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Fortifying America's Future: Pathways for Competitiveness
Chike Aguh, Senior Advisor, Project on Workforce, Harvard University; Former Chief Innovation Officer, U.S. Department of Labor
Bruce Andrews, Corporate Vice President and Chief Government Affairs Officer, Intel
Robert M. Gates, Partner, Rice, Hadley, Gates and Manuel; 22nd U.S. Secretary of Defense, U.S. Department of Defense; Former President, Texas A&M University
Katie Jenner, Secretary of Education, Indiana Department of Education
Moderator: **Courtney Kube**, National Security and Pentagon Correspondent, NBC News
Session recording: https://www.youtube.com/watch?v=gqEXK2VN2ZA

Courtney Kube:
Thank you so much Anja, and I just have to take a quick moment before we get started and say just a round of applause for the Aspen Security Forum. People since, yes, I don't want to name them all. I know I'll miss someone, but what you all don't see is the unbelievable amount of coordination that is going into this with changes in flights and schedules and everything and world events. And the reason that they are so wonderful is because you don't see any of it happening from where you're sitting. So just while I have, this is my last time up on stage, so I just wanted to take a moment to say that while I have the microphone, and thank you all very much for being here. We have a chance to highlight what is, I think a pretty exciting and fascinating collaboration between the Aspen Security Group here and the Walton Family Foundation, which I have to say is a sponsor of NBC News.
Since 2022, the Aspen, ASG and Walton have been convening these round tables with these super smart people, thinkers, big thinkers, and they're addressing some of the talent gaps that exist in critical technology industries in the United States. And one of the ways they're looking at it, as we just heard from Anya, is in education. So they're looking at how these gaps may start as young as in kindergarten. The roundtables have yielded some fascinating reports. And what I love about a report is when there are ones with findings that are applicable to the real world. I know we don't always have those. Let's just say I cover the Pentagon. I know a report that doesn't really have any findings. So does Mr. Secretary Gates here. Last year we had the privilege, my colleague had the privilege to discuss the first report here at the Aspen Security Forum and it found that national security professionals should work with students and schools and educators so that American students can contribute to the national security, to the defense industry and to keep the United States competitive on the world stage.
And today we're here to talk about some of the ways that those can be implemented and some of the next steps for some of these stakeholders. So joining us here for our discussion here today, we have Chike agu, who's a senior advisor of the project on Workforce at Harvard University, former Chief Innovation Officer at the Department of Labor. We also have Bruce Andrews, he's the corporate Vice President and Chief Government Affairs Officer for Intel. Also has government

experience in the Department of Commerce. We also have Mr. Secretary of Defense, former Secretary of Defense, Robert Gates. He's now a partner at Hadley Gates and Manuel. He also served for several decades at the CIA and I believe still is the only person ever to go all the way up through the CIA to make it all the way to director. Correct me if I'm wrong, Mr. Secretary, but you don't want to correct the moderator because the rest of the panel may not go very well for you.
I'm just saying. And finally, we have Dr. Katie Jenner, she's Indiana's first Secretary of Education and where she's working to reshape the face of education, not only into Indiana but also beyond. So welcome all. Thank you all for being here. So the US spends billions of dollars every single year to stay competitive and to be a global leader in technology and technological innovation. But the question that we want to ask here today and hopefully get some answers to is are US schools actually preparing students to move into these future jobs? So that would actually potentially keep the US competitive in technological innovation? And specifically, are they working at it in some of the earliest stages of education like in K through 12? Because these are the sorts of jobs that can actually impact national security and readiness for the us. So I want to start with a question for the entire panel here. Do you believe the current educational system in the US is creating opportunities and pathways as early as K through 12, the earliest stages of education to move students into the workforce and be ready for the jobs of the future? And I'm just going to throw that out to whoever wants to catch it. Chike, I'm looking at you.

