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HOW VIRTUAL EDUCATION CAN SAVE AMERICAN SCHOOLS

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P R O C E E D I N G S

MR. WHITEHURST: Good morning, everybody. If I could ask those of you in the back of the room to have a seat. Welcome and thanks for joining us for an event by the Brown Center on Education Policy at Brookings. If you think you're here for the Brain Science event, you're in the wrong room. This is the Virtual Education event.

I'm really pleased to have the opportunity today to give Paul Peterson, who's to my left, an opportunity to talk about his new book, *Saving Schools: From Horace Mann to Virtual Learning*. It's interesting, to me, and I hope to you, that there have been two noteworthy books released on education in the last couple of months, both by individuals who are or used to be associated with Brookings.

Paul Peterson was head of the Governance Studies Program here starting in 1983, and Diane Ravitch, who has had a notable book recently, is still a non-resident fellow here, and I can't help but riff a bit on the two books, in part because I don't know if you've noticed or looked at the other book, but they basically have the same covers, and on each cover there's a little red schoolhouse, but – whereas Diane's book is a nostalgic call for the great American school system to be like it used to be. Paul's book enthusiastically looks towards a dramatically different

future. So we have two people associated with Brookings taking a 20,000 foot view of education prognosticating or calling for a future and those futures could not be more different, and I think that's interesting.

Some of you will have noticed the report we released here a few weeks ago on choice and competition in education, and Paul was a co-author of that report that also focuses on virtual education and the role it will play in the future of American education. And so one of the themes I hope we can come back to is how changes in education relate to choice and what that means for the future of American education.

Our script for today will be to allow Paul some time to present the findings of his book. And then we have three distinguished discussants who will come to the stage at that point, and I will introduce them, and they will have some remarks to make, and then we will open up the floor to comment and discussion at the end of the event. So, again, thank you very much for being here, and Paul, thank you for the interesting book and being here to share it with us. Paul Peterson.

MR. PETERSON: So that you can see the screen, I'm going to try to do the presentation from here. I think I can see to the back of the room without being on the podium. Thank you, Russ, for that introduction.

It brought back to my mind the fact that when the book was finished and I had signed a contract with Harvard University Press, we had a big

struggle over the title of our book and the – as you know Diane Ravitch's book is called *Death and Life of the Great American School*, and my preferred title was The Rise, Decline and Resurrection of the American School, and the senior official at the Press adamantly refused, said that was a hysterical title and too many associations were being brought into play with that, and I said, well, I'm going to – I can publish this elsewhere, you know, and I was thinking of Brookings, you know. But my wife came to the rescue, she said, you know Paul, just try to get along, and *Saving Schools* is a good title, so that's where we went.

So, I have two basic points today, and they're very simple, and I probably already have given a hint as to what they are. First is the bad news, our system is stagnant today, and second, we've got a chance to change all of that. So, let me begin with the bad news, but, just give you this little offering before I do that. The quotation from Howard Gardner, who is at the Harvard Ed School, who says that so long as we insist on teaching all students the same subjects in the same way, progress will be incremental, but, now for the first time, it is possible to individualize education, to teach each person what he or she needs or wants to know in ways that are comfortable and efficient.

So, that's sort of the theme as to where we're going, but first the bad news. You know, we believe in capital, we know how important

capital is, what we mean by capital has changed over the centuries, this is gold and silver, and the days when the Spanish thought that was the way to get capital and oil and steel as they wanted it back in the 19th century, and Calvin Coolidge's idea of cars and kitchen appliances, and now we know that it's human capital that counts.

And in some sense Americans have always understood that human capital was critical to economic growth. We have had the best elementary school system for a century, we were the first to grow the secondary educational system, and we were the first to give wide spread access to higher education, and this great growth of our educational system in this country was part of the creation of the industrial empire that came to dominate the world economy after World War II, so education, the creation of human capital has been American passion for a very long period of time.

But, beginning around 1970 we began to stagnate and the rest of the world began to catch up with us, so that we are number one today in Olympic medals, at least in winter Olympic medals, in Vancouver. Germany, Canada, Norway all did pretty well, but we were number one, okay. But, if you look at where we are in terms of the performance of students on the science test, number one, Finland, number two, Japan, number three, Canada, the United States is way down the list, or you take

math, it's even worse. Finland, Korean, Switzerland, Netherlands are up at the top. We are way down the list.

We have not seen any improvement in the test scores of 17 year olds since 1970, graduation rates from high school are stuck at where they were in 1970. This is not just what I'm seeing, it's conventional wisdom. I was really struck by the radio address that President Obama made to the nation a couple of weeks ago, when he laid out his call for a change in No Child Left Behind. And in that he started off with a presentation that's virtually a carbon copy of what I just said. I claim authorship, but, you know, I'm delighted he is saying the same thing. So, that is really the bad news, but there is good news, too.

And let me introduce this idea of good news with a concept of co-production. I think co-production is a terribly fascinating idea that was first developed by Elinor Ostrom, a Noble prize winner. It's getting unpaid labor to do what paid labor would otherwise do, getting unpaid labor to do what otherwise paid labor would do.

In an American industry, this has been the secret of success for many firms. McDonalds gets us to eat in our cars and take care of our own garbage so they don't have to.

Walmart gets us to buy huge packages of things and store them in our closet so they don't have to sit on their shelves. And we all are now

our own bank tellers, and Amazon's got us downloading our books onto Kindle, and Steve Jobs has got an even more clever devise perhaps, and Southwest Airlines, US Airways has us standing in line. Southwest has us even lining up, figure that's so they can board us more quickly, we're helping them out. But in education we are going in the opposite direction, we're getting more and more paid labor for every 100 students. Since 1960, we have doubled the number of professional educators for every 100 students, from six back in 1960 to 12 in 2005. Non-professionals, the same thing, from two back in 1960 to nearly four in the 21st century. So we are using more and more paid labor to produce the same product.

There has been no increment in the quality of the product, there has been a very large increase in the amount of paid labor at work, and that means we have rising expenditures. So, the red line is showing the decline in class size that we have enjoyed over the last few decades. The green line shows in real dollar terms, constant dollar terms, inflation adjusted dollar terms. Inflation is not in this graph, that the cost of education has more than tripled over the last three to four decades.

So when you have more paid labor and you have to pay them more because the economy is becoming more productive, you are going to have rising costs, and there's no way we can get out of that, and the part about fiscal crisis and education today is due to these long term

trends. It's not just simply mismanagement by school districts or state legislatures, it's an underlying trend that's as much an education as it is in health care. The cost of education is steadily rising. So what do we do about it? Well, we go to the Magic Kingdom, Orlando, Florida, and we discover that down there, there is Florida Virtual School. And we're very fortunate this morning to have the CEO of Florida Virtual, Julie Young, right here in the audience. I write a lot about her in the last chapter of my book. I won't tell you the inside story on Julie in front of her face today, you have to buy the book to get that inside story.

But Julie Young has created a remarkable school. It's the fastest growing, largest virtual school in the country, and one of the secrets to its success is that any student in the state of Florida can choose to take a course from Florida Virtual or a course from their local high school.

