership responses towards this feeling of uncertainty? Let me describe in I would say almost simplistic terms, what I see as three basic leadership responses, which are relevant to education also.

A first response is rather than tackle and solve problems, you actually feed the fear and uncertainty. This bolsters people's dependency on you as a leader. You find enemies, scapegoats, divide society, polarize, but keep your support base energized, united, and even fanaticized. I don't need to analyze this type of leadership in depth. I believe we all are or cognizant of this type of leadership today in many parts of the world. Leaders transform everything into a controversial battle, whether it's wearing a mask, testing, vaccines, or opening schools. But what is its effect? What does this type of leadership, how does it affect transformation? Well, in fact, this type of leadership denies, it negates the possibility of the capacity of societies to transform themselves.

A second type of response, I would call it a more mainstream response is as society faces uncertainty, you feel the pressure to go back to normal. So, what do many leaders do? The kneejerk reaction is to try to create a sense of normalcy. This in many ways reproduces the existing system without major changes. Or it could even mean backsliding on existing good practices. So, education ministers have and will be consumed by the issues of opening of schools, mask wearing,

rescheduling, chair arrangements, online access, how students will be graded or evaluated. And with the economic situation becoming dire, education ministers will be struggling to convince finance ministers for more money or even no cuts. They may even be pressured to use technology for cheaper services replacing teachers.

In your reports, you underline the bad practices in use of technology, computers, and the lost or dormant opportunities for innovation. So, a back to normal approach would at most look like a linear expansion of the existing classroom with standardized online lectures. This, of course, can be useful. It may help many more have access. But as you have said in your reports, access is not enough.

Another possible outcome of this approach would be to give much more power to the digital corporations. The Googles, the Apples, the Facebooks, the Amazons, they will soon play a critical role in shaping the future of education, particular tertiary education. But this could also mean that the locus of policymaking will shift from public agency to private corporations with untold consequences. And in your reports, you very much highlight the need to strengthen the public systems.

Now, let me come to a third type of leadership response. And this is where leaders actually use this sense of uncertainty we are living as a positive force for transformation. A difficult exercise for leaders, but one with which creates opportunities to imagine and collectively implement a very different and better future. And this is what the ancient Athenians would see as good politics.

Barack Obama recently said to a group of young leaders, "Today leadership is less about policy and more about storytelling." Well, let me try to unpack that. We're at a moment where the question of how, which usually refers to the technicalities of policy implementation, needs to be preceded by the question of why, which is the narrative or the storytelling. When we see technology as a silver bullet, we often forget that it needs to serve our students, our teachers, and instructional core, and not the other way around.

So, today there's a great opportunity to reimagine the role of education. An educational system that in its methods harks back to the industrial age in its purpose it still focuses on professions that may not exist, work that may be taken over by robots or AI, and its pedagogy it focuses on conformity, rather than innovation and critical thinking.

So, in closing, allow me to challenge you with possible new narratives for a new normal in

education. A difficult but fruitful exercise. As your reports conclude, having a vision of the change we want to see matters, and can and must help guide discussion, debate, and ultimately action. So, I'll propose a three-pronged new narrative for a new educational ecosystem, if you like. First of all, a new pedagogy. This would mean to power up the instructional core as well as transform the relationship between students, teachers, and educational materials. And I would add to that, outside stakeholders like parents and the community. New forms of educational experience, delivery, pedagogy, use of digital, gamification of education. Games, I'd like to remind many that the word school comes from the ancient Greek meaning leisure or fun, maybe games. So, education should be seen in a new light.

A new role of teachers in their content delivery. They are more as guides and mentors, rather than delivery only. Even personalized mentors for students on their path of learning. Students, students as active participants and not passive consumers of information. More self-motivated, more self-paced, more self-evaluated, where both teachers and students become creators of content. So, you have a wide variety of user generated content.

Networking with the community. Make the world your classroom, I heard a student say in one of these webinars. Very nice, a very nice phrase. Make your world your classroom. And all who can, get them to teach. So, there's huge potential to bring in new partners. Not simply allies, but also be part of the teaching, learning, and development of education materials that core instructional process, bring more people into that. Where teachers become the sort of managers of this new ecosystem. So, you can get the best of content, but also have a very different role for the teachers.

A second point in this narrative would be making education as a source for adaptation and resilience for our societies. So, for example, how do we respond to pandemics? How do we become resilient to these types of new challenges? How do we train skills for the unexpected black swans? How do we change the curricula and a pedagogy to deal with new and uncertain challenges such as the climate crisis? What are the type of new skills for our collective health and wellbeing? Our food habits, our relation to the environment. How do we work in an interdependent world? The refugee crisis, diversity, and adversity, global citizenship.

Finally, why not look at a narrative and really upend the whole way we look at education? See education as the center of transformation for our society. Wellbeing has become a central concern

for all. So, can the schools become the center of transformation for the wellbeing of us as individuals, but also for our society? Not reproducing the existing power structures and system but getting students to pose and work on some of the very basic questions. I think we are fearful sometimes of bringing in the big issues into our classroom. The conflictual issues in our society. And therefore, we don't teach our students to deal with the issues they will deal with as citizens.

So, racial injustice, inequalities, a holistic approach to environment and health. How to deepen democracy and participation, but even deeper issues, ethical issues. Major ethical issues we're facing. How we as human beings can use these amazing newfound powers that technology gives us. Whether it's biotech, artificial intelligence, cyber automation, and not use this power with a sense of hubris concentrating it and abusing it but using it for the common good.

So, the instructional core what matters most, and this is from your report, what matters most to improve learning is the interactions among educators, learners, and educational materials. But we need to see this in a new ecosystem. This change will not come about by itself. So, who will be the agents of change? Well, many have seen teachers as one of the heroes of the times. But heroes can be shooting stars, a quick moment later forgotten. So, in an ideal world, I would say that the teachers should be the drivers of this new ecosystem. They should be empowered, trained, supported, to be the leaders of change in creating this new ecosystem. However, we're not in an ideal world. And these changes are also linked with wider societal changes, political issues. So, action needs to come from a multiple source of stakeholders, new and old allies, through informed debate, which creates the space and the security for imaging and using the best of ideas and practices in making this a leapfrog moment in transforming our educational system for the better. Thank you, Rebecca.

MS. WINTHROP: Thank you so much, Mr. Prime Minister. I couldn't have touched on the key highlights of our report, which is the frame for this session better, myself. For those of you who don't know, the report is up on our website and it's called, "Beyond Reopening School: How education can emerge stronger than before COVID-19."

And I think our fundamental insight is that there never has been a moment in time when the real desires and hunger for education that the most marginalized families feel around the world, thinking about my old past work working with refugee families who did everything to try to get their kids an

education, married up with middle class families around the world because school went away in a flash during the pandemic. So, there is something about this moment where people around the world of multiple class levels, multiple geographies, all of a sudden realize that public education systems are the center, the spine of how we organize our lives, are the center of communities, both for learning and for social supports. So, you know, we're very eager to think about how can we capitalize on that?

And I am incredibly pleased to thank you, George, for your opening remarks and ask you to stay. I appreciate the time for the panel discussion.

MR. PAPANDREOU: Be glad to.

MS. WINTHROP: The rest of our panelists who have come up on the screen. We have Urvashi Sahni who is not only a nonresident scholar here with us at the Center and former Echidna Scholar, but the CEO and founder of the Study Hall Educational Foundation, coming to us from India. We have Kevin Watkins, CEO of Save the Children. We also have Minister David Sengeh, who I see on the line, but, David, I do not see your video. Minister Sengeh is the minister of education of Sierra Leone and has just walked out of a meeting. A ha, thank you, with the vice president. So, I'm going to kick off, Minister Sengeh, let you catch your breath, kick off and turn to Urvashi first.

And the first question for all of you really is, you all are working on continuing education and from very different vantage points from government, from grassroots, from big nonprofits, et cetera, from intergovernmental work that you do, George. Are there strategies that have emerged amid the pandemic that you think are actually helpful in the long term that should be sustained? There are, of course, many strategies that we can't wait to get rid of. I have put a big sign on my office door saying, do not come in, to my children, who are still taking school from home. So, I'm sure parents around the world can't wait for their kids to go back to school. But of the positive strategies that you think could help strengthen education, what might those be? Urvashi, why don't you kick off?

MS. SAHNI: Thanks very much. You know, what we found during this time is that, you know, it's like in going to work, the creativity culture of everybody has kind of spiked. Teachers, parents, students, and the relationship between teachers and parents has become really stronger. We clearly see this as a partnership. And the digital divide has become very, very obvious and there's a huge push to try and fix that. And, I mean, (inaudible) the Prime Minister announced that we should have optic fibers as

far into the remote villages as we can.

So, there have been many, many practices which teachers want to hang onto, parents want to hang onto, students want to hang onto. For one, everyone has recognized the joys of technology although this technology always existed. But they found different ways of using it, different ways of communicating. They found that their outreach has increased. They want to keep technology in terms of using it, but they want to keep it to the use of particular things. For one, they feel that there's individual connect with students, so they want to document their practices. They've all developed (inaudible) short videos documenting it, using it repeatedly because students can use it then to educate to teach themselves. Then they realized that keeping it helps them store it, helps them reuse it many times. They find that they want to keep the relationship that they have got with parents and they want to use technology for that, and they've understood that it's really very valuable. Parents have understood it's very valuable and they want to keep that partnership going.