Chike Aguh:
First of all, thank you so much to my fellow panelists to Aspen and particularly the organizers of this. Again, there's so much that you don't see and they've really could have made this work. Just thank you to them. The question is, or the answer I think to the question is not for everyone. I think, which has sadly been the case for too long. The education system is a very wide bell curve in terms of not in terms of the quality of the students, but in terms of the quality of the education that they receive. And I think the reason that that matters is that, and I throw the statistic out a lot, which is I have a younger brother, he's about eight years younger than I am. He graduated high school in 2009. That was the largest graduating high school class in American history. Demographically, it simply won't be that large again.
And so as we think about how this ripples through all these sectors that we need workers in, there are implications. The main implication is that we don't have students, we don't have Americans to waste. And if there are students that we are not giving the education that prepares them for the future, actually exposes them to that workplace as early as possible. We are leaving our future workers on the table today. And one thing that I say to a lot of companies who I get to spend time with is I say, understand all the fancy graduates of MIT, Harvard, Stanford, you've hired them already, therefore you're going to need to look and recruit in communities that you haven't before. And many of those communities are ones that they're not getting the education that they need to serve in the sectors that are going to make this country competitive and safe in the future. So I think

the answer is not for everyone and that actually is a huge problem for a lot of the questions that I think we've been discussing today.

Katie Jenner:
I would push that a little bit and say not for most, I think we are not moving fast enough as a country in terms of making sure all of our children have the foundations in reading and STEM look no further than the NAP data. Or you could dig more deeply and probably lose sleep at night if you do. We have a lot of work to do in the space of K 12. The other thing I know we'll talk about is we also must urgently rethink high school in America. It has been the same in our country for about a hundred years and we are out of date. It's time to move in that space.

Bruce Andrews:
Sure. Let me speak from the employer standpoint, which is, look, we are competing globally and there are two major challenges we have. One is just the cost differential between manufacturing in Asia, but another is talent. And for us Intel, we're doing about over a hundred billion dollars of investment in the United States in the next five years. But in order to have the employees to fill the fabs that we're building, we really, really need to see the education system improve. Because if you walk onto one of our factory floors, you have everything from high school and community college graduates all the way up to people with masters and PhD and everything in between. And so having the talent and having people that are able to do those jobs is super important to us. And the amount of our own money we spend right now and work with local education institutions and with other organizations to do that training is significant. So having a better K through 12 system where kids both come better prepared. But also you mentioned STEM education, which is critically important not only for us as an employer but also for the US to be competitive.

Robert M. Gates:
I would just say that I think we have to understand, and I like the idea of rethinking high school because we're going to need to meet the demand for the kind of tech workers that companies are hiring. We are going to need a lot of young people who do not go to college, A lot of young people who have technical skills and that is possible. We have a very high tech firm that employs a couple of thousand people up where I live and they've just opened a new plant. They do classified work for the Department of Defense for a variety of other organizations.
75% of their workforce do not have college degrees, but they're making between a hundred and $200,000 a year in high tech jobs because they've been trained. So back to the military, my brother's a high school, was a high school principal for many years. My wife is the sponsor of a nuclear attack submarine, the USS Missouri. And on the tour of that boat, my brother was blown away by 18-year-old sailors in the technical elements of that boat who understood the technology, who had mastered the technology and who were doing extremely high tech work. They didn't go to college, but they came out of a training program in the military that taught them those technical skills. So

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figuring out which kids go to college, which kids who aren't college bound still need to come into that workforce to fill the jobs that are going to be required that you all have just talked about. So I think that's a really significant element. I think I used to think that when I was president of Texas a and m, I used to think that high school counselors got a bounty for every kid they sent to college Because there were so many kids in college who didn't belong in college. They belonged with technical skills, they were electricians, they were linemen, they were welders and making good livings, but those weren't presented as options for them by those counselors. So I think that this is a much more complex issue than just stem. It's rethinking as you were just saying about how we go at this. And I will just make one other comment. This is not a new problem. There was a study some of you may remember done in 2005 called the Gathering Storm. It was led by Norm Augustine had the president of Yale, president of MIT, Chuck Vest, I was on it. The retired chairman, CEO of Intel was on it that retired chairman and CEO of Merck. And guess what? They came up with exactly the same conclusions that the Walton Foundation studies have done and that was 20 years ago. And the same needs a few of those recommendations were implemented in the Competes Act, but most have not been. So the question is, and we'll come back, I'd like to come back to this at a certain point, the question is we kind of know what we've done a pretty good job of diagnosis. The question is what do we do about it? And more importantly, how do we actually make what we know we need to do happen? Getting from a decision to implementation in this arena is a gigantic challenge.