So if they don't like a particular course at their local high school, or they've got to take a course over again and they want to graduate on time, and they want to take a course over the summer or on weekends or fit it into their life in some way, or they want to take an advanced placement course that they can't get at their local school because they're in a rural area, or if they're on the verge of dropping out and they want to still take some courses, I'm thinking about this horrible thing that happened in

Massachusetts, where this poor girl was being hectored, virtual education in Florida would have given an option, I'm not saying it would have been taken, but it can be an option for kids in great distress, the way it's designed, because it applies to your high school diploma even though you take it online. The money goes to Florida Virtual. If you take it online, it goes to the district, if you take it in the local school district.

Now, what's really interesting about Julie is that she has created a philosophy that is as progressive as anything that John Dewey ever enunciated, or even a Harvard Ed School professor today, and it's – the philosophy is, any time, any place, any path, any pace. Guys, Julie has told her teachers, we are about teaching kids, not teaching content. They all learn differently and we adjust our content to our kids.

So at Florida Virtual, they even teach physical education online. Yeah, you laugh, but really, if you think about it, think about – it's not so much fun to take phys ed when you're in high school for a lot of kids. How many really enjoy physical education in high school? Well, there's a few, so it does work for some. How many did not have – well, a few more like me. I can remember that was a pretty horrible experience. Sports is one thing, physical education is another. It's mainly standing around and watching somebody else do something. So what do you do if

you go to the town of Wellville, which is the virtual school course in physical education?

Well, you have your pulse taken, or you take your own pulse, and get your height, your weight, you lay out your diet plan, you learn about good diet, and you learn about exercise and the importance of exercise, and you state what your favorite sport is, whether it's walking or playing tennis or running or whatever it is, and so you then come up with your teacher a plan, and then you track yourself over the course of the term.

So physical education online can be a totally meaningful experience for students, and Julie Young reports kids who have lost ten, 20, 40 pounds by taking the course. And, Julie, when can I sign up? I can, okay, so that's good. So in any case, I don't want to say this – this is the most popular course, but there are many other courses, as well. They offer 150,000 student courses a year. They offer courses in Latin and in advanced placement and make-up courses. It's a whole variety of offerings, and they're getting more complex with the passage of time. But I don't want to say that Florida Virtual is the best education in the world, that it's better than the most dynamic teacher in the best classrooms, in the best schools in the state of Florida, I'm not going to say that, I don't believe that that's the case.

I do think it's probably as good as the average school, the data seem to show that. Florida school students perform above average on state tests, they perform above average on advanced placement tests. This suggests that one of two things, either the better student is taking the course or the course is actually better. It may be both are taking place. But the point is not whether or not this is at this particular point in time, better than what's offered elsewhere, the question is the trajectory.

We know what the trajectory is for the brick and mortar school, it's been flat nation-wide for the last 40 years. What is the case with technology is its constant improvement. It's like the transistor pocket radio that Sony invented back in the 1960's. RCA Victor had the opportunity to do this, and they said, no, this is really much better, this is the vacuum to radio or television, and this transistor is too dinky to ever produce a sound of the same quality, we're not going to go into that business. But Sony said, look, we can make little pocket transistor radios, we can sell these to kids, and they don't have a radio now, they have to listen to their parents' music, they can't listen to a radio in the middle of the night in their own bedroom with a radio beneath the pillow where nobody knows they're listening.

Well, kids just love this, and pocket radios sold like crazy, and Sony was able to take that money, reinvest it back into the product and to create better and better transistors.

I can remember on my marriage day, I was given a slightly larger transistor, it was about this big, a little thicker than this, but about this big, that was just a total thrill in my life that I was now going to have a big size transistor radio.

Well, of course, it was out of date within a year, and there were better products coming online, and RCA Victor is no longer with us, and Sony became the dominant producer. So that's the way to think about virtual education today, it's not to sit there and judge it by is it better than what's happening in the best classrooms or on average in all classrooms, but what is the potential for change and what's the potential for growth. Well, I can't promise exactly how it's going to happen, because over the last 15 years, who would have guessed that you would have had all these products coming online, the computers, whether HP, or Apple, or the Microsoft system, or PowerPoint.

I can remember the slides that I used to have for this kind of a presentation. Google, or Playstation or Wikipedia, or Facebook, or Twitter, or the iPhone, all of which are changing our way of communicating with one another and presenting material, and all of which are producing

products that are potential mechanisms for instruction, that curriculum can be transformed by this.

Now, even though I can't say exactly how technology is going to change our educational system, I can suggest that there's going to be some elements that are going to be very important in this new future, and one is, education can be at the price point.

The price point idea came to me when I was at a meeting of some hospitality designers out on the west coast a couple of weeks ago, where they were all talking about, we've got to sell our products at the price point, and what a price point is can't be too high because then the customer won't buy it, it can't be too low or they'll think you're from Walmart and they don't want it, so you've got to hit the customer's price point. So it is with students, you have to find out what do they now know and teach to that price point, to that particular level of understanding that they have acquired at that point in time, and therefore, you have to have a very adaptive curriculum so that every student in the class can be taught at their price point.

Currently, most students in most classes are either bored or confused because the teacher can't meet everybody's price point. Everybody has their own price point. And a lot of students, they can't understand the material and the others have already learned it a long time

ago. So finding a system that can reach students at their price point, that's what Howard Gardner's opening quote was all about. It can be a transformative mechanism for much more rapid learning than we have now.

Game based, one of the ideas that has conventional wisdoms about virtual education is that it's just going to be a kid staring at a computer. On the contrary, there are all kinds of capacities available today for cooperative and competitive games. The School of One in New York City is an operation in three middle schools, just opened up about a month ago, is using games to get the students excited about the material. They had a trial run last summer that was extremely successful.

This is going to be a huge part of virtual education as curriculum becomes more and more sophisticated. Three dimensional, think avatar. But the story I liked best about this is my experience in biology class in tenth grade. I studied the book diagram of the frog. I knew where the heart was, and the stomach, and the liver, and the intestines and all that, and then we got to dissect the frog, and I can tell you what it wasn't like, it wasn't like this, this nice, neat, little experience that these fellows had, no, mine was a total mess, I had to throw this thing away.

I don't know how your experience went, but I found it extraordinarily difficult to get from two dimensional space to three dimensional space. Now, imagine my avatar, dissecting the frog's avatar, and doing it again and again until I get it right, and not killing any amphibians in the process. This is a transformation of the way in which kids can learn and it applies to phys ed and geometry and anything – any educational offerings that require an understanding of depth, as well as height and width. There it is, the avatar.

Now, finally I think in the long run it'll be open source, that actually students themselves will be creating curriculum, that there will be – the best way to learn is to teach, and students are going to discover this, and they're going to get excited about teaching, creating a curriculum that they can use to teach other kids, and that's when you will have a truly dynamic, constantly changing system.

Now, here's just a lovely quote from Daniel Birmingham, thank you, Russ, working on problems that are of the right level of difficulty is rewarding, but working on problems that are too easy or too difficult is unpleasant. Well, that's a nice, simple way of saying it. Julie Young has said it even better, we're teaching kids, not content, and so that's really – it's the same thought, you've got to find where the student is.

But, now how to get there, I think, first of all, virtual education has to be transparent motor schools and inherently non-transparent, once the teacher shuts the classroom door, it's very hard to figure out what's going on inside. Virtual education gives the opportunity for supervisors to see exactly what's happening between teacher and student, exactly to see what the curriculum is. An outsider should be able to have access to that curriculum.