MS. WINTHROP: Urvashi, could you explain to us how are they using the technology? What are you doing in your program? You said it was always there, but all of a sudden we're using it in new ways --

MS. SAHNI: Right.

MS. WINTHROP: -- that we couldn't before.

MS. SAHNI: So, for one, people, you know, they always had phones. They always had the ability to make videos. They always had ability to record themselves, right? There was always text messaging. Suddenly, they're using phones to make one-on-one connection with parents, especially in the --

MS. WINTHROP: The teachers are sending short videos --

MS. SAHNI: Yes, and students.

MS. WINTHROP: Okay.

MS. SAHNI: So, what has happened is education has moved outside school yards and outside school spaces into the community, into homes, you know, out of necessity. But it's been a good thing. So, now they started making very short videos to explain their concept and they say, hey, this really works. And students have said, you know, I feel the teacher's talking only to me and they love it.

Then they started using text messages where, you know, children don't have Internet, and many of them don't. Then they had to speak to parents to reach the students where there's one phone at home and many students, many children. And so, they built a relationship with the parents. And parents have understood that teachers care. And so, they have become more involved in their children's education.

So, I think the biggest win out of this is that teachers have learned to communicate differently. And they found that it is aiding their teaching. You know, for a long time we've been talking about you're using technology and that it helps you. Teachers weren't convinced because they just found it easier. You know, you go into a classroom, you do your thing, you're fine. And now they realize, hey, wait a minute, this makes my task easier, and I become more effective, and my children gain more. And in fact, they think learning outcomes are going to rise because of this.

MS. WINTHROP: That's a great -- that's a really interesting point. I want to pick up on that in turn to you, Minister Sengeh, next. In our report, "Beyond Reopening Schools," I mean, it's very, very early days. It's hard to see what fast and hard evidence exists, but there certainly is emerging cases and anecdotal evidence along the lines of what Urvashi just said. That we have seen from Botswana to the U.S. to India where education leaders, teachers, administrators, are engaging with parents in a new way. And being quite surprised, actually, at the ability using lo-tech phones, voice messages, flip phones, What's App messages, nothing fancy, at how much parents, particularly busy working class parents, low income parents, who maybe didn't have modalities to engage with their kids' education before, are really stepping up to the plate.

I'm wondering, Minister Sengeh, if you're seeing that in Sierra Leone? Or if not, what are the other strategies that you are seeing emerge, if any, that you would want to continue even after COVID goes away?

MR. SENGEH: Thank you. (Inaudible) outside the office, as you said, because I'm at the ministerial on local governments and evolution, and actually, it very much ties in with the questions you're asking. Because education is a difficult function, basic education. And the evolution really means bringing the service delivery to the local councils. And the kinds of solutions and generating problem solving we saw, could only have happened at the local level at the school level, at the small chiefdom

level. And we saw that happen. We saw the school leader as independent. We set up What's App group for parents and for learners. We saw them reorganize.

I mean, I think we've spoken a lot about and there are cases around how the community as society be innovated to problem solve, and we're here to talk about policy. I also saw people on my team really address questions that they -- I mean, we always maybe believe that we should address those things and we never thought them. And one of the things that were really activated and pushed through is this radical inclusion policy.

And it's this idea that you stop at nothing. You'll do everything to remove every roadblock to add everything to ensure that every child, in particular, the most vulnerable receives the service. When you do that you are guaranteed to make sure everybody receives the service. So, for us the real change here in innovation was in how we deliver education service for the most removed. And that means we have to think about paper-based learning materials, even though we have radio and expanded radio. We know that they are villages around the riverine areas who wouldn't have connectivity.

That means you have to collaborate better with local radio stations. That means you have the printable collects and bring them to those children. That means when we open schools, we have to ensure that everybody is given the chance to travel back because people who travel with lockdowns. And we provided buses for people everywhere. And we brought school feeding for all kids in primary school and not just (inaudible) and chiefdoms that were included before COVID.

We were forced as the government as policymakers to reimagine what drives our decisions for service delivery. And for me, and I was talking to the (inaudible) general of Sierra Leone. I mean, it's probably and it's universal it's some adolescent young girl living in a rural area who may or may not be living with their parents, but so with some poverty. How do you solve for that girl who is illiterate? Maybe lives with parents who are illiterate where there are no services. And when we changed our framework and as we invite our teams and our schools to do that, the questions become different. And one particular manifestation was there are pregnant girls. We overturned the ban for pregnant girls to come to school one week before we did school closures. And we knew this was intentional.

MS. WINTHROP: Can I just pause you there because not everybody might know about the ban on pregnant girls, and --

MR. SENGEH: I see.

MS. WINTHROP: -- for attending.

MR. SENGEH: Sure.

MS. WINTHROP: And then just what you're probably going to do, spell out sort of what the radical inclusion policy is. I think it's a great example of something George talked about, about new partnerships emerging. And it also there's a question that was emailed in from Mark who asked about, you know, the role of social protection, new --

MR. SENGEH: Sure.

MS. WINTHROP: -- emerging for social protections. So, I think, actually your example answers that question well.

MR. SENGEH: So, right, so there are many elements there. Eleven years ago, cabinets had a ban. So, we had Ebola and also people had been -- there was poor learning outcomes, which is universal. So, we knew there's a learning problem. And the cabinet and the government then decided that there were too many pregnant girls. And the reason why there were too many pregnant girls were the pregnant girls were influencing each other and they had multiple reasons. So, they banned pregnant girls from attending normal school. And they could take exams, but they were not allowed to attend normal schools.

And this excluded thousands of girls. And during Ebola, for example, there were about 14,000 girls who were pregnant, and those girls would derived and estimate, and those girls were deprived of any opportunity really. Though the ministry then did a lot of good work with them from a learning centers, but it's not the same. You know what I mean? People dropped out.

And so when we knew -- I also sit on the presidential task force for COVID. But either way, we knew that there were going to be closures, the school closures. And so cabinet and maybe two weeks or so before decided to overturn that ban because it was originally put in place for 11 years by the previous cabinet. And instructed and we launched a radical inclusion policy, which we had just tabled and a comprehensive safety policy.

And between radical inclusion and comprehensive safety, it really is to ensure that the wellbeing of children, particularly girls in rural areas, the wellbeing of children, people with disabilities,

people with learning and cognitive and physical differences, people in rural and opened areas, people who can afford and couldn't afford things, we had to develop a process in which one we provided for them.

And secondly, our communication had to be that we were focused on inclusive education. And that means it doesn't matter if you're pregnant or not, you come to school. It's our responsibility to protect you. School, our framework was the safest place for children. And we wanted to ensure that that was true when schools were closed and not opened then. When we opened schools post the lockdown, there was zero transmission recorded at the schools. We have about 800,000 kids come back. And today the final batch of students are completing their transition exams. The primary schools did. The junior secondary school did. Now the (inaudible) will have an 80-day national exam. Now, when they all came back to school for about five weeks, which was really important.

And we also changed how we track data. So, my team now (inaudible) of them are just that they have gender desegregated data. We also track people who are missing school because they are pregnant, not just boys or girls. We want to understand the reason why they are missing school. And today I just got a proposal from a group called Girls Plus and we're just -- I'm just trying to review to see how we can support them or there local partners that can local and international partners that can support them.

We have a program called Second Chance. And it is to say we knew that government has had overturned this ban and there's radical inclusion and we knew that many girls will not come to school either don't know these policies and they'll have challenges as to still coming to school. Our Second Chance program minister said they will go and essentially find these girls and bring them back to school because over the last two years, actually just last year, the (inaudible) school census 2018 to 2019, we had a 34 percent increase in the enrollment. Senior secondary school 50 percent increase in enrollment. And we don't want to reverse that. And so we have to be intentional about that process.

MS. WINTHROP: In 30 seconds, before I turn to Kevin, can you just tell us, because you were explaining to me when we spoke last about this really innovative partnership. And to me that's something that has emerged during the pandemic is new allies, new sort of organizations that are working differently together. But around sort of banks, clinics, setting up a bank savings account for girls, how

they can access the money, and just very, very briefly, Minister, I think people --

MR. SENGEH: This is a new idea the cabinet passed. A sustained school program for girls. And the framework here is how do we ensure the girls not just come to school but stay in school all throughout so they can transition? And we're bringing together -- we know girls generally and women don't have the (inaudible) identity. We know that they don't have bank accounts and personal financially empowered. And we know that completion of high school increases all these other outcomes.

And we're looking to see how we can bring together the banks and the national civil registration and ministry of health to really ensure that when children and girls, in particular, access health that they are entitled to that they don't know of or take advantage of. That we can give them incentives for them to pay for things that every other girls need to pay for that often they are at risk of being used when they don't have those resources. But most importantly, use this process that for every year they stay in school have a savings account that grows transition out of school, they can either go to higher technical institution or they can be an entrepreneur or they can do something that's about their independence and we're just about to start putting those in place. So, anybody who is excited to think about that (inaudible).

MS. WINTHROP: That's a great example. Kevin, I want to turn to you next and Minister Sengeh brought up this issue. So, I'm going to add -- you now have two questions. One, is what is the first question that has, you know, about the strategies that might have emerged in Save the Children, your programs around the world that you would argue should be continued. But also, Minister Sengeh brought up the point that access had really increased in Sierra Leone exponentially it sounds like. And he's really worried about that being reversed.