Courtney Kube:
Well, yeah, you can clap. This is a friendly environment. Okay, let's build off of, because you both made the point about rethinking High School and Dr. Jenner, I want to start with you because you have made some changes to high school in Indiana. So can you explain those here?

Katie Jenner:
I can. And as a good teacher, I always come prepared with my notes. I'm looking at you gentlemen. No, I'm kidding. You'll be great. Well, first of all, just to share with the group, I was reading this report, which is what we're speaking on, which is in your bag there and on page six it says, we must start treating a strong education system as a national security issue. I'll tell you, you may know this, my schedule is very, very open. People know where I am and what I'm doing and where I'm traveling, which is fine, but that's quite a few people say, huh, the National Security Forum, why are you going there? I think going back to the point on the key foundations, which we won't spend a lot of time, but I want to pull one thread and then hit high school hard. When we look at literacy specifically about one in five students in Indiana is not able to read by the end of the third grade. And that data, if you look nationwide at even our adult population, we see some of that as well. So urgently pushing on science of reading, learning from the Mississippi Miracle is key in that space. Let's talk about STEM really quickly. Robotics, and I'm going to humbly brag on that really fast. Indiana has more,

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Courtney Kube:
This is Aspen, humble Brad are thing here. Indiana,

Katie Jenner:
We don't humbly brag very often, so it's uncomfortable. But Indiana has more middle school and high school robotics teams than any state in the nation. And that's your challenge because I want you to push us. We've invested big on that. And the other thing, Indiana gets more invitation to the VEX robotics world Championships than any country or state in the nation. Indiana's number one, do you know who number two is? China is number two friends. And so I think urgently we have to push on robotics urgently. We also should push on computer science, which also includes ai. Only 10 states in the country presently require that course as a requirement, but we have a lot of others that have been there for a hundred years that aren't moving the needle like they should. Let's talk about rethinking high school. We launched the Indiana GPS, which started as a profile of a graduate about three and a half years ago and said to Hoosiers, what matters to you?
What came about is knowledge, of course, reading stem, but also skill development, collaboration, financial literacy, civic literacy, work ethics, et cetera. We took that foundation or took that profile of a graduate and we built a longitudinal dashboard to say if this really matters in Indiana, and that's another tip in here, longitudinal dashboards. If this really matters in Indiana, how do we measure it not just in K 12 but blur the lines between K 12 higher ed and workforce. So for every high school in Indiana, you can see that skill element, but also median income, sustainable employment, some of the pathways that students are on. The other piece that I'm most excited about is what we're doing right now. And I'll tell you if you Google this, which all of you're going to do right now, not all the headlines are positive because change is often desired until the change starts happening.
And so as we totally redo our diplomas, we're leveraging our profile of a graduate as our foundation targeting ninth and 10th grade, 11th and 12th grade. We are totally trying to add significant flexibility for experiences like work-based learning and apprenticeships that really, really matter and are market driven, which I hope you all will talk about more. And then also, again, the credentials of value, which industry should be telling us what we should be encouraging and there are other components to this. You mentioned I feel weird touching your back actually because you're very important. Sorry, that was too much.
It's not just a diploma redesign, it has to be a full system redesign. We in Indiana are looking at our funding formula, we're looking at our accountability model. We are looking at how we're incentivizing what we want to see to build the full system. Final point, and I think I just said that final final, the other option that we will allow students or we will encourage students to have is you can get the enrollment ready seal, the employment ready seal or the enlistment ready seal. You can get two of them, you can get three of them, your choice. And we're working straight with major General Lyles in Indiana to build out the enlistment ready seal working with the Indiana Chamber to build out the employment ready seal, working with our colleges to build out the enrollment. I could go

deeper into all of that, but we're really shaking the tree to rethink high school and Indiana because again, we have to get better for the individual child and our economy and our security.

Courtney Kube:
Chika, you are nodding your head during a lot of that. Do you have you something you want to say, and I'd like you also as somebody who really understands the workforce and how to get people into the workforce. I wonder what you think about some of those ideas.