Accountability, accountability both in the sense that the provider has to not – virtual education can easily be done down to a very low and unacceptable level, and so we need to figure out how to set the standards and expect expectations for the quality of the curriculum that's being provided, and that's going to be – has to be dynamic, it's got to change, because this is going to be a rapidly transforming system, so we have to have – we can't built in rules and regulations that are going to constrict this, but we have to have rules and regulations that hold the provision of virtual content, accountable, and we have to find ways of holding students accountable within the system.

And finally, we have to have competition, because it's only when providers constantly are forced to improve will you get better and better instruction. I think it's really fascinating that the state of Florida has improved on the national tests more than any other state in the union. I'm

not going to attribute that just to Florida Virtual, but to a lot of public policies that were put into place, Florida Virtual being one of them, and one of the elements is this competition that's been put into place between Florida Virtual and the district schools.

I'm not going to say that we will have equality of educational opportunity as soon as we get virtual education, I don't think that's going to happen. I think the most resourceful are going to find ways of using this new tool more quickly than others, that's the way it always is for new renovations.

The rich were the first to start smoking and the first to quit, and they are the first to adopt the iPhone or the Kindle or all the other new innovations that are out there. But once a product has proven successful, once an idea has been shown to work, it spreads and diffuses rapidly.

And once you can free learning from spatial constraints, from the fact that you have to live in the best suburb in the metropolitan area to get an excellent education, and you're stuck with a terrible education if you live in a geographical area where schools are bad, that restriction of geography on equality of opportunity can disappear with the development of virtual education. It's already happening in our colleges. One out of five students today at the college level is taking at least one course online. It's much less at the high school level, but what works at age 18 is going

to work at age 17 and it's going to gradually spread downward through the system.

Well, there's more that can be said, but we have a wonderful group of commentators, so thank you very much for your attention.

MR. WHITEHURST: Let me introduce the panel to you. Their biographies are in the materials you got when you came in, so I will not spend a lot of time on this. I'll introduce them in the order in which they speak, and that'll be a reminder both to me and to them.

Andy Rotherham, to my right, is everywhere and does everything, as you know. Andy has a new job, he's the Co-Founder of a new company called Bellwether Education, which is non-profit, that will be working to improve educational outcomes. He was the Founder of Education Sector, publishes Eduwonk, a very popular blog, served in the White House, the Clinton White House as an advisor. He's generally a wise person about education. I forgot to mention he served on the State of Virginia's Board of Education. Katherine Mangu-Ward writes for *Reason* magazine. She has recently been covering virtual education and doing it in a very thorough and informed way. She previously worked for the *New York Times*, and I think brings a very interesting journalistic perspective to this topic.

You've already heard a thing or two about Julie Young. Julie is the CEO of Florida Virtual School and has – and by everyone's account, has been a very influential pioneer in this industry. So I will turn to Andy for comments. Andy.

MR. ROTHERHAM: Thank you, Russ, and thank you, Paul, and I appreciate the opportunity back. I'm actually a little surprised that Russ would have me back. While I was here a couple of months ago, we did a forum on a really interesting reported on education media, and I always keep my cell phone on silent so it doesn't ring in any setting I'm in, but that – I forgot to actually shut it off, and so I completely destroyed the audio of the event because of the feedback from my phone. And so you can imagine my surprise when I was invited back just a few months later to, of all things, discuss technology, but it's great to be back. As Russ said, I am one of the four Co-Founders of Bellwether Education, which is a new national non-profit. We're sort of a hybrid between a think tank and a consulting firm. We do regular think tank programmatic sorts of work and then we also work directly with organizations that are trying to improve outcomes for low income kids.

So let me start, it's interesting, we're here to discuss a book, but it's really I think the last chapter that I suspect most of the people in

the room are interested in, and that's the chapter about Julie and the really interesting work she's done and the implications.

Let me just say quickly, overall, I would highly recommend the book. It's a really interesting book. The intellectual spine of it and the narrative that Paul tells through these interesting lives, James Coleman, Martin Luther King, Albert Shank, or Horace Mann, John Dewey and so forth, it's fascinating and well done.

It pierces some myths, and intellectually, there's sort of several conversations that you hear played out that are sort of I think indicative of the really interesting work that Paul has done throughout his career, and everyone in education thinks of him through one set of work he did on the school choice question, but really his intellectual career is much more wide ranging and very interesting. And you hear these conversations around rights, around institutions, and also around educational history played out, so I'll make an editorial plug that I think the book is well worth your time and I hope you'll read it. And as Paul alluded to, and Russ, it is very symbolic to be discussing Paul's book here at Brookings.

But as I said, I think whatever everybody really wants to discuss, you know, our field in general doesn't do history very well, so we won't belabor that, what people really want to discuss is this virtual education.

So I think I may have been brought to be the skeptic on this, and I guess in some ways I am a skeptic, and I'll talk about that, but I'm probably less of a skeptic than you may think, so obviously I'm a big fan of Julie's work and what she's done.

Actually, at Bellwether, we're going to be doing some work on online in a couple different forms, including, and I should just make this disclosure, we'll be doing some work with K-12. And the interesting thing about K-12 is like the curriculum, you look at the curriculum they have, it is more refined and more developed than you're going to find in any school district in the country, including school districts that can bring tremendous resources to questions like this. So I'm not completely – I'm not either completely a luddite cell phone incident notwithstanding, nor am I skeptical of this, but I am going to offer four big reasons for sort of caution and skepticism here.

I could offer five, but it would be cheating. The fifth one, the easiest one is history, which, if you look at education history, and I differ from Paul a little bit, I don't see the story of – I wish that there was a story sort of a rise, a fall, and a resurrection, I see more of a story of sort of a tough torturous rise. I don't think we ever had anything to fall from.

Different groups have been historically underserved, we've never done I think – to romance the past, and sort of the theme that jumps

out for me, unfortunately, is futility often in terms of reform, and so it would be easy to say the fifth reason is just history. You'll never go broke betting on things not working out in this field, unfortunately, but that would be cheating, so let me offer four.

The first one is, I think if you look throughout educational history, and particularly the last 20 or 30 years when we've had this focus on innovation, which, despite all the rhetoric, is about a new focus. We've had this focus on different models and so forth. A trend you see is good ideas implemented with really weak fidelity to the core of the idea and what makes it effective and really poor implementation.

And I think a lot of educational ideas, that's where they go, they get discredited. And you can even see that now with powerful ideas like charter schools, because of poor implementation decisions in some place – you can see a very powerful idea on its way to being discredited because of outlier examples and so forth, you see this.

And if you look around the country right now, online education, highly uneven. If you look in higher ed, where there really is sort of a boom, some even say a bubble going on, highly uneven, and I think that sort of unevenness and so forth given our politics is a huge risk.

I think ultimately we're going to land on bricks and clicks models, which is sort of hybrid, where some virtual, and it's delivered in

school, I'll talk more about that in a sec. Those are expensive, though they don't bend the cost curve in the way – you still have – the inputs are still fairly substantial. So I think there's reason to be skeptical in all that. Second, I think a huge challenge is getting quality right at scale. I mean Paul is exactly right about sort of the way – I couldn't agree more about the way to think about this. And often in this field, we compare everything to the ideal, and we should be comparing for the virtual school, for instance, to the experience that the kids are getting in Florida, and I think if you look at that, there's a lot to recommend, the Florida Virtual School.