And so the second question to add for all of you is not only what are the strategies, but how should the solution set today 20 years after the millennium development goals where the world really focused and the MDGs and education on access to primary education and, you know, rich countries supporting poor countries to do that. And we've evolved and now we have the sustainable development goals that a) are global, but b) most importantly really puts learning at the center and lifelong learning at the center. So, how can we learn from our past mistakes perhaps or whatever lessons we can garner over the last 20 years, so we don't, as George said, just revert back to normal and go straight back to an

access agenda. How could the solutions look different this time even in the face of an emerging access problem?

MR. WATKINS: Thank you, Rebecca. And, Rebecca, if I could before I answer the questions directly, I just wanted to say how important I think these reports are and how important George's opening remarks are. When I was preparing for this, I actually came across something I had read years ago by someone called Horace Mann who very few people have heard of.

MS. WINTHROP: I've heard of him.

MR. WATKINS: You have, of course, I know. But Horace Mann was probably the first great education reformer in America. He created the common school movement. And I read a pamphlet that he wrote where there's a lovely line in it where this is in the 1840s where he says, "Education above any other creation of policy is the single greatest equalizer of men." And if you adjust that for gender, I think it's such an insightful comment.

And I think we're at a period now where if we don't do what you've set out in these reports and we don't follow the framework that George has set out, this is not returning to the status quo ante. This is returning to a period in which we will see a massive expansion of education inequalities, which will in turn drive wider inequalities in opportunity and set back whole nations. And I think what's so critical about this period is first of all the lockdown has been happening during a period of surging child poverty. And I think we can anticipate the risk of at least 20 million additional children dropping out of school as a result of the pure poverty effects of this crisis.

And, of course, the children who are returning to school have lost six months or more of education. And, you know, we know from evidence in the U.S. and the UK that it's the poorest children who will have fallen furthest behind. And they'll be returning to schools that were already failing them. And so, I think the critical requirement for closing the equity gap as we go back to school, is deploying these technologies in the way that you set out. Now, the danger is, you know, in my day job I get inundated with people who have discovered the app that is going to end global illiteracy, and it's going to equalize opportunity around the world. And, you know, if I got $10 for every one of those apps that's going to save the world, Save the Children would be in a much better financial position than it's in.

But the truth is, as you set out in this report, that unless you establish the school in the

way that David has set out as well as a center of community learning, unless you create the institutions in which these technologies can be applied by properly trained teachers, properly supported teachers, by parents, by other children in the community, they won't deliver the results. And in fact, may well exacerbate inequalities. And, you know, the thing that we've noticed in Save the Children where, you know, we're very actively engaged in large scale distance learning program, radio, digital programming, mobile programming, they work best not because of the app, not because of the technology in the app, but because they're harnessed to a teacher, to a community that is supporting the school and so on.

And so I think it's really so critical that, you know, I would say the reports that you've produced, Rebecca and Emiliana, should be mandatory reading not just for every education minister, but for every prime minister and every finance minister because this is really about the future of nations. And, you know, our future prospects for building societies that are more equal by ensuring that groups that currently don't have access to these technologies, get access to them and the benefits they can bring.

MS. WINTHROP: Great, thank you. Well, of course, I love that idea. Everybody read the reports, mandatory reading by the person who's in charge of all the world's finance ministries I'm not sure who that would be.

But I'm wondering, actually, George, to turn to you if you could pick up on Kevin's point because he has a point about narrative, I believe. And I'm wondering if that is part of what you might think when you talk about leadership and this idea of not going back to normal. Or what have we learned over the last 20 years? There is a massive, yeah, there is a massive educational crisis especially for the most marginalized. And we would argue, or certainly we do in the reports that the gap is widening. Because some affluent and sort of well-resourced families, the kids are doing amazing things. They're doing their own learning at their own pace. They're doing robotics. They're like, you know, going deep sea diving by video with National Geographic Explorers incredible, amazing things.

And whereas others, Save the Children was one of the first ones who put out a big report saying, you know, there's at least 10 million children, especially in the developing world, who aren't going to ever go back to education, particularly girls. And UNESCO estimated at some point a little bit ago, a couple months ago, that there is at least 500 million kids who don't have access to remote learning. UNICEF just put out a new report that said there is actually 463 million kids who don't have access to --

they looked at sort of where learning programs are happening and where technology, television, radio, and Internet is available.

Now, that doesn't count for, interestingly, a lot of the creativity that Urvashi and Minister Sengeh were talking about, which is lo-tech just flip phones, What's App, connectively relationships and what Kevin was talking about. So, you know, perhaps the numbers aren't as bad, but still that's a huge problem. And how do we move through that without just going straight back to the access agenda, even though that has to be central?

MR. PAPANDREOU: Well, Rebecca, this is the core of the issue, I think, and Kevin put his finger on it. We often are seeing technology, not just technology, but leadership roles the so-called technical solutions and these are looking for a silver bullet. We're looking for a vaccine and we think that everything will go back to normal. We lose an opportunity first of all. Secondly, technology we have seen and Kevin mentioned this, can actually divide further. It can create new inequities. Those who do have the capacity to use new applications or have the hardware or have the broadband or whatever and those who don't. So, this is something that I think is really important.

Also, what we are seeing now is that trying to go back to the old normal may in fact mean that we're making things worse. Because we are trying to somehow patch up the system so that it continues, but the system has already marginalized people. We have seen, I mean, Urvashi mentioned that, but also Minister Sengeh, that there are marginalized groups. And trying to simply patch the system up could mean that these marginalized groups get further marginalized.

So, the question of not just the narrative, but what are our goals and how policy therefore respects these goals or follows these goals is really the issue. So, the idea of on the one hand radical inclusion. I like that. It's a very nice point. So that as a policy. So, you have to say how does technology make sure that we do include and not just say, okay, technology is going to solve it. No, technology will not solve it if we don't have people using it and policy and ministries and governments saying we use it in order to have radical inclusion. In order to deal with the marginalized groups, the more vulnerable or the less privileged. So, we want to move from privileged to rights in many ways that everybody is guaranteed rights in this educational system.

And I think another point, which I think is important too. This moment has and we've

seen it both Urvashi mentioned it and the Minister, has brought in a sense of creativity. Well, that can get lost if we try to go back to the new normal -- to the old normal. So, and somehow we have to nurture that the creativity quotient. I like that word. And it's not just innovation in technology. It's innovation in finding new partners, using community, working with parents, new sources of teaching and learning, new types of materials, new ways of building materials.

Again, however, this is not a technical issue. This is a political, if you like, or an adaptive issue. An issue which no app is going to solve. It's going to be through our concerted, combined efforts and driving, pushing an agenda. And this is what we need to do. What we need to do in these discussions is, you know, we may be informed citizens, if you like, with our experience. How do we get these ideas, as Kevin said, these reports out into the public debate and public domain so that we really, at least for leaders that want to, actually can use this and move forward? There are leaders that will not want to do it. And as I said earlier, there are leaders that try to create divisions to keep their standing strong supposedly. But for those who do want to see change, I think we need to see how we can access them and convince and policy changes in this direction.

MS. WINTHROP: That's great. Kevin, I want to come back to you just on that because where George ended there was really talking about a campaign and could be interpreted as talking about a campaign. It's talking about pushing an agenda forward at the leadership level. And Save the Children has been one of the key organizations involved in a really big campaign called Save our Future, which we're involved in too and very supportive of. Which is really around organizations in the international development field coming together and thinking about how to make sure ministers of finance, head of state, prioritize education.

And we actually have two questions who asked the same similar question, one from Isabel, one from Susan. And they both are asking, you know, how can you make sure that governments prioritize education amid all -- at this moment in time, amid all the competing agendas that governments are facing? And they're asking particularly about, you know, funding resources. And I know that's a big part of the Save our Future campaign. Do you want to talk just a little bit about that? What is the strategy behind the campaign? How do you think it will be possible to keep education prioritized for funding or at least sustained budgets? Maybe not increased but sustained.

MR. WATKINS: Well, look I think it's a really tough question and I would encourage people actually having promoted Brookings reports, I'll now blow the trumpet for Save the Children. If you go to our website, we've got a report where we set out our campaigning agenda. And I think, you know, there are opportunities and risks that we face. So, the opportunity, and you said this right at the beginning, Rebecca, is that all of us, I think, understand the importance of communities and schools and teachers in a way that maybe we didn't if we're honest, a year ago. You know, I've had six months at home with my little guys and we were both really relieved to see the back of each other as they went back to school. And, you know, I certainly have a newfound admiration for teachers and an understanding that I didn't have before. And so, you know, I think, you know, this may be an opportunity to get education on the agenda in a way that it should have been, but it hasn't been.

I think on the other side, you know, the great danger with COVID-19 is that policy makers around the world still predominantly see it as a public health crisis. And it is a public health crisis. But I think it's a public health crisis, which could give rise to what is an unprecedented education emergency. You know, setbacks in the educational progress of whole nations.

And to address that I think we need to do partly what we're doing in this meeting, which is talking about the costs and the consequences of inaction. And I hope someone's going to write out what George set out at the beginning because I think he framed it brilliantly. But, you know, we're in an environment where finance ministers, especially in low income countries, have seen the floor drop out of their budgets. You know, the combination of a collapse in revenue, reduced growth, cutoff in remittances. And let's be honest, the international response on education has not been great. And I'm talking about the major multilateral institutions here.