Chike Aguh:
I think I very much agree with that. I'll say three things and I think it is also helpful where it's helpful to look abroad. So if you were to go to Germany, if you were to go to Switzerland, this distinction between high school higher ed and workforce, I don't want to say it's meaningless, but the borders are far more permeable and that has bounded to their benefit. We certainly think why does it matter how long a student in high school sits in a seat to gain certain skills? I think one initiative I encourage you all to look at is an initiative by Bloomberg Philanthropies where Indianapolis is involved, but basically it's a 12 region initiative where Bloomberg Philanthropies has come in to 12 regions and said, we are going to work with a high school, a healthcare system. We have deep needs in our healthcare workforce and higher ed, and we are going to work to effectively create healthcare high schools where from nine through 12 kids are going to yes, learn things about all their general ed requirements during the day.
They will be on site at a healthcare facility for multiple times a week and ideally when they graduate in 12th grade, they will graduate with ministry certification, a diploma and a job. That's right. There is no reason that there should not be semiconductor high schools or that there cannot be Intel High schools. I'm from the state of Maryland where cybersecurity is very important to us, partially because the NSA is righted on the road from us. Something that they've always been very pressing on is that they have been going into Baltimore City high schools for decades to go get interns. And the issue is they just can't feed enough of that supply because partially the question is, well, how is a kid going to meet their seat requirements for high school if they're on site at the NSA, which frankly probably is going to matter more for their career if they want to make a career there. And so we have to rethink what high school looks like and frankly make the skills the constant and the form factor of delivery, the variable.

Courtney Kube:
Yeah. Can I play devil's advocate on that idea for a minute because what do you say about the notion that you're locking these kids in to a career and a life at such a young age?

Chike Aguh:
I think the answer is, again, we can look abroad. If you go to Switzerland in America, when people make the choice whether I'm going to go to high school or go to college or I'm going to go into the

workforce, we assume it's a final choice there. It's not. It is assumed that, hey, I'm 17 and I chose to do an apprenticeship and I'm going to do that. And at some point if I want to go back to higher ed and get a different job to request that, so be it. It is normalized here. We make a choice as if you're getting married, as if till death do us part, I have chosen to go into the workforce and that's that. That's not the way it works and that's the way it should work because in the semiconductor space, for example, you all have deep meat, of course, what I call the white coat professions, which are the folks actually cutting these waves and doing that.

But to build these fabs, you also need brick layers, electricians, welders, machinists by the way, which we do not have nearly enough of similarly. Again, I am from the state of Maryland and we are trying to replace the key bridge over the Patapsco River and we have to now sit and say, because we don't have enough of these people, do I have to go to Philadelphia or Virginia when we could be creating those jobs here in the state of Maryland, we don't have that talent. So I think what the doctor is saying is so important because we have to change the form factor and let it fit around the student. And we also need to accept not every student will have the same path. There will be some students who spend more seat time in a high school, what they want to do, there'll be some folks who will spend more time on a work site that's also okay.

And I really want to hear from Bruce on this. The key thing I like about the Bloomberg effort is that the employers at the table from the very beginning, we are not theorizing about what those jobs are. You had, I believe, I was at a conference with Secretary Mundo yesterday and she would talk about when she was governor, she said we would do the train and pray approach, which is I train people and I pray that there's a job. That's not how we should be training. It's not how we should be educating and making sure that folks like Bruce are at the table the entire way is really helpful. So I'm sure Bruce has a lot to say here, but I agree with everything that's been said and I think Bruce's and people like Bruce are critical to that.

Bruce Andrews:

Bruce. Well, I appreciate that first of all, but look, anytime you were exactly right though, and what we have realized is we need to help create our own training programs really in partnership with local institutions. So just a couple examples. Yesterday actually in conjunction with Department of Commerce, we announced a new apprenticeship program in Arizona. And to your point about construction workers, if you are a construction worker in the United States right now, particularly in a growth region, you are doing really well. You are in high demand in places where there's a lot of construction going on. Maricopa County and Arizona, for example, 14 major projects, they're importing workers from all over because they're just not enough. When I was deputy secretary of the commerce department at the end of the Obama administration, the number that was out there was about 5 million unfilled jobs because people didn't have the right skills.