There is an equity issue here, and we want to be very careful we don't end up with a system of bearing kinds of instruction again bifurcated by class, which is basically what we have now. And it's not, you know, you hear there's a silly debate that goes on about schools like – that it's like some kids are getting one kind of instruction and some kids are getting the other.

Really, if you look at the outcomes, and particularly if you just spend a lot of time at schools in low income communities, what you see is, some kids are getting instruction and some kids aren't, period, and we want to make sure that we don't replicate that again, so I think there's big equity concerns and a reason to be cautious. Third, and I guess this is my former public official, my state board hat, we don't like to talk about this,

no one wants to come to these August salons and sort of just be so crass as I'm about to be, but our public schools are a big national publicly funded daycare system, and that's a fact.

And the economic cost of sort of not allowing parents to send their kids some place during the day time hours, which in our country are generally the work hours, where there is someone who has a custodial function for looking out for them, is enormous.

And so I think the idea that sort of, you know, we're seeing a lot of activity on the margins, and there are a lot of underserved kids, and the example, Paul referred to the girl in Massachusetts, there's lot of stories like that and so forth, this is still relatively marginal, and the idea that we're going to sort of – that there is a huge market in this country, either that we can even have a huge market in this country, or if there are parents who want purely virtual offerings I think overstates the reality and overstates, frankly, one way, again, and we don't talk about it a lot, but that people view our schools, and if you get down close to the ground and you see what some of the fights are about, the parents really care about like when they can put their kids in school, you know, how long their kids can be at school, those sorts of things, you start to see this reality play out, and so that, again, I think speaks sort of bricks and clicks and some stuff that will put a little bit more of a break on this.

And then finally the fourth one is just our special interest politics and what I would just call beyond that, education is just sort of special politics, and special, that's a euphemism for highly dysfunctional.

So I mean a couple of things, first of all, regulatory capture, as bad in this field as you're going to see anywhere, really powerful regulatory capture, where the interest basically control the regulatory apparatus of the executive or legislative branch, regulatory apparatus in most states.

And this is not like teachers unions, bad, everyone else – it's not that, it's just there's an establishment here, there are vested interest, there are privileges, that are stakeholder prerogatives, there are jobs and money at stake, and people don't give those things away in a liberal democracy without a bloody fight, so you've got to pay attention to that. Second, beyond regulatory capture, something you see in education that has really struck me is, you also – basically the Stockholm syndrome, which basically it's a syndrome where people study hostage situations. After you've been taken hostage for a long time, you tend to identify with your captor, and people do really weird things that you wouldn't think somebody in a situation like that would do.

It's rampant in our field. If you stop and look at how various groups behave and act and so forth, they don't behave necessarily

rationally, even in their own self-interest, they behave in some very bizarre ways, that if you start to think about sort of how your perspective can be changed by being part of something for a long time, it starts to make more sense.

And so both of those lead to this politics of control, and it's very powerful, and people do not want to give up control. And everything that Paul is talking about is a loss of control, and so I think it will be very bloody to see that control rest.

And if you look right now, you look around in states and how a lot of states are oppose virtual education, people are okay with it only insofar as they actually control it and can minimize it. Or in the case of Florida, for instance, there was so much other stuff going on that had people freaked out. You had, you know, for a little while in Florida, voucher programs were popping up like mushrooms after a rain. You had, you know, the McKay Program for special ed kids, you had the program that Jeb Bush had for kids in low performing schools and so forth, they are the sort of special interest groups and the politics, they were like so freaked by all this other stuff that like, you know, Julie was sort of able to sneak up on them, you don't have that situation everywhere.

And then finally just the politics of education, and one of the really lively parts of this book, as Paul walks through sort of what's

happening with school finance and what has happened to get us to where we are, you know, the move from sort of adequacy and equity and some of the challenges there, and you see in that also just the politics of education, people are going to look out for their own kids, it just creates – and so I just think the politics are a huge thing that doesn't get a lot of attention in terms of a real constraining factor on this.

And you see, look, this is an industry, Paul talks about the Wisconsin case in the book, where the teachers unions there went to court to restrict the virtual school, you know, you see an industry that will go to court to protect its prerogatives and so forth, and that's, you know, you don't get change easily when you have venues like that.

So I get excited, too, about all the examples. I mean I have an apple in my briefcase, I mean I'm on board, but all these examples, whether it's Sony radios and Toyotas, and Paul talks about that in the book, apple, some of the things we talked about up here, that's all great, but there's no proof of concept for this sort of deterministic theory of how change happens, there's no proof of concept for it in a field that's highly publicly regulated and quasi monopolistic, which is our field.

We're not selling transistor radios, we're not selling Toyotas, we're not selling computers and kindles, and the politics here play out radically differently. And so I think at best what we've got is a bunch of

Fox Mulder, for those of you who used to watch the X-Files, that would put Paul in that camp, which is, I want to believe, because we've tried so many other things, and the politics are so brutal, and you see this, and so this is the thing. You see a lot of people who they really want to believe that this is going to flip it, and I think, at worst, we have, and I would not put Paul in this category, again, I would urge you to read the book because it's a very sort of hard headed look at this, it's not boosterism, but there is a lot of boosterism out there. There's a lot of Kool-Aid drinking that's going on and group think about just how this is going to transform everything, and this is totally different, and it's going to be, you know, this incredible velvet revolution, and you know, I don't buy it, and I don't even buy the numbers.

This is like home schooling. Home schoolers talk about – home schooling has been growing, you know, 15 – 20 percent every year, but that's growing on a fairly small core, and it's the same thing here, you hear these projections of the number of kids that will be served by virtual schools and so forth. Things don't happen in our field in a linear way like this, and again, they don't happen like they happen in the private sector.

So I don't want to leave you totally depressed, and as I said, I will leave you the reason to be hopeful, and the reason I'm supportive of a lot of work in this area, which is quite simply, there's no other choice.

And so I'll leave you with sort of a closing thought that's a little different from the way Paul came at this, but as sort of somebody who cares about equity and outcomes, I'll leave you with this thought, Georgia, this is the example I like to use, there's about 340 credentialed high schools in the state of Georgia right now across the state. There are roughly 80 credentialed physics teachers, solve that problem. And I would submit to you, we're not going to solve it by just recruiting more physic teachers, we're not going to – for any of the normal – you hear, paying them more, improving working conditions, all those things are important, but you're not going to close that gap by doing that, highly unrealistic.

And so it does, as Paul said, we've got to rethink how to use time and space in the field, how do you think about productivity, if you're seriously going to solve that problem. And so that's the reason I'm hopeful, because I think, in terms of addressing some of this, this is the best strategy we have. So, again, thank you for being here, thank you for your attention. I look forward to hearing the remarks of my colleagues.

MR. WHITEHURST: Katherine.

MS. MANGU-WARD: I guess I'll actually pick up right where Andy left off, with the despair as the root to optimism, sort of a perverse entry. As a journalist, I would like to say that I'm far less expert than everyone else on this panel on this subject, but what I see when I look at

virtual education is a very, very big story. It's small now, it's being I think under covered, but it's going to be very big very soon.

So let's start with despair. Right now schools for most kids are a sort of terrible juvenile form of hell. Smart kids are really bored, dumb kids are really confused, and there's no multi tasking. I think you can't underestimate this.