One of the things we've argued for in Save the Children, especially for low income countries, is that, you know, there are many countries that are facing very steep debt repayment obligations, especially for private sovereign creditor debt around 40 billion actually in the next financial year. Now, surely this is an opportunity to say there's a choice here. Do you put first the claims of private creditors? Or do you put first the rights of children to investment in education? We would like to see part of that debt redirected into investment in children including education. We have to build the political momentum for that to happen. It's not going to be easy. I mean, George dealt with a debt crisis in

Greece very directly. This is a debt crisis on a global scale in an area where we don't have a debt relief framework. But I think putting children first above the claims of creditors has to be one of the things we should be able to unite on.

MS. WINTHROP: Great, thank you. I want to pick up on another thing, George, that you talked about. And in fact, all of you have talked about with just technology. And we also have two questions from Anil (phonetic) and Ava asking about really how have you seen technology being the most useful at this current point in time? And what are the technologies you're finding most useful? Minister Sengeh, I'll start with you and then Urvashi, we'll finish off with you with the last word.

MR. SENGEH: Thank you very much. Yes, I think in terms of one of the things that we worked on is hybrid technology solutions lockdown (inaudible). I am also the Chief Innovation Officer, and we have these hybrid technology solutions that we've been working on already. And so, the NVSSC on basic education we have a framework. You know, paper as also technologies some people often forget. So, it's things that work online, offline, paper, mobile web, of actual in-person, a combination.

And the biggest outreach obviously is radio. And one of the things we've done is to expand on radio and we had with the (inaudible) service commission new curriculum content and when people think about radio programming and radio teaching, originally was different. So, it's not just the technology that transmit, whether it's a technology to record and interact that's also been very useful.

So, for me really, and now the key is how do we use radio and which is back to your point, to support continuous learning and professional development even when schools resume to normal?

MS. WINTHROP: Are you --

MR. SENGEH: We don't just have to imagine that --

MS. WINTHROP: Are you talking about -- is that something you're pondering and thinking about?

MR. SENGEH: No, it's something we're doing. It's something we're going to do.

MS. WINTHROP: Okay. Now, tell us a little bit about what you're planning on doing or doing now and planning on continuing.

MR. SENGEH: Two things. Two things. Well, with radio we really went to core of the --

in fact for the last month, we focused on basic education because they had exams at the junior secondary school. And we added things like music and meditation that nobody imagined that (inaudible) --

MS. WINTHROP: Is that interactive radio?

MR. SENGEH: The radio teaching. Yeah, yeah, yeah, they don't have many of them that have music and meditation in their normal life and we added that.

And two things we're doing. One is continuous professional development. We're developing content. Now, it's already running. So, with the British Council we have English continuous professional development, which is running every week. And TSE is charge to come up with new (inaudible) work to roll out. And we're working with UNICEF on that as well. And so we provide a radio and the USB, radio USB to teachers and so you can do both complimentary USB and radio.

And for schools we're looking to see how we can augment -- and you know, back with teachers. I can't provide -- we can't provide French teachers or language teachers to everybody. And the question is and it's one that my team is thinking about, can we have a really fantastic French curriculum or Arabic curriculum or some entrepreneurship curriculum that everybody who is in JSS, all JSS kids that each have a radio. I have 1,100 radios. They all listen to it once a week. These are some of the questions we're thinking about.

MS. WINTHROP: That's wonderful, thank you. And I should note, Urvashi, before I turn to you, that on Kevin's point about maintaining budgets -- I'm skipping here. But Sierra Leone I was incredibly impressed that it has maintained and increased its budget to education. One of the few countries that I think has done that.

MR. SENGEH: That's correct.

MS. WINTHROP: And in large part to the advocacy of you, Minister Sengeh. Urvashi, final word. Tell us about your thoughts around technology and how particularly offline, you know, how it can work in the remotest parts of the world.

MS. SAHNI: You know, what I find that are the things that it's actually technology has provided such a huge opportunity that it's shown us ways of increasing our outreach into remote villages. We started the school that you mentioned that these will be the hubs. And we built an army of volunteers really, fairly low paid. But volunteers with smartphones, which we provided, and small simple laptops with

an Internet connection.

And what they've done, even during this time is set up with the community centers where they're teaching 12 children. And they're in touch with the school that is providing the content, that is providing training, and they're facilitating and they are lending their own creativity to make more stock themselves. This what it's done is where we had about 1,700 children in part of our community centers, we already had those, but we weren't using technology like this.

Now, it has tripled and we are planning and, you know, and it's reduced our cost. So, in terms of the budget -- by the way, and there is also promise to raise it from 3.4 percent to 6 percent of the GDP. But it's been promising this for a while, so we have to wait for it to happen. So, we are another country that's doing this.

And, but we intend to continue. And what I think is going to be very useful going forward is lo-tech, no apps given. Our teachers have made their own materials. Short videos in their kitchens in their homes. Our students have made videos that they have been sharing with each other. And when we are talking about these volunteers, who are they? These are our alum. There are people in the community who are educated but want to do this. And in their own verandas, in their own terraces. We have been calling and small centers 12 children, 15 children. But many of them. And I think that's what's going to happen. That to increase outreach, it's going to be schools as hubs and these community clusters or forms of learning as you have them in the U.S. as the spokes. And they will be connected to the schools that we'll provide.

The other thing we've done is because we know that technology is the way forward, our teachers are (inaudible) digital (inaudible) we call them. They're also teaching young adults, making them digitally literate. The other thing that's happening is that because children are learning on these little phones and they're learning at home, parents have become very interested. So, it's another way of doing adult literacy, giving us that idea. And then --

MS. WINTHROP: In some ways you're talking about, you know, one sort of innovation with multiple benefits. And I think I'm hearing you right --

MS. SAHNI: And no cost. And no cost.

MS. WINTHROP: Right.

MS. SAHNI: The other thing, I just wanted to add this, Rebecca. In terms of inclusion, what it's done is it is managing to span distances. So, now when we have a webinar, for example, you know people have videos. We're able to get children from villages, children from low class home, children from middle class homes all on the same page. And everybody is beginning to share their view. And I can't tell you how that has helped empathy. When teachers have got a greater insight into parents' homes, and parents are looking at teachers as human beings also with their own challenges. That's humanizing people. And they're --

MS. WINTHROP: That's great. Thank you, Urvashi, for that. That's an incredible --

MS. SAHNI: -- no Google or Facebook.

MS. WINTHROP: That's an incredible example of leapfrogging as we speak amid crisis. And if I'm hearing you right, you're saying we should sustain this anyways because even before the pandemic there were lots of kids who weren't included. So, thank you for that. It sounds like a great innovation.

We're going to continue the conversation on technology. I want to thank you all very, very much. Thank you, Kevin. Thank you, George. Thank you, David. Thank you, Urvashi for spending your morning, afternoon, evening with us. We're very, very grateful.

We are now going to transition to our next panel where I'm very pleased to allow you to have a deep dive conversation with the authors of a new education technology playbook we have out. Which is really looking at what do we actually know works in improving teaching and learning through technology that can be very informative as we think about leapfrogging and education system transformation and what strategies we want to sustain over the medium to long term.

Many thanks for our moderator who I'm going to hand over to now and will take it away, Jearlyn Steele. Who we have invited because she's a radio talk show host at CBS and incredibly interested in inequality and solutions-oriented work. But I must say for those of you who don't know her, she is a true renaissance woman. She is a singer, has performed at Carnegie Hall. She is an entertainment reporter. She's also an actress. So, Jearlyn, we are very impressed with your multi-dimensionality and we're very grateful to have you here. So, over to you. Thank you.

MS. STEELE: Oh my goodness. Thank you so much, Rebecca. I sound so good in

those words.

MS. WINTHROP: You are so good.

MS. STEELE: Well, I tell you, that conversation that you just had with the Prime Minister, and Kevin, and Urvashi was really enlightening. And to realize that we're all working together across the world to make sure that the children are learning is really quite remarkable. So thank you for that.

I am delighted to moderate the second hour of the event. We just heard incredible stories of innovation and resilience from our speakers from India, Sierra Leone, and the UK.

Now, one of the goals of this conversation is to shift the debate from reopening schools as we used to, prior to the pandemic, to seizing the opportunity this crisis presents which is to transform schools, so all children and youth learn the skills they need to reach their full potential. In this hour, we'll talk about how education technology can be harnessed to improve student learning.

And I'm delighted to introduce our speaker, one of the co-authors of the Center for Universal Education's new publication, "Realizing The Promise: How Can Education Technology Improve Learning for All?" Emiliana Vegas is senior fellow and codirector for the Center for Universal education at the Brookings Institution. After Emiliana's presentation, we will have a conversation with her, and her two co-authors Alejandro Ganimian, assistant professor of applied psychology and economics at New York University's Steinhardt School of Culture, Education and Human Development, and Frederick "Rick" Hess, resident scholar and director of education policy studies at the American Enterprise Institute.

Now please, send us any questions that you may have via Twitter by using the hashtag transformingEDU, or by emailing your question to events at Brookings e -- Brookings.edu; I'll get that right. If we don't have time to answer your questions today two co-directors, Rebecca, and Emiliana will be on Twitter at 9:00 a.m. Eastern tomorrow for a live Q&A session.