I think that number is at least double now, and I suspect it is much more. So there are jobs and companies are desperate for employees, but it's having people who have the right skills and the right education to being able to step into it. So I'll give you two examples. So one is we have what

we call the quick start program, which is a two week program that we do in Arizona to essentially introduce people to what it's like to work in a semiconductor fab. So it's not a training program per se, it's really a chance to say, and these are people who just have a high school degree. This is not, we're not looking for PhDs, doesn't have to be anything fancy. It is literally a come in. We are going to show you what life is like and what the world is like in a semiconductor plant.
And if you're interested, we have a partnership with Maricopa County Community College where you can go to that community college and you can get the training. And we are desperate to get people at our facilities. And one of the things that's always interesting is when you build an ecosystem, one of the reasons TSMC built in Arizona is they followed us because we had created these job programs in conjunction with the community colleges with Arizona State. But the challenge is having that K through 12 education that people are ready to being able to step into those jobs because the jobs are there, but the skills are not.

Courtney Kube:
Secretary Gates, I want to ask you about something else that was in the report that Dr. Jenner mentioned that's that a strong education is a national security issue. And I wonder, first off, do you agree with that statement and where do you see the US as standing right now compared to countries like Russia and China, some of these competitors, major competitors?

Robert M. Gates:
Well, it is a national security matter and it's also a matter of our economic future. But in the national security arena, I would say that, well, the good news is that probably a million smart young people, mainly young men, have fled Russia. So that's Putin's problem a decade from now between the young men he's killing in Ukraine and the number who have fled, Russia's going to have a serious workforce problem, particularly in high tech. China's a different issue and there the major problem is highly educated young Chinese not being able to find good jobs in tech. The tech sector, when the private sector was growing by leaps and bounds in the nineties and the two thousands, those jobs were easy to find and there was a lot of promise for young Chinese. Now it's a real problem because a lot of those companies are not growing the way they were and are not hiring.
And so you have the lay flat movement in China of young people just sort of bailing out or being consigned to do jobs in rural areas or in places that are not stimulating. Let me come at this in a different way. I think the only way this problem gets fixed is a combination of local and state initiatives that we've heard described here about Indiana. There are a lot of them described in the paper that the working group did in different states around the country of new initiatives that are being brought to bear, what's going on in Maryland and so on. But the other side of it is what can be done from the national level and particularly in the national security arena, and people are a little boggled by that. But let me take you back. Let me confess my age. Take you back to 1958, September 2nd, when President Eisenhower signed the National Defense Education Act. It had a revolutionary impact on education in the United States, and I did bring notes.

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Katie Jenner:
That's a gold star for sure.

Robert M. Gates:
I'll just read briefly what the NDEA did and compare it to the recommendations of the working group study that you have in your packet. Specific provisions for scholarships and loans to students in higher education loans to students preparing to be teachers and to those who showed promise in curricular areas of mathematics, science, engineering and modern foreign languages grants to states for programs in mathematics, science and modern foreign languages in public schools. The establishment of centers to expand and improve teaching in specific areas help graduate students including fellowships for doctoral students to prepare them to be professors at institutions of higher learning, assistance for the improvement of guidance, counseling and testing programs, provisions for research and experimentation in the use of television, radio, motion pictures and related media for educational purposes and the improvement of statistical services at the state level. It's almost an overlay of the recommendations of the panel.
That was 1958. It was enacted into law and it revolutionized education in the United States, not only higher education, but K through 12. I was in high school then and that's when honors programs that later became AP programs came into effect. So for members of Congress or the media or others who are in here and think about what could be done legislatively at the national level with respect to national security, you could do a hell of a lot worse than go back and take a look at the NDEA. I went to the Russian and East European Institute at Indiana University on an NDEA loan and it really made a difference at the high school level at K through 12 and at the national level. So if you want to figure out a way to actually implement some of these things with the national security imprimatur and what goes with that in the Congress in particular in the public, go back to 1958, I would add this, the Department of Defense has been involved in supporting educational programs forever. Virtually all Chinese and Soviet studies in the United States were funded by CIA over the years, over the decades I started the Minerva program in the Department of Defense working with a number of different universities and providing money. So for those who say there's no business of national defense in education, they are people who say that are unaware of the actual history that exists here, but also precedents that can be used to good advantage that supplement don't supplant, but supplement the initiatives that are taking place at the local level.