You've got a bunch of kids who are surrounded by adults, who live their lives on screens and the kids themselves prefer to spend their time with a video chat window open, and a text chat window open, and watching something on YouTube and listening to music, and then you put them in a classroom for six hours a day, and you tell them to sit still, face forward, and listen to someone talk, and maybe write, that's awful, that's torture to these kids. So anything we can offer them that can get them out of that loop I think is a great gift and something we should be searching for.

It's pretty excruciatingly obvious to everyone in this room that being online makes everything better. I've noticed a couple people in the back who even think that being online during this panel is making it better, and I totally endorse that. I think you can consume what we're giving you up here and do your email. We shouldn't think that kids are stupider than us, that they can't do that, too.

So let's talk about, if we've already sort of seen hell, what's the vision of Heaven. And I think Paul's book does a great job of laying out the various visions of Heaven that we've experimented with over the years.

And right now what we're realizing is that no matter how great a harp, and how fluffy a cloud, and how white a robe we give each kid, there's going to be a lot of kids that don't want that, that Heaven is not a uniform picture for everyone, and that maybe Heaven looks more like one of those great salad bars, you know what I'm talking about, where you go and you get the lasagna and also some salad and some Chinese food, everybody can get what they want, and, you know, maybe each item in the salad bar isn't the absolute top quality, best that you can get, but it's still a better option, and that still looks like Heaven compared to the spaghetti every day, you'll eat it and you'll like it and you'll shut up option that we're given them right now. So how do we get there? How do we get to Heaven? And the answer is that we have to spend some time in purgatory. And I think Andy's skepticism about how these models are going to work out, and the idea that there are a lot of products out there, educational products that are pretty terrible, is right.

But there's a sort of lucky cork of the human brain that protects us from whole heartedly adopting technologies that are only a little bit better or aren't going to work out in the long run.

The behavioral economist, Richard Thaler, says – he calls this idea the endowment effect. He says that we tend to over value what we already have and we tend to under value what we might get in the future. That means that when we are faced with an option of something that's better, it's not enough that it be a little bit better, it has to be significantly better, it has to be, according to a recent paper by a Harvard Business School professor who's – he calls it the 9X problem, he says it has to be, you know, we over estimate what we have by three times, we under estimate what we could get by three times, and we have to get – that also innovators are over estimating the quality of their product pretty significantly. If you are someone who's selling say an interactive math video game, you've already bought into the idea that an interactive math video game is going to work really, really well, but you have to sell that to kids, to parents, to school districts, to all the people who have a stake in this.

Luckily I think, you know, we can envision a situation where we let 1,000 flowers bloom, where we let kids and parents and teachers

choose from a bunch of different models, and the hybrid model that Andy mentioned is very appealing.

It's absolutely true that schools right now perform a very important role of just being babysitters for, you know, a massive proportion of the population of kids in this country, and we can't take that away, that's not going to go away.

But there's no reason why the babysitters, the people who are doing the babysitters, or even the entity that provides the babysitters has to be the same people who are teaching your kid how to dissect a frog or how to read. So what we can see is something like the iPhone model, or maybe for geeks in the room, the android model, where we say let anybody who wants to make the hardware, let anybody who wants to provide a place for kids to go, or a way to monitor kids so that their parents don't have to worry about them, then let anybody who wants to provide the software, the operating system, and this I think is a crucial element, and this could be non-profit, it could be for profit, it could even be provided by the state, of how do we let kids get access to the third part, which is all the apps, all of the content, the modules, whatever you want to plug in there, you know, video, text, anything, but that those three elements right now are and have for a very, very long time been provided

by the same people, the same entity. And there's no reason to think that the same entity would be good at all three of those things.

So one thing that online education offers is a chance to say let's let people specialize in what they're good at and then let parents or others put together a package that works for them.

One of the big barriers to this, of course, are, again, as Andy mentioned, vested interest. We're talking here mostly about teachers unions, but others, as well. And I think there is a parallel right now in terms of teachers unions to dock workers, right. There was a moment when dock workers were mostly occupied with fighting off scabs, with fighting off current, you know, pushes to be a little more efficient here, to work different hours there, to change their personnel system, meanwhile at a lot of ports a mile down the river, somebody was building a new port that's entirely automated, that needs only a couple of dock workers who are highly skilled to run the machinery.

I think teachers right now might be surprised to find themselves in a pretty similar position, teachers unions, they are fighting on the margins, they're fighting vouchers, they're fighting charter schools, they're fighting, you know, merit pay proposals, and they're so occupied with fighting those elements that they might be missing the fact that right down the road, Julie Young is building the automated port.

And I think Andy's note that Julie kind of snuck in in Florida is pretty good. Right now a lot of these technology options are sneaking up on the traditional providers of education, and, you know, I think we can hope that we'll be able to handle the transition gracefully.

I'm a bit of a pessimist about that. I do think it's going to be bad. But if what we can do is sort of go back to this idea of 9X, go back to this idea that the product that we're providing is – that many, many people, non-profit, for profit, whatever, the prize that they're providing is so much better and so much better suited to each individual kid. And we can save kids from this kind of hellish world that they live in right now, where text has so hyperlinks, which is like putting a kid in a prison, and that maybe, you know, at some point, ten years, 25 years from now, teachers unions are – start to look a little more like the, you know, the producers of buggy whips or something, that they just – they fade out.

It's not that they had to be busted or broken, although they may have to be, but that they are simply going to become changed, different. There's lots of little companies to be excited about right now, there's lots of little companies that are going to die grisly deaths, taking investor dollars with them, or foundation dollars with them, and I am very much looking forward to covering the birth and death for all of those players.

MR. WHITEHURST: We'll see if Julie has anything controversial to say. Go ahead, Julie.

MS. YOUNG: I think I'm the least controversial of this group. But first of all, thank you for having me, I appreciate it, and this is fascinating to me. One of the things that I think is the most interesting about all of this, and I have to kind of step out of myself on a regular basis, is, you know, in 1996, there was a grant, a break the mold grant that was awarded to two districts in the state of Florida, and I happened to be the newcomer in town, and it was for this virtual school, at the time called a web school, and I will still say that no one in their right mind would have left their day job to take this job as a principal, but for me, it was a promotion and it was, you know, it was kind of like, okay, nobody expects it to work, so I'll give it a shot.

And, you know, the goal was not to reduce the cost of education, the goal was not to create something that was far better than the traditional schools at the time, the goal was not to reduce the teacher/pupil ratio, the goal was, at the time, to create a completely different option for kids.

So that if we think about our traditional schools and we think about, you know, depending on what area of the country that you're in, that, you know, 30 or 40 percent of those kids never make it to graduation, what if

we created a completely different option so that we could give kids, you know, one more way of which that they could be successful, not replace the obvious option that kids had, but give them another opportunity. And so from day one, you know, we started to think about, you know, what if we just blew this whole thing up and reinvented education so that a student who went to this virtual thing had a completely different experience. We were very fortunate that we had a political climate where everybody was on the same page, there was huge support for choice and change.

I did not have the pressure of you need to accomplish these four goals, it was, you know, go figure this out and come back and tell us how we should do it. So for six years, we were a line item that was intentionally created in a way that did not threaten the schools, so that it was double funded for six years.

And I had an elementary background, brought into a high school experience, and my goal was, how do you take a high school and design it in such a way that it feels like an elementary school, where kids want to come to school, where they laugh, where they play, where they leave and they do go home and tell their parents what they learned today.