So now, let's hear from Emiliana Vegas.

MS. VEGAS: Thank you so much Jearlyn for this introduction, and I will turn now -- I will turn my screen on now so you may see my slides. So as we've been talking in the previous session, we are going to hone in into how can we leverage and realize the promise of education technology to improve learning for all. And I'm going to summarize very briefly what is, in this report that Alejandro, Rick, and I prepared, targeting really ministers of education around the world, especially those in low and

middle income countries to help them really think differently about how they can employ technology to accelerate student learning, leapfrog, and really close the gaps that we observe today between low income children and youth in poor countries, and in high income countries, but also in high income countries, like the US where children from disadvantaged and poor communities are at huge disadvantages.

So the book is organized into five sections. First we have a brief introduction setting the stage as to why we embarked on this work and why we think it is relevant, especially in today's covert, and hopefully for the post covert world. Second, will describe briefly what is the framework that we are relying on to shift the conversation between what we call kind of supply driven technology to really thinking about what are the questions that we want to address with technology to improve learning.

In the third section we talk about the diagnosis. How important it is to really understand your local context, and we provide some instruments to do that. In the fourth section, we review the evidence on how technology can really complement the work of teachers, and how to play with comparative advantages to accelerate learning. And finally, we discuss our prognosis which is really a step-by-step guide for policy makers to leverage technology for learning.

So let me start with our brief introduction. So when the one laptop per child program started almost 20 years ago there was this hope that it would be like a magic bullet. That if only every child could have a device they would really have access to infinite learning opportunities. But reality has shown us that this has not really been proven to be the case and, in fact, few education technology interventions have proven to really help leapfrog learning. So we argue for a simple, yet surprisingly rare approach to education technology that speaks to first understand the needs of what you're trying to achieve. What are the infrastructure components and capacities that a school system has to engage technology for learning.

Second, to survey the best available evidence on interventions that match those specific conditions, and finally that once you decide on what intervention to introduce that it's so important to closely monitor the results before you scale the map and why you're scaling them up. Our framework is based on a framework that was first developed by two very prominent education researchers in the United States; David Cohen, and Deborah Ball, who argued that part of the reason why so many efforts to

reform education and improve learning in the United States have failed is because they haven't paid sufficient attention to wah they coined the instructional core; and that is the interactions between learners, or students, teachers, or educators and content.

And what we do is we enhance this framework a little bit by including as well parents who, in normal times, but especially in COVID times play a very important role in mediating and helping the interactions between both learners and content as well as between learners and educators.

Then, we turn to the diagnosis. In the playbook we argue that in deciding when and how to invest in education technology, systems should first understand for their own context what are its specific needs to improve student learning. For example, there are some countries where over 70 percent of students are not meeting the basic proficiency levels in reading and math. And that's a very different problem to address in countries where there are high levels of inequality and you have large scales of students at both the bottom and top ends of the distribution of learning.

The second factor that decision-makers should consider is, what is the infrastructure context in their own system. We were just hearing from Minister David Singer from Sierra Leone talk about how important paper is as a technology and how radio is the way in which, in that country, they can be reaching so many students in rural and remote areas. So that so important that's very different from other countries. And so a lot of the interventions that have tried to introduce EdTrack (phonetic) in developing countries in particular, but also in middle and high income countries that failed, in part, it is because they haven't really deeply understood what was their infrastructure context. And thirdly, what's the capacity to integrate technology in the instructional process. How do teachers and educators, how do school leaders, and how do students, and even parents engage with technology today can be a real strong factor to consider in how we might get them to move to really use technology effectively for learning.

We developed some instruments based on our research of already survey instruments that exist in a number of international and national assessments of education technology. But we also advise governments to leverage their own administrative data or data that comes from the service if they have already participated in them.

The fourth section of our report really focuses on a very different kind of review of the

evidence of education interventions in low and middle income countries. And it's different because we really try hard to build on what we know from the learning sciences and to shift the conversation from what we see as more of a supply driven review where a lot of the evidence is analyzed in terms of whether it's hardware or software or what types of software, but really asking what are you trying to achieve and where can education technology really play a comparative advantage, vis-à-vis, the work of teachers, students and parents, to accelerate learning.

So in our understanding, there are four ways in which technology can really complement and accelerate learning. The first one in the bottom left of the slide is scaling up standardized instruction. So we heard earlier that providing radio -- through radio lessons is a very effective way in some contexts to scale up standardized instruction. In our review we document evidence from prerecorded lessons and also these ways of providing distance education.

The second comparative advantage of technology that we identified is facilitating differentiated instruction through, for example, computer adaptive learning that really meets the student at the level in which they are in terms of their skills and helps adapt in real time so they can continue to grow those skills. In another area in which we found less but let's say emerging evidence, it's a more recent type of intervention given how technology and connectivity has evolved, is like one-on-one tutoring, which can also help facilitate personalized or differentiated instruction.

The third comparative advantage of technology is expanding opportunities for students to practice. So we know from the learning sciences that it's not enough for students to read content or to hear content through a very good lecture for example, but really when one really comprehends and acquires the skills and we can act upon, is when we practice and apply them to a real-world problem. So technology provides a forum whereby students can access almost infinite numbers of opportunities to practice concepts that they've learned in class or through other means. And finally, technology can help increase student engagement through a video tutorial or games and in some ways making learning more fun through playful activities, which we know also is a way to engage students differently and help them learn faster.

So our fifth and final section really presents five steps to realize the potential of education technology for learning. The first one is really, as you can imagine given that we provided some survey

instruments is just to take stock of how your current schools, teachers and your students are engaging with technology. The second important step is to consider how the introduction of technology may affect the instructional core, these interactions among students, teachers, and content. The third important step in a review is before you even design an intervention is really to define what is it that you are trying to achieve. Are you trying to move everybody to a minimum or acceptable level of proficiency in a certain subject? Or are you trying to reduce learning gaps? And then establish goals and know how you are doing and establish ways to assess progress against those goals and to regularly adjust and make course correction to ensure that you meet those goals.

The fourth important step is to understand that how this kind of reform is approached can matter immensely for its success. And by that what we mean is that involving educators, all the stakeholders, school leaders, teachers and students from early on in the design stage is critical to understand both their capacity as well as their ability to engage with this proposed intervention. And if they own it, they will implement it. And finally, to communicate with a range of stakeholders including teachers, school leaders, parents, and students about what you are attending to achieve and what you are not intending to achieve to ensure that you have the right messages.

So with that, Jearlyn I will turn it over to you and we can start our conversation.

MS. STEELE: Thank you. Thank you so much Emiliana. It is really quite remarkable this report. It opened my eyes to so much more than I had considered. Educating my children, education means so much to me. And so knowing that this report could really take standardized learning and add to that and expand it so much more. So I'm looking forward to re-reading and rereading this report because I think it's that important.

I want to start out with you, Rick. As you heard Emiliana talking a moment ago, I understand that one of the reasons that the three of you came together to write this report is that you, Emiliana, and Alejandro shared the view that although technology had not delivered on its promise to transform education, it could still do so if we only thought about it differently. Why do you think Alejandro, this approach is different and how do you hope it will shift the conversation?

MR. GANIMIAN: This is for me or for Rick? For me?

MS. STEELE: It is for you, yes.

MR. GANIMIAN: Excellent. Wonderful. So we are hoping they will shift the conversation in a couple of ways. One of them is by being founded on a thorough diagnosis of the system. Often times what we see in terms of adoption of education technology interventions, particularly, but not exclusively in developing countries, is that the product of the moment, be that a one laptop per child or be that a Khan Academy product is what is being taken up by school systems. What we are arguing for is something that actually is trying to leverage all the data that school systems are regularly collecting and perhaps not fully taking advantage on to actually say, number one, what do you want to change in terms of learning. Do you want to get rid of low performers? Do you want to challenge high performers? Do you want to be able to educate children in the same classroom that have different levels of skills? Whatever your needs are, you need to outline those first.

Then, what do you have to make that work. What is your infrastructure? What is your electricity? What is your Internet connectivity? These seem like, as Emiliana was saying, super simple questions. However, they are -- there are reasons why some of the highest profile initiatives in education in technology in some developing countries have failed. And thirdly, what is the capacity of your system to adopt any technology. So not only do teachers know how to manage education technology, what familiarity do the students have with that, but in addition to that, do they have resources at home and at school. What is -- how open are they to taking them up? So that's the first one, being based in a very solid diagnosis of the system.

And the second one is, being evidence-based. So this seems quite important, especially when the prevalence of certain education technology products seems to be determined based on the publicity that they get and also because, let's face it, governments face very strong incentives to take up reforms that may not be effective. Distributing laptops looks like a great initiative on paper and in the newspapers and in photos, but not necessarily the most effective, in fact, sometimes it actually harms learning. So combining both this diagnoses with a candid, I would say, reading of the evidence is what we think is sort of most distinctive about the approach that we are proposing.

MS. STEELE: So the challenges you must have experience trying to diagnose things from all of the sides is challenging. We've been trying to get the diagnoses correct for many, many decades. So when you see this report really changing things when it comes to the diagnosis?