Courtney Kube:
So it sounds like what we're talking about here is the need for federal incentives for programs, right? Would you agree? Is that what you all think? I throw that to everyone, anyone?

Robert M. Gates:

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Well, my view would be I would let the states have their own initiatives. I wouldn't have the federal government try and get down to the local level in terms of what they did was provide, what NDEA did was provide the resources and provided grants to states that were then used and applied by the states. I think you run into a huge political problem if you have the federal government start trying to tell the states how to arrange their curriculums. We had a little experience with that a couple of decades ago and it didn't go well. So I think it's kind of a push me, pull you, you have the local and state initiatives, but then you also have the national initiative and the impetus for the NDEA was Sputnik.
And I mean that was it. It scared the hell out of everybody in the country because all of a sudden the Soviets were ahead of us. There is a lot of worry in this country expressed by these gentlemen and many others about where we are competitively with the people that we're going to need to be competitive both militarily and economically as we go through the next decade or two. And those are the areas that we need to use in effect to galvanize attention at the national level is we face challenges from abroad both economically and militarily. We have not faced in many decades. And maybe that can serve as the same kind of a spark that Sputnik did in 1957

Katie Jenner:
And another recent spark. And I echo I'd like the federal government to stay out of our way and let us run and sprint ahead. But the Chips and Science Act was actually helpful in Indiana. We won. We had a big team that worked on this, but we've one in microelectronics and biotech and then separately in a different area in hydrogen. And so where we're leveraging those dollars is kind of like what you were saying. The Swiss system is very, very interesting because of the permeability and because the way that they have scaled it to 70% of their students in Switzerland is because they have industry leaders and educators at the same table battling it out on what is the curriculum, what is the assessment to affirm your learning? And then of course that job connectedness, that talent pipeline. But specifically in Indiana where the Chips and Science Act has helped us is like with microelectronics and biotech, that's exactly what we're doing.
We've learned from others, we've learned from them. We're pulling together industry educators, building out the curriculum, building out the assessment, but it's all developed around apprenticeships. We're building out apprenticeships for our students in Indiana in these areas. I think your example was excellent, but what a lot of our industry leaders are sharing is the one off schools calling a business saying, can you partner? Can you partner? Can you partner is wearing out our business and industry and then the schools don't have time to do it either. So that systematic development, sometimes it involves an intermediary helping to develop that. But that is one way that the federal government has helped us move it forward. One

Courtney Kube:
Thing, the report also identifies some gaps. It identifies six actually specific sectors that have major talent gaps, all technology and based artificial intelligence, quantum computing, semiconductors,

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five 60 G, technology and biotechnology. So I wonder, and Chike, you've been nodding your head a lot over there. I wonder are you finding that, and to Bruce, I actually want to ask you this as well, if you're finding talent, enough talent in those areas to come into private industry, and I wonder, Chike, if you can say how you think the US can be better prepared. You've thrown out some of those ideas already, Bruce.

Bruce Andrews:
Sure. Well the short answer is no, right? Because two things. One is the system. So starting with K through 12, working up through our community colleges, colleges, graduate schools are not churning out enough engineers. We're not churning out enough computer scientists. And it's a really competitive world out there. So if you are a computer science major, you're going to have a whole bunch of interesting options when you come up. If you're an electrical engineer, there is a huge demand. One of the things businesses said is, Hey, we need to reform the immigration system so we can make sure the best of the brightest if people come to graduate school, we can keep 'em here, but we've got to do it as a homegrown talent because it's not going to work in the long term. And two, the secretary's point about being national security. We learned during covid, we learned during the Shanghai port shutdown, we learned why resiliency is so important.
And one is having resiliency in supply chains, but we can create all these great jobs we're going to create with our investments about 87,000 new jobs. And if you multiply that, that's going to end another 10 by 10. So probably 870,000 jobs are going to be created by what we're doing. The challenge is if we do not have the workers to fill them, then we've got a real competitive problem. And so having these systems set up and what you said is really important, which is we've gone and created programs with community colleges, with universities ourselves, but if there was a way that we didn't have to do all the work and the intermediaries were mentioned, which is really important, but having a system that we don't just have to create it ourselves in partnerships with the schools would be remarkably helpful.