So from day one, our challenge was really looking at how do you reinvent, how do you reinvent education. Our goal was, and still is, is

to transform education one student at a time. So when we sat down and we said, okay, how do you do this, what do we want to do, we said, okay, it's all about the student, take ourselves out of it, you know, assume we don't have to work in this environment. If we're going to create an educational environment that's all about the student, what would it look like?

We studied a research study called Prisoners of Time, which kind of parallels the quote Gardner had that Paul flashed up on the screen, which basically is that if you give every student an equal education, you are going to give them an equitable education, because all students are not created equal.

So if you had the opportunity to personalize instruction, to customize instruction, to give that student one-on-one, give them the time that they needed, what would happen? So that was really the goal.

So initially, obvious as you might imagine, 15 – 14 years ago, the concept of virtual education was a little bit of a snicker. I was kind of dubbed the virtual lady. And so credibility, obviously, was one of our greatest challenges. How do you prove that this is a credible way for kids to learn? Well, first of all, you're incredibly transparent. You ask a lot of questions, you invite in a lot of critics, you try a lot of things, you fail at a lot of things, and you learn from your mistakes. What would it look like in

terms of funding? We didn't have to deal with that initially, but when we did in 2003, we actually asked for a performance based funding model. The reason that we asked for that model was because we said, okay, so people just don't believe, we're going to put our money where our mouth is, don't pay us unless we're successful with our kids.

Then you think about getting the word out. Well, as we've talked about, no one really wants change in an educational environment. They might say they do, but it's – not when it affects them. And so for probably four or five years, we were the best kept secret anywhere. No matter who knew about us in the schools, they would only kind of share that information if they had a need that they could not meet.

And so at one point, Governor Bush, who was Governor at the time said, I want you to go directly to the people. And so at that point, we began to market, yes, market a school, market to the people and put ourselves in places where we could find students and parents unfettered. And then, of course, attracting teachers, what teacher would want to leave their day job to come to this, because we were a line item, stroke of a pen, we're gone the next year. Well, we built this cadre of teachers who believed, and so they knew they were taking a risk. To kind of mitigate that risk initially, we borrowed them from the school districts, we said can

we just borrow some of your teachers, so they were assignment for a virtual school. We paid for them, but they still belonged to their district.

Now, you know, we have an incredible group of teachers that are far beyond highly qualified, and a list a mile long of teachers who would like to get in. Why is that? Well, there's a lot of teachers feeling like the students that Katherine described, in terms of how they look at their jobs, their daily life, and being somewhat captured.

So now not only did you have a personalized experience for kids, but you created an environment where teachers can almost personalize their work environment, too. You have some teachers who work at 4:00 a.m., you have others that are working at midnight. The goal was not to measure the amount of time in seat for students, and not to measure the amount of time in seat for teachers, the goal was to measure the success of students. And if you met your goals, and your kids were successful, and your kids were learning, and that could be proven, then whether you spent 35 hours or 50 hours, depending on your skills, how new you were to the organization, was not an issue for us. We really tried to design a school that looked very much like a business at the time that was defined by the metrics of the customer, i.e., our students.

So in terms of successes, there's still a long way to go with personalizing instruction, but we believe that we've made many, many

strides in that regard. There's personalization and there's individualization and there's customization, and those three terms are not necessarily interchangeable, they're all very different. So initially I think we were really good at individualizing education.

I think next we got much better at personalizing education, and now we're moving to really customize that education experience as the technology has gotten more sophisticated and a bit better.

So in addition, we wanted to really change the paradigm. We really wanted to think about – as Paul said, I was about, you know, teaching kids, and I was amazed at how many math teachers that I met that didn't really like kids, they loved math. And, of course, you know, I was fairly young and naïve, and I was kind of like, why are you teaching. But changing that paradigm to realize that that relationship is absolutely so critical. You know, kids will perform for teachers that they think love them, that care about them, that want them to be successful. It's a huge component of our program, to build the relationship, that's the very first thing any teacher must do, and we teach them how to do that if they're not that great at it, and if they're not that great at it, they simply won't survive, because the nurturing has to come first.

I mentioned, again, engaging teachers, as well as engaging kids, we're good at what we love, you know. If you love what you do, you

typically are fairly good at it. So making sure that the environment is such that teachers love to be there, if teachers love to be there and they love their environment, they won't focus on organizing for other reasons, they'll focus on coming to work because they love to come to work.

What we found is that if we gave kids choices, and that was from day one, we said, okay, for every lesson, we want kids to have five or six choices how they can show us mastery, so when you look at the courses we've designed, there are choices for kids, so that if we had a student who didn't like to write, and the student was having a conversation with the teacher, and the teacher said, well, what do you want to do, and he said, I want to be a producer, and she said, really, why don't we – why don't you write a play, oh, that's a great idea, it was all about Egypt, it was a World History course, well, guess what you have to do when you write a play, you've got to write a script.

So she worked with the student on designing and writing a play, and at the end of the day, the student realized that the writing was one of the most important parts of what he did to produce this particular play.

So thinking out of those boxes, equity, first six years, we had – we used to tease that the schools would only give us their very smart white males because we could not hurt them.

And so overcoming the equity paradigm that Andy talked about, you know, now 38 percent of our students are minority students, they're from low performing schools, we have probably 30 to 40 percent of our kids who are credit recovery, you know, the gifted and talented portion is smaller than any other population within the school. The average group of students is probably the most – is a growing population, as well. They're there because they're choosing to be there. Our credit recovery kids are typically there because someone directs them to be there. Our gifted and talented kids are there; again, maybe they can't get the option of that particular AP course in their traditional school.

So all of that I think comes together to create an environment that does challenge the status quo. I don't think it's meant to, you know, our goal was never to replace it, it was to build gaps and to make the education system in Florida stronger, give kids more options, different ways to learn, and more ways to be successful. Thank you.

MR. WHITEHURST: Thank you. One question that I'll throw out for the panel, and it has to do with what we're talking about here. Are we talking about something that adds value to the educational options that are presently available in the public schools, or are we talking about a fundamentally disruptive influence?

And if we're talking about a disruptive influence, and I think most of us would like to think about that, because it's hard to imagine education 50 years from now that is not in some way transformed by technology, what is going to allow that disruption to occur in an industry that Andy has correctly characterized as a regulated monopoly. And so I'd ask the panel, anyone who wishes to on the panel, to talk about what are the barriers that presently exist, to the growth of virtual online education, and what could the people who have the policy levers do to remove some of those barriers. So I'll just throw that open to anybody who wants to –

MR. PETERSON: Good question, Russ. And I think Julie is right, this begins as a movement to provide those who have nothing with something. That's basically what Clay Christianson said in his book, Disruptive Innovation, that it's like the transistor radio, the pocket version was for somebody who didn't have anything. The people who had the console in the living room didn't want it. But once you get this product going, if it can constantly be improved, it becomes disruptive.

Now, what's the mechanism of change, and that's what I think Andy's comments really highlighted is, you've got to have a dynamic of change. And I see three elements contributing to that, one is the cost of education is rising, rising, rising, it's hitting the higher education system dramatically. The cost of going to college is going to be beyond the

capacity of even the upper middle class if the current trajectory continues within a very short period of time. Universities have to find a way of delivering the product in a less expensive way, and they're going online very fast. I just talked with somebody at Education Week yesterday who said the changes occurring in higher education are rapid. We're seeing very slow movement in the same direction at the K-12 level. And he asked, well, why is it; well, I think at the higher education level, you can easily transform the working force, because so much of it is in the junior colleges and so much of it is by instructors, people like me are dinosaurs of the past.