MR. GANIMIAN: Well, I would venture to say that most school systems do jump into the technology adoption phase without conducting a diagnosis. So one point of difference I would say with, say for example with respect to 10 years ago when some of these interventions were first being adopted, is the explosion of domestic, regional, and international assessments. Those only give you a full picture of where children stand in terms of learning -- you know, some countries have, such as the Dominican Republic, have about 80 percent of their children performing at the lowest school levels of PISA versus a country like Chile performs among the best in Latin America, but has high levels of inequality. Those two countries have very different challenges in terms of student learning.

But not only the learning diagnosis, but also the student questionnaires. So in the past -- over the past 10 years we've had international assessments asking about the willingness of students and teachers to engage with technology and also the degree of familiarity. PISA has for the past two installments of not more, administered a specific module that is trying to gauge ICT or information communication technology familiarity and other testing organizations have launched assessments of technical literacy, such as the international assessment organization based in the Netherlands.

So I do think that we have quite an explosion of data now that we've never leveraged. And one more thing that I would add is we are also better at using those data now. So one program that I hopefully -- I get some time to speak about later on, what it's basically doing is adjusting the level and the pace of the material to students' ability to engage with the material. So just like most people might be familiar with the SAT or the GRE, if you can answer something correctly, then you get a harder problem. If you can answer something incorrectly, then you get an easier problem. So our ability to, actually, not only use diagnostic data for the system as a whole, but for individual students to be able to use their responses to arguably, actually target the material to what is most helpful to them is actually quite recent and quite an exciting, I would say, use of technology.

MS. STEELE: Thank you so much. And Rick, I know you have a lot to say about this because you two are very engaged and very concerned about the data and how we use it to make sure the students are going to be better after all of this research.

MR. HESS: Yeah. No. I mean, that's terrific. That's what this is all about in the end. Look, I think one way to think about the conversation from this morning about the challenges around the

globe, what Alejandro is saying is we need good data. But the data is only helpful if you're asking the right questions. And I think one of the problems with a lot of education research is we tend to study what we can easily see rather than necessarily things that help us help kids.

So for instance, we know for instance that physicians are going to be able to better treat patients if they have diagnostic equipment, if they have x-ray machines. But we could spend a lot of money and buy x-ray machines for every clinic, and every nurse and every doctor around the land, spend a lot of money on x-ray machines, but it might not actually be all that helpful if we were sending it to people who didn't know how they were using it, if we didn't necessarily make sure that folks knew what it was useful for and what it wasn't useful for. You can imagine a spending billions and billions of dollars on x-ray machines and having people say that medical technology doesn't work because we didn't know what it was supposed to do.

So when you hear Alejandro for instance, talking about assessments or online instructional supports that can go up and down to help a kid, it's like watching a seven-year-old play chess against the computer. If they're watching them play a video game, they're more likely to be playing. If it's too hard, they get frustrated and quit. If it's too easy, they get bored and stop paying attention. If you are a teacher with 25 or 30 students trying to figure out what's just that right level where it's not too hard, but not too easy, trying to play Goldilocks for 25 or 30 kids can just be unreasonable.

On the other hand what teachers are really good at is when a kid is a little frustrated, putting a hand on the shoulder. A teacher can be really good at sitting down with a child at the start of the day and saying, how come you're not -- your head is not with us today. So what you hear Alejandro talking about is not that technology make schools better or replaces teachers, but that technology lets us do things to help kids that just become impossible or unreasonable when we are just dumping them all and a teacher's doorstep. But the answer is no more technology. The answer is, hey, what is technology let us do that we couldn't do before.

And I think what's cool about the report, and this is almost entirely a credit to Alejandro I think, is the job he did really walking carefully through the evidence that speaks to a bunch of these ways that it can get used to help teachers and help schools do a better job solving these problems for kids.

MS. STEELE: Well said. Alejandro, Emiliana talked about EdTech's four comparative

advantages to complement and expand teachers' work so that all students, all students can learn. If you were advising a minister of education to invest in EdTech, which of these would you prioritize based on your reading of the evidence?

MR. GANIMIAN: Well, I hope that you don't think I'm punting when I say that it depends. That is the main argument of our report. No single intervention is effective for all needs in all contexts. And anyone who argues otherwise is just unfamiliar with the nuances of evidence. So what does this depend on? Three very quick things; learning needs, infrastructure, and capacity.

So let me give you some directions in which you might go depending on the needs that you might have as a school system. So you might struggle to recruit effective teachers in remote or rural areas just because there's not enough qualified human capital in that particular area. Well, distance education seems to have very strong evidence and be consistently effective for those settings. So distance education mean some teachers, or groups of teachers sitting in a capital city or in a larger urban area and they are transmitting education either live or in a prerecorded way.

Most of the evidence in this question comes from the very large program, national program in Mexico called the Terex Media program which seems to have improved not only educational attainment, but as the number of years that students complete in those areas, but also the long-term outcome. So how are those children doing once they entered into a labor market or once they entered into postsecondary education. So that's one way to go.

Another way to go is you might be struggling not with recruiting effective teachers in remote areas, but with educating heterogeneous groups of students in your classroom. Why would that be a problem? Well, our developing countries have massively expanded access to schooling over the past two decades, which is great, but on the flipside, it means that now we have the most heterogeneous classrooms that we've had in our history, which means that now you have a single teacher, as Rick was saying, educating 30, 40 plus students each with its own level of his or her own level of starting ability. In that case, computer assisted learning seems to be most effective.

Most of this evidence comes from dynamically adaptive software in India. But as I was saying before, just as the level and the pace of the material to students' abilities the answer the questions correctly.

If you are struggling with -- many developing countries are -- with low instructional time because of short schooldays, or teacher absences, or whatever and with lecture-based lessons where the teacher is actually explaining something rather than interacting with students directly most of the time, well, in that case, opportunities for additional practice seems particular promising.

So most of the evidence that we have on this comes from a series of interventions in which children from middle and high school were getting access to math remedial education software in China that they could use at home. They tested the software in several different settings. So it really does depend on what your needs are. But I think for a given level or composition of needs, there is most definitely one set of interventions that seems to come out and strongly, at least temporarily, in terms of the evidence.

And I want to highlight, this evidence is not just -- because I think this is quite relevant in EdTech. It's not just when this program happens children do better, but these evaluations that we are discussing here, evaluations that are specifically designed to determine the causal effects, the cause-and-effect relationship of these interventions. So we are actually quite confident that these interventions improve learning in the way that we've discussed.

MS. STEELE: When you mention infrastructure, immediately the hair on my head stands up because I know that infrastructure has been a real problem.

And Rick, you can speak to this as well. As we watch all that we learn unfold, it's infrastructure that's right in the center some the complications. Would you agree?

MR. GANIMIAN: Well, I think so. So in developing countries at least, we have a series of impact evaluations that are trying to understand if you only improve infrastructure, does that actually help children. And the answer is mostly no. And once you stop and think about it, that doesn't seem all that surprising because infrastructure, or learning materials, or computers are only going to be helpful to you if they affect the crucial instructional core that Emiliana was referring to. That is interaction between students, teachers, and the material. If you're not affecting instruction, then infrastructure itself is not going to be helpful.

Now, if you combine infrastructure with better skilled teachers, and you might do so by training the teachers, you might do so by helping the teachers, as Rick was saying. You might do so by

using teachers from remote locations through prerecorded lessons or live lessons, then that seems to change things. What I think that is something we should be really cautious about is sometimes we -- or often, or increasingly I would say, we perceive inequalities in access to technology and we want to address that. And I think that's a very normal, and caring, and empathic thing to want to do in a school system. If we see low income children with no access to computers, we think that just merely providing them with such computers is actually going to make them learn a little bit better.

What we've learned is we need to do a little bit of extra work. We need to connect the resources to something that we think is going to change learning every day or children's daily experiences in school in these developing countries. So it's the necessary but not sufficient condition for improving learning outcomes. And in this particular case, we want to make sure that this is affecting something meaningful in the instructional process. If that makes sense.

MS. STEELE: Okay. Rick, here's the thing. As we know, every time we embark upon a change in our education system, we have the children that are learning and receiving all of this data outside of the school, away from their teachers, and then they come to the school and there is more data inserted. That is a real challenge because sometimes they fight each other, correct?

MR. HESS: Yeah. Yes, they do. And you know, this is kind of on display right now. Any parent who is dealing with remote learning -- you know, my first grader's downstairs right now in front of the computer. And so you've got all of the stimulus and all the stuff that they have in their life most of their day, and then you stick them in front of the machine and the school says, okay, we are supposed to teach stuff and trying to figure out what that stuff is and how do you get it to the kid.

And you know, and part of the problem is trying to figure out this stuff in isolation is if you are a school district and you got a curriculum you're supposed to cover and you've got to run these diagnostics, what you tend to do is think about how does technology help you deliver the stuff that you are supposed to deliver to get the assessment expectations that you are -- and U.S. state government around the globe, your national government is looking for.

And that may or may not actually be where these kids are tripping up. It may not speak to the actual challenges that they're bringing with them. And so what happens is we often wind up talking past each other. The way that schools and educators think about education technology can feel real

distant from the real frustration that kids, and families, and communities have, not because somebody

doesn't care but because they're speaking two different languages.

MS. STEELE: Those two different languages, Emiliana, if you can step in here. It

doesn't allow us to communicate as well as we need to. No matter how many gadgets we have, no

matter how much data we are receiving from the world every second, every minute, the children are still

seeming to miss out not just on the learning experience, but there are different types of learning going on

every day in the school room or online. And as we learned with this pandemic in the United States,

distance learning is very difficult.