Chike Aguh:
Yeah, no, I think we lack for a system, we have a lot of great one-off examples, but we do not have a system. If you were to think about most companies, there are people in companies who assiduously follow your supply chains. They can tell you where the freighter is that has the silicon on it that's going to go into the fab, but there's nothing parallel around your talent. Most companies don't have that level of granularity on where am I going to pipe in the talent. I encourage you to look at a paper written by Joe Fuller from Harvard Business School and Matt Siegelman from Running Glasses Institute on creating a talent supply chain. We don't have that at scale anywhere in any company, in any country or in any community. I think the other thing I'll say is when you look at some of the gaps that are made in the report, one of the things I think about in remembering a lot of these emerging technologies is there's a mix of technical skills, what I call again, those white co professions and also frankly what we called skill technical workforce.

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So let's take quantum computing. If you've ever seen a quantum processor, it's about as tall as I am and huge, massive. But I didn't understand it until I went to IBM and I said, wow, that quantum processor is huge. And they said, no, no, no, it's not actually. And they pulled out this little thing and they said, this is the cubit that all these brilliant folks from uc, Berkeley and Los Almos helped develop. And then I said, well then what is the rest of this? And they said, this is simply cooling. It gets so hot, they have to keep it cool and it's liquid nitrogen and all the things you have in your fridge. And I'm like, this is hvac. To make that quantum processor work, you have to combine those things that frankly we've looked down on for too long, these skill technical jobs, combine it with these yco professions and that's how we're going to win.
So when we think about these jobs for emerging technology industries, remember it's not simply your engineers and your scientists. It's not even just their skill technical. It's them working together. And one of the things that I hear consistently from employers is they don't find enough people who can mix those two buckets of skills. The technical or what I call the just in time and the timeless. And if we think about how we're going to be educating children and how to make them economically indispensable, it's that it's that's what's going to make us economically competitive. And we don't do that enough. Schools are not designed that way. A lot of workplaces are not designed that way. And we all need to do a bit better if we're going to actually fill that gap going forward.

Courtney Kube:
That's fascinating. All. I'm a complete bum and there's only two minutes left, but I do want to take a question or maybe two, and I'm going to go right here to Commander Trek in the front. You want my mic? I was going to be like Oprah for a second. Hand out mic's around the room.

Question 1:
Good afternoon and thank you to everyone for this panel. So I just moved from Germany where my two children entered the education system at one and three, that's when their education starts. And children that go to preschool are anywhere from like eight to 22% more likely to graduate high school, talk a lot about starting in kindergarten, but there's really no national or even a lot of state programs other than Washington state that start the education at one. Just would like to hear your thoughts on that.

Courtney Kube:
I have lots of thoughts, but you probably don't want to hear from me.

Katie Jenner:
I think education starts immediately, and I also think it starts writing a home with a parent and the family. I will speak on Indiana. I wholeheartedly believe we can continue to improve our early learning systems. Presently in most states, we don't even really know where kindergartners are coming in. What is the kindergarten readiness, which is part of our challenge to prove return on

investment for early learning. And there are studies, I feel different people in the room, like there are studies on both sides to this on the value at different points. I'm a believer it starts immediately the earlier we can begin to support our learners, we should. And that also to your point, that's where a lot of the skill development occurs and being able to be around, I'm not going to touch your back again, but being able to be around people comfortably is a major thing that most kindergarten teachers will tell you. Some kids don't know how to socialize. So I'm personally a believer in early learning, and

Courtney Kube:
I imagine that's only exacerbated by Covid right now. We have children who didn't even enter the education system in person in their earliest years. So

Katie Jenner:
A lot of the debate, or at least in our state, other states I've seen too, if you only have so much money in Indiana, we're half the budget K 12 education, it's about $10 billion. And I get this, if I ask for more money, that's cutting something else out somewhere else. What I really should be asking is what's the return on investment for what we're doing presently in the other areas? Let's figure that out and then invest in what works

Courtney Kube:
Well. This has been such a t, clearly I didn't do well in math because we're way over our time, but I'm going to say thank you to you all for your time today. It's been such a fascinating and really a conversation that is, I think, so relevant right now. So thank you all. Thank you.