It's a different kind of teacher that's out there and you can change that teacher very quickly, they don't have tenure, and those who have the technological skills are getting hired, and those who don't have those skills are not getting hired. So you're changing human capital as rapidly as technology is changing.

Now, in the case of K-12, you have a work force that rewards experience, it changes very slowly. You have all kinds of regulation entering into the work force through the education schools, and so the human capital development is going to be much more challenging to develop. But that's why the disruptive element is very powerful, because parents are going to be able to access virtual education by going

around the public school, that's what makes the home schooling movement interesting. It's not that the home schooling movement is so big today, but they have legitimated getting your education outside the public schools.

It used to be that there was such a thing as compulsory education. I don't know what compulsory education means when you have home schooling. And so there's a potential for a run around.

And finally, I think that at some point a national politician is going to find this an interesting topic. And in the end, virtual education cannot go to scale without support from the federal government, and that's going to require national political action.

MS. MANGU-WARD: I would say the other thing about the disruption question is that, I think, maybe to mix a metaphor, well, no, maybe just to abuse a metaphor, that the – as a thin end of the wedge, virtual education is much sharper than charters or vouchers, that once you get a little bit of virtual education in a state somewhere, it's much harder to deny it to kids everywhere in that state and everywhere in the country than with these sort of specifically allocated, you know, there are 100 vouchers or there are 100 charters. And what that means is that you can sort of start to build the force for disruption from within the existing public system,

although I also think, you know, it's quite possible that the major change will come from without.

You know, one example that, just very briefly, is when I was in high school, I took gym in summer school. It was, you know, you mentioned everybody hates gym, you know how to hate gym even more, take it in summer school, because there were two populations of kids there, one was kids who had failed gym, which is a pretty impressive feat, and one was kids who wanted to take French and music, or, you know, a language and music, and you couldn't fit that in the schedule the way that my high school was structured.

If you had just had the option to do essentially what Florida Virtual Schools currently offers, unsupervised, but, you know, checked in upon by – with various mechanisms, make your own plan, do the exercise either during the school year or in the summer, my life would have been so much better. I just can't convey the magnitude of much better that would have come to my life. And I think once you get a bunch of kids who are having that, either gym, you know, just getting a good AP course, whatever it is, it'll be a lot harder to staunch the demand, and I do think teacher's unions, existing bricks and mortar schools, existing state legislators have a lot at stake in tamping that down and they're going to keep trying, but just giving a taste of freedom I think could push open the

door for disruption in a way that we hoped charters and vouchers would, but they seem to have failed to do.

MS. YOUNG: Now, the PE, the online PE, it's always such a great topic, but it's a great example, because I think what became most disruptive about Florida Virtual School, we were disruptive without really intentionally going we're going to be disruptive, is that we designed a system that was around student needs, and we decided that we did feel like learning should be engaging, and that kids should want to be there, and that, unfortunately, was a paradigm shift.

And so what became disruptive was that kids enjoyed learning this way, and, oh, by the way, many learned at a much higher level than they were learning in their traditional environment. And so our goal with physical education online was about – it wasn't about, you know, whether they were going to meet the presidential, you know, fitness test, it was about trying to create a desire for students to have a life long physical education plan. And so the design of the course includes the whole family, and it gives the kids the opportunity to, if they're a gymnast, they get to choose gym, and so it was, again, a fundamental change of how do you meet the needs of that individual student and make it all about them and make it relevant.

So I think that was disruptive because it was just so different than what we've always done in schools. And I think that today schools are starting to realize that kids are making choices, parents are making choices, obviously, they're going – they're home schooling or they're going to private schools, they're making choices.

MR. ROTHERHAM: I guess I will come down firmly and speak for the ads value camp, to your question, Russ, and I'll say it for a couple of reasons. I think, again, I think the politics, I've said that, I think it's going to ad value, and only if it's good. I think the sort of idea that this is so disruptive and so forth, I don't think we've really seen a great deal of disruption, I'll say – but briefly, so a couple of things, only if it's good. I get very nervous, so I'm going to push – Katherine said, that it's just the same as someone in the back of this room multi tasking while they listen to this as a kid multi tasking in school, it's absolutely not true, and I'll tell you why.

Domain knowledge matters; and every one of you in this room can sit in the back and multi task because you have domain knowledge about this. You probably know roughly what I'm going to say. Julie runs a virtual school, you'll probably get the idea she's not going to come in here and say virtual learning is awful.

The libertarian, you know what the libertarian is going to say. And you're probably roughly familiar with Paul's book and Paul's thinking,

you can understand that. You have domain knowledge, so you can sit in the back and multi task.

A kid doesn't have that, and so content matters, and this sort of diminishing of content, and I'll just give you a real concrete example of why domain knowledge is not transferable and why you need it.

I may know a lot about football, so I really understand football, I understand the positions, the plays, the intricacies, then you want me to talk about baseball. Well, there's certain things I'll get because I know about football. Competition with a fixed set of rules over a fixed period of time, the idea of a referee or an umpire and so forth, there's a whole bunch of stuff I'm going to have no idea about and you're going to have to teach me about how baseball works or I will simply never be able to understand reading an article about baseball, I couldn't make sense of it.

Watching a baseball game, it's a very glib example, but you get the point. And I worry that a lot of what we hear in virtual, there's this enthusiasm, it's all content, it's all content free, it's adaptive, it's meeting the learner. There's a romance to that that simply cuts against what we know from a large body of work or how people learn cog- psychology and so forth, and we need to be attentive, and so I worry it's not going to be quality.

What I think will be the disruptive is two things; one, when poor people, now I'm going to sound like a Marxist, but I'm dead serious, when poor people in this country finally just demand better schools, because the incredibly inequitable system we have, which is not just a little inequitable or stagger step, catastrophically inequitable, Paul talked about that, there's the difference. If you're fortunate enough to be born in Fairfax County, you're fortunate enough to be born in Arlington, or you're born in D.C., just the different life outcomes and the probabilities, it's catastrophic.

And then second, if people get serious about quality, and that's all folks, and so I think – and we haven't as a field been good at that, we don't have, no pun intended, but there's no common court to even organize that conversation, everybody gets to say what quality is, and if you have those two things, but I think it's going to be really hard, and so the other thing I'll push back on is this idea that once you have virtual education, you can't bottle it up.

Sort of beware in our field this sort of idea of the cargo cult, the thing washes up and we get so excited about it. Florida Virtual School is great, and I really like what they're doing, but I could take you to lots of states around the country, including some not very far from here that will remain nameless, but that I might be very familiar with, where we're

bottling up and denying that constantly because of political power and the way it works. And so the idea that this is just like water running downhill in, as Russ said, a publicly regulated monopoly, it's just not the case. And so I think sort of the enthusiasm here sort of outstrips the reality that you really see around the country, and just again, just the brutal nature of the politics.

And so one of the things I like about this book is, I've always enjoyed Paul as a contrarian thinker, and a skeptic, and I've always enjoyed his work, and I think sort of when people look at this, they lose their sense of skepticism about just how difficult it is, even though there's proofs of concept of that happening everywhere.