And how do you get the children back to doing it? If they go into the classrooms even

two days a week, they start to be at home on education technology. And how do we make sure that they

continue to hold on to that and know that no matter where they go, the technology can support them not

necessarily be their be-all?

MS. VEGAS: That's a really good question. And I think what this pandemic in

particular -- but you know, profound education research has shown prior to that is how important

interpersonal relationships are between students and their teachers and that there is no technology that

can really supplant that. So even though students and teachers may not right now be able to many

places to be together in person, the efforts that teachers can make to still reach out on a personal level to

students using technology as simple as cell phones to just check in on them and how they are doing will

go a long way to keeping them engaged in school and to keeping them focused, when they can, on the

learning that they can access remotely or in person.

So that factor, as we were saying both in the presentations and I could hear it and

Alejandro's and Rick's comments about when the EdTech -- you know, with technology started changing

every aspect of the economy, of our own lives, the expectation was that it would solve all of the education

problems. And we now really come to realize how crucial teachers continue to be and their role is really

irreplaceable. And what technology can do is help teachers and help students in that process of teaching

and learning, but it can't substitute either of them.

MS. STEELE: It is so true. I have to tell you Emiliana, my oldest granddaughter who is

about to turn eight, that to me, I think my childhood is over because I can no longer be with my friends at

school. I can't hug my teacher. So the education technology is great. But at the same time, we need -- we are sentient people. We need to feel each other. We need to be in each's space to continue to learn together as well.

Do you agree Rick?

MR. HESS: Absolutely. And I think this is when we talk about asking the wrong questions, I think this is one place in the U.S. we are getting this wrong right now. So we did a pretty - school district did a pretty abysmal job with online learning this spring. And so in too many places the solution this fall has been, we're going to do a lot more of it. It was a McDonald's approach. Like well, we don't really have good drinks here, but we're going to give you really big drinks. It's kind of the Big -Gulp-ification of education.

So you got kindergartners. You know, I get notes from parents of kindergartners around the country who are supposed to sit in front of their computer from 8:30 to 3:00 every day. So not only is it your granddaughter's feeling isolated and there is no hugs, but instead of folks saying wait a minute, how do we use all these technologies to get kids talking one-on-one to teachers, to have kids feel connected, instead it's, how do we use these technologies to bombard kids and parents with a lot more emails, with more assignments, with more instructional hours because the way we've defined education, it feels like that's what we're supposed to be doing.

But again, just like what we were talking a moment ago, what you think about what your granddaughter needs, when we think about what 5-year-olds and 12-year-olds really need, technology can actually help us meet those needs a little bit, part way, but only if we use it real differently definitely then think about killer apps and online curriculum.

MS. STEELE: And Emiliana, it all starts at a different level in different communities, different neighborhoods, different towns, different states. So how in the world do we get everybody on the same -- you know, in the same book to make sure we are applying it not necessarily at the same time, but we are applying all that you -- we've learned in this report? How do we apply it to make sure that the students are receiving what they need first and foremost?

MS. VEGAS: I think what we tried to do really -- and your question is right on. At the same time, it's impossible to answer because there is not one way for everybody to be on the same page.

And that's very clear because everybody right now has different circumstances.

I mean, we heard earlier from the minister of Sierra Leone speaking about issues like girls getting pregnant and being banned from returning to school and that being a big challenge in that country. Or having areas where there is no connectivity, but there are -- or even electricity, but families have access to radio. So it's really understanding your own contexts and then asking the question, how can I serve kids so that they can continue learning and they can even increase their learning with the tools that I have now at my disposal.

But I have to say frankly, and as a shout out to the save our future campaign as well that Kevin Watkins was speaking about, we have to invest more in education. It's really schools and teachers that forge the future of countries, not just of students and individuals. So I think there is a clear need to prioritize education at a time when we are facing obviously a health crisis that requires investment in healthcare and an economic crisis that also requires subsidies to families and businesses. So keeping an eye on the ball and the long-term is going to be really important for our decision-makers.

MS. STEELE: Wow. Invest, invest, invest. Come on Rick, you know what that means, right? And we have tried to define investing in education for a long time. You know this as well, Rick. And so if we are trying and we are not succeeding quite yet, then where do we need to look? Do we need to look under something that will reveal to us what we're doing wrong?

MR. HESS: We've got to do something. You know, it's funny. On the first call, the radio got its shout out. But what folks forget in the U.S., back in the 1920s and 1930s, they said radio is going to save our educational problems. It's going to be the schoolhouse of the air. And if you go back to the 1800s, people were talking about chalkboards and ballpoint pens as revolutionary. Every time the folks out in Silicon Valley or whatever figure out something new were sure that they solved our problem for us. You know, the gentleman on the first called talking about the search for the killer app.

And so yeah, I think part of the problem is, those of us in education have somehow lost all confidence that it is our job to figure out how to educate kids. It would be a set of folks that -- you know, in the medical profession said we don't know how to fight COVID so we're just going to throw up our hands and wait for somebody somewhere to come up with a laser. No, no, no. That's not how it works. You guys have got to drive the train and got to tell the tech folks what equipment is going to help

you get the job done.

And in education, I often feel like we've just like we've let the educators go to the caboose and the folks with the tech investment are sitting up in the engine saying, let's try this. Let's try that. The answer ought to be real simple. What I think we -- you know what Emiliana did a great job of framing out in the report was look, the answers to using tech to improve education are the exact same as any other effort to improve teaching and learning for kids. It's got to be about the child. It's got to be about the educator, and it's got to be about the content, and it's got to be about those dynamics that they are facing.

And if we think about it that way, teachers spend a lot of time even when we are not living through 2020, teachers spend a lot of time on things that don't help kids. They are watching kids sharpen pencils. They're listening to announcements that interrupt their class. They're dealing with one craziness after another.

There is a study out of Providence, Rhode Island which figured that teachers have more than 2,000 interruptions a year in class. After each one of those, they got to get a bunch of 9-year-olds back on path. And meanwhile, you got kids who can't get the explanations they need, can't get the support they need.

Now technology is going to help with all of this like crazy. Technology can allow teachers to take attendance in a snap. Technology can allow teachers to give kids a quick six question quiz where they can flash the numbers up anonymous to see who gets -- whether people understand something or not. Technology creates all these ways to let teachers do the teaching job more effectively, more powerfully, and they let kids, like Alejandro talked about before, get the support they need.

But when you talk to folks cooking up cool new technology apps, when you call to the folks running procurement either around the globe for nations or in the U.S. for school systems and states, this is hardly ever the conversation you have. Instead of talking about what problem is this technology going to let solved for these kids and these educators, we wind up talking about which technology makes test scores go up. And as long as we're having that conversation, I think we are looking under the wrong rock.

MS. STEEL: Alejandro?

MR. GANIMIAN: I think that's right on. And let me add a couple of illustrations just to

give a sense of what Rick is talking about in developing countries. So I think one thing that we need to --

that is underappreciated in this debate is the trade-offs of the adoption of technology. So as Emiliana,

Rick, and I have mentioned, one of the highest profile education technology interventions was one laptop

per child intervention which was adopted in Peru and many other Latin American countries in which

children were given a netbook that they could take home in some cases. And that netbook came pretty

loaded with a host of different software.

        Well, this was not the only hardware intervention. There were other interventions, one in

Romania in which they give kids desktop computers. This other interventions which kids are given

tablets. The same principle applies. What you think kids will be when given a hardware with a bunch of

software? Do you think they're going to use it for Microsoft Word and Excel or are they going to use it for

games? They're going to use it for games in many cases.

        This is very funny for us think about in hindsight, but these are very disadvantaged

children who are already performing at very low levels of achievement. And the fact that in some cases

the provision of this hardware actually led them to perform worse in school is a serious business and we

should be paying closer attention to that trade-off.

        The same thing happens with the issue of social emotional skills that Rick was raising.

So some of Emiliana's former colleagues at the Inter-American Development Bank had this beautiful

evaluation of an initiative in Chile that actually tried to get kids to learn more math by getting them to

compete against each other in different groups of different classrooms or across different schools. But as

Rick was saying, if our single objective was to increase test scores, that program was a success.

Children did better in terms of test scores. Now when you look at how children felt about learning math, it

made them more anxious.

        So this is quite interesting. And the reason why I think we need to do about what are we

losing when we are trying to gain test scores, as Rick was pointing out, and also just to flag the

importance of closely pilot and monitor any intervention that you're trying to adopt before you take it to

scale. In the case of Chile, there's a very small scale program if you can detect it and correct it as

appropriate before you take it to scale, then you might have a successful program in your hands. But I

think paying close attention to the trade-offs is very much in underappreciated question in this space.

MS. STEELE: Emiliana, jump right in, because of course you talked about gaming and gamification in this report. And it's important to deal with that because children leave our schools. The leave the classrooms. No matter how great the teacher is, they go home, and their life is in front of that computer and a lot of them are playing games. So I love the Alejandro mentioned that. What say you?

MS. VEGAS: Well, you know in -- there are games and then there are games. So there are some entrepreneurs and a lot of these -- what you call them, crazy apps or sexy apps? I can't remember, Rick, what you mentioned. But they have developed apps that are entertaining for kids and engaging in ways that games do but also build skills. And those of the kinds of apps that we wish all kids had access to. But of course it's very hard if those apps aren't as entertaining as the ones that don't lead to more learning or the ones that maybe have some competitive aspect to it that increased anxiety like the case of the Chilean pilot study.

So we have to be very careful. I think all in all it goes to what is needed in this particular context. What are the main challenges for getting kids to learn and really understanding how technology can best be used. I think very simple ways to unburden the work of teachers is one way as well as to then engage kids differently in their learning experience.

MS. STEELE: Go right ahead Rick.

MR. HESS: Just two points building on what Alejandro and Emiliana just said. One, Emiliana nailed it on this gaming point. We tend to say oh, games or -- look, there's a whole lot of people, like say the folks who built Fortnite, who we should have a ton to learn from as educators about how do we use these to get kids engaged and excited. So when we talk about that caboose and the engine, the educators ought to be driving the train. But when we are think about how to make things entertaining, they ought to be saying, wait, you guys can show us how you do it.

So a lot of times we're just not getting -- you know, when we actually have figured out how to make things interesting, go and sit down with a chief technology officer in a school district and you feel like you are in a movie from the 1950s. Then you walk out and suddenly you're watching a kid playing with something designed by -- you know, for an Xbox platform. And it's incredibly fun and you're dying to have a term. How come we haven't brought that kind of thinking into our ed. So partly this is about -- it's a cultural shift and how we think about these firewalls between what counts as education and

what doesn't.

And then to Alejandro's point on testing just to make sure that folks on a webinar get this right; look, I want kids to be able to read and do math and know science. These are important things. All three of us are -- but we've got to make sure that we are focused on what matters. So Joel Rose, for instance in New Classrooms has pointed out in the U.S. given the way we do assessments, that if you go in and you are working with eighth graders were four, five grade levels behind and you've got supports that help them make incredible games, there gave me two, three years in the course of 12 months, it doesn't show up on the test because the tests are asking are they at grade level. And if you got kids who are way ahead of where they should be in a rural area of India, the state -- the national test might not pick this up because what you are helping them learn, they already knew how to get the right answers.

So tests should be one part of how we think about whether things are working. But the question should not be, did test scores go up. The question should be, are we solving problems for kids and teachers that are important to solve.

MS. STEELE: I need to get two more questions and before we go back to Emiliana.

Alejandro, you have done a lot of work in developing countries. Please share some salient EdTech interventions from these contexts and why they were to improve student learning.

MR. GANIMIAN: Sure. So it actually dovetails very nicely with what Rick was saying. So one of the impact relations that I had the fortune to be involved with, was there was this organization in India called Educational Initiatives, EI, who have developed this software called Mine Spark. The Mind Spark software is a computer adaptive software that actually adjusts to children's learning levels and learning pace. It is available in math and in language. It is available not just in English, but in many vernacular languages. It was developed over 10 years. So there's a lot of iteration that went the product development.

There are learning specialists in both math and language that are focusing all the time in how to improve that software. And in addition to that, every single time that children are using the software across all of India, then if a specific pattern is detected, the children are interviewed to understand how the software is actually working for them. So all of this to say this is not just one of the many sexy products that we've discussed today, but something in which real thought went into how to

improve children's experiences every day in school.

So we've validated the software for children's in grades four through nine and then four afterschool centers in Delhi in India. We valued at over half the school year. So what we found was very large improvements in the assessments that we have developed, speaking to Rick's earlier point, which were targeting very low level skills. So even though we had kids from grades four through nine, we had items that were testing grade one all the way to grade nine content. And the children were improving the most and they were improving a lot of times in the lower grade content items. So they were improving on basic skills.

Interestingly though, we also evaluated that program using the official assessment, so the Delhi school system, and we didn't find those things. Why? Again because the content, the test from the state were at this level. Our test was at this level. So the children were improving in the basic skills that they needed to actually progress, but the official test were not picking that up.

This is a great innovation. We are very excited to see that learning had improved in both reading and math and by a moderate to large amount. So now my colleagues Karthik Muralidharan at UC San Diego and Abhijeet Singh at the Stockholm School of Economics are actually evaluating an expanded version of the software which the software is integrated into the school piece. So no longer as an afterschool thing, but during the school day if you are a math teacher, you can take your kids to the computer lab for one hour per day and help them interact with the material.

Now this might be much more challenging than you might be wondering, but they found very optimistic results which I hear are forthcoming to be shared publicly. So I think this illustrates something that we are trying to convey in this report. First of all, what is your need. In this case, the need was to teach to children in very different levels of ability.

Number two, how do you measure what you want in this case not only using the official test, which of course are appropriate, but also our own tests which were more realistic in terms of expectations. And then thirdly, evaluated as small-scale. See what works and then take it up and continue to evaluate it to see if it works what you scale it up. So that's why I like that example because it illustrates a lot of the point that we are trying to make in this report.

MS. STEELE: Thank you so much. And of course Rick, I really want to ask you a

question. This is your last question. Of course we talked in reports, stakeholders were talked about a lot. Really key that the stakeholders are on board with this education technology and the everyone knows exactly how this is supposed to rollout.

Are there things that have been really effective when it comes to the stakeholders and the technology getting together?

MR. HESS: I don't know that there is anything specific to technology. I think we know a lot about when you actually get some buy-in. One, when a school model is launching and people like that school model and parents and teachers had the chance to opt in -- so we saw this family sleep for instance in small schools in York city 20 years ago. This is been one of the things that has worked around a lot of charter programs. When you're trying new pedagogies, when you trying new tools, instead of telling 50 teachers, you shall do this like it or not, it can work real nicely to say hey, who is excited about being part of this so that you are opting in and in the same for families. So that's one.

A second is making sure that actual classroom teachers and parents are part of a design team. What happens a lot when we rollout these kinds of improvement efforts is we let some smart people -- we have a committee with a couple of teachers from the district and some tech folks and they come up with something at the district level and then they announced in August, this is our new strategic plan. And teachers in a school look at each other and go, first I'm hearing about it. There is real value in taking that extra 12 months and saying, hey, here's what we are thinking about and then letting groups of teachers in each school really weigh in, talk about how it's going to work for them working with parents.

And look, I think a third thing is making sure that these plans are not, here's what we hope to accomplish, but here's why we think this is going to help kids and teachers. Are we wrong? So one of the things I found really useful when I worked with -- at least in the U.S. context with school districts, is if you can get them to start the rollout not by saying he is what we're going to do could is going to improve test scores, but here's what we think we're going to do. We are hoping to help you guys. Are we right? It gives people room to have -- start that open conversation about whether the you've got it all wrong to start with.

MS. STEELE: It does. And of course Emiliana is going to speak to that because -- Emiliana, why was tackling this topic important for the Center for Universal Education? And what are you

planning for the next steps?

MS. VEGAS: Well Jearlyn, thank you first of all to you, and to Alejandro, and Rick for this really exciting conversation. You know, at Brookings Center for Universal Education we really worked to help improve education systems across the world with an eye especially for students who are falling most behind. And those tend to be students that come from the poorest and most disadvantaged backgrounds.

And so that's why we felt like it was important to reach out to people as brilliant as Rick and Alejandro to work with us to help inform this debate on technology and help us understand and help really policymakers and decision-makers understand why, unlike many other sectors of the economy and our own regular lives, technology has really transformed education and how we can think about it differently.

So moving forward, we have a long-standing agenda on how to help education systems make what we call nonlinear change or leapfrog so that they don't follow that same trajectory of what are today's high-performing education systems only because the majority of today's high-performing education systems took at least 20 to 25 years to get where they are. We don't think we have the time for today's cohorts of young children in Africa for example who represent over 50, 60 percent of the population of that continent to wait another 20 years to have the right learning opportunities for them to get the skills they need to contribute and reach their full potential.

So we are really seeking out these opportunities and what the research says are ways in which you can accelerate change. So that's where we will continue going forward. We have a long agenda not only on technology, but also looking at how to involve parents in innovation realizing that they too are a very important stakeholder, and of course working with teachers not just in the education sector, but also other policy makers, for example, secretaries of finance and heads of state -- who we heard earlier the Prime Minister from Greece talking about how education should really drive the recovery and be the great equalizer.

We heard all of the previous speakers talk about how important it is to get this message out not to just ministers of education which are of course our original target audience, but also heads of state who ultimately will be driving these changes. So we are hoping to do a lot more of that. So any

help you all can give us to help get the word out -- we have put all these materials in various formats from

the reported stuff, which looks lengthier than it is because it has very good pictures and graphics, thanks

to our wonderful graphic designers, but also we have a podcast that our colleagues from Brooking Tech

area recorded. We have blogs both Rick and Alejandro and I have put out and videos. So there's a lot of

ways in which we're trying to get the word out and we are asking all of you to help us.

   And meet us tomorrow at 9:00 for a Twitter chat at the hashtag transformingEDU at 9:00.

So we look forward to continuing the conversation. This is only a beginning and we hope to continue and

evolving all of you. Thank you.

   MS. STEELE: It's been a pleasure everyone. Thank you so much.

   MR. HESS: Thank you, Jearlyn.

   MS. VEGAS: Thank you so much, everyone.

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CERTIFICATE OF NOTARY PUBLIC

I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

Carleton J. Anderson, III

(Signature and Seal on File)

Notary Public in and for the Commonwealth of Virginia

Commission No. 351998

Expires: November 30, 2020