MR. WHITEHURST: Thank you. I'm going to answer my own question, then I'll throw the floor open for your questions. And my answer is from the Brown Center Report on choice and competition, and it's a recommendation that the federal government set up accreditation organizations for virtual providers in the same sense that the federal government provides for such accreditation for post-secondary institutions, and then it provides for title one funds in low performing schools to be made available to pay the cost of access to online education for students in those schools. So with that, I will turn the floor open to you. I'll ask you to raise your hand, we'll call on you, someone will come forward and give

you a microphone, and if you would tell us who you are and make it a question, and a brief question, I'd be very appreciative. So here in the fourth row with her hand up, Nina Reese.

MS. REESE: Hi, I'm Nina Reese with Knowledge Universe, and my question is to Paul and the panelists. Paul, you touched on open sources being one of the key ingredients that you think we need in this space, can you explain that a little bit more? And I'd love Katherine's reaction, that of Andy and Julie's, as well.

MR. PETERSON: Well, open source we know from Wikipedia, from cell phone apps, and from web site design, and linear programming, and there's tremendous community contributions to the creation of knowledge where people are volunteering this.

And when you think about curriculum, there's no reason at all why it couldn't motivate people to contribute to a common platform and constantly improve upon it. It's really like Wikipedia in that, it's sharing knowledge. And the incentives could be there for somebody who wants to promote the fact that they know a lot about this particular subject and they can present it very effectively. So like if you can identify who's making the contribution of the common platform, it can be to their benefit in other ways. I think that students could be excited about contributing to a common platform. As I said, being a teacher is the best way to learn. So I

don't think – there is a school in Utah right now called Open Source High, or Utah Open High, I think it's called, and they are just beginning to try to take all of their curriculum from open sources, not 100 percent, but as close to it as they can, and they're hoping to continually adapt and upgrade as open source gets better.

I see this very much in the transistor pocket radio stage. I don't think I'm going to make that claim, that that is the way to go at the present time, but I think it's something to keep in mind as a long term possibility.

MS. MANGU-WARD: I'm certainly very – I hear the siren song of open source, it's something that I want to love, and certainly I am a great user and abuser of Wikipedia as a journalist, but I guess what I would say is, that's one model that might work, and we really just don't know what the model is that's going to work. The most successful open source projects are often non-profit or start out non-profit, and as several people have alluded to, we're probably going to need some money somewhere in this industry, money to be made and money to be passed around, at least in part because right now teacher's unions have a huge, huge amount of money. They're one of the biggest lobbying presences in Washington, D.C. and at the state level, and they're spending some of it to retard the growth of virtual education, and I think in particular the kind of

virtual education that would come out of open source is what makes the established kind of entities in this game the most nervous.

But that said, I think there's a misconception about open source, which is, anybody who's anybody gets in there and it's a big mess, and there are so many projects, including the ones that Paul just listed that demonstrate that doesn't have to be the case, that actually you get superstars in open source, you get people who are famous for the work they have done for free for some kind of massive collaborative project, and I think we already see that a little bit.

Just, for instance, there's a physics teacher who – his name escapes me now, but he gave up his day job to post YouTube videos teaching physics and calculus, and he has like three million views on YouTube, and it's all free, it's all open, it's just there, people consume it as they want it, and I think that's the kind of model for open source. And it might just be a supplement to the sort of closed and proprietary, you know, model that is something like Florida Virtual Schools, as well.

MR. ALTMAN: Hi, my name is Fred Altman, and my – it seems to me that virtual education in particular is ideally suited and differences in different individuals, and to do that, one really needs a good background in basic – how individuals learn and the differences in the way they learn and the feds, particularly the Department of Education, should

be supporting basic research on how we learn, and I just wondered, do you agree with that need for doing something like that?

MR. WHITEHURST: I'll take a stab at that since that used to be my job. A little bit, but the National Institute of Health and the National Science Foundation have a statutory role to invest in that area, and they invest to a large degree, so my own view is that the Department of Education should be a relatively minor player in the basic research business because there are other federal agencies that are set up to do that. Next question, please.

MR. HOLMES: My name is John Holmes –

MR. WHITEHURST: Would you take the microphone, John?

MR. HOLMES: My name is John Holmes -- I don't think it works. Okay, all right. My name is John Holmes, I'm with the Association of Christian Schools International, I'm the Washington office, and first of all, I have a young lady in our neighborhood, and I want to help her because she quit school. She's very willing to come to our house, and we just do it as a mentoring situation, but I was wondering if I could get her hooked, because I'm in Maryland, and they seem to be against virtual education, and I was wondering if I could hook up and pay a fee to use your services.

MS. YOUNG: Yes, you may. We have a most unique piece of legislation that actually directs us to take what we do in the state of Florida, license, sell it, share it outside the state using those dollars to come back in for research and development. So we have a global school and we'd be happy to take her.

MR. HOLMES: Wonderful, thank you. Now I have one other thing in terms of draconianism, forced regulation on non-governmental schools. There's a piece of legislation right now before the – just passed the House of Representatives, just flew right through, and we're going to keep kids safe by allowing teachers not to touch children. That was George Miller's idea. It sounds like it's wonderful, don't abuse kids, don't allow them to be put in seclusion. The way private schools get involved, religious schools get involved, they are forced for the first time, if they have anybody who receives federal funds, they have to comply with this. It's dodged legislation in the Senate, and it's going to be for the Helps Committee. It is in complete contrast with what you're talking about, absolutely.

MR. WHITEHURST: Thank you. I'll take that as a comment rather than a question. Can we take a question towards the back of the room here? Thank you, go ahead, right there.

SPEAKER: (off mic) – a question about – you said – you had a line item – and I'm wondering what the basis for the compensation on the – and how that compares to – for people. The broader question is – a number of charter schools – there is a – in terms of financing – because the claim is that they simply are – and so forth, so they just – educate the kids. And we always heard defend the idea that 100 percent – child, but I'm also hearing on the panel that in the long run, virtual education is a way of – and actually gaining a lot of physical efficiency in education. So maybe we – and I appreciate comments from – on that broader question –

MS. YOUNG: Okay. First of all, you'll see this line in the book that says that Florida Virtual School doesn't want competition based on quality, we're all for competition, but we want the quality in addition to the price. And what's happening across the country, and in Florida, as well, is, it's all about driving the cost down right now, and there's almost no discussion about quality, so that is something I think we all need to be keenly aware of right now.

Our cost model, as I mentioned, it was designed initially to be non-threatening so that we have the opportunity to become a quality program without threatening the schools and to kind of get legs.

When – actually what happened is, class size amendment passed in Florida and everything zero budgeted, so overnight we became an FTE per pupil driven model. But we were insistent not to be a seat time model because we believe that that eliminates a huge advantage that virtual education offers. So, thus, the performance based mastery model is what we asked for, and the difference was that when the schools in Florida were reporting seat time three times a year, we report successful completions, which means students master the material.

And so it was a way to do something very different, but actually frame it so it would somewhat fit into the traditional system in Florida, on the same schedule, et cetera.

Initially, we were funded at the average FTE in the state, because we took kids from everywhere, so initially I think our funding was about 6,800 per FTE. Our FTE was 12 half credits of any combination. Currently now, we actually are about $1,500 to $1,800 cheaper than the average FTE in the state of Florida, significantly cheaper than any other district in the state of Florida, and the economies the scale based on our size and our growth have allowed us, which was the design, I mean that was supposed to happen, and it certainly has.

But you do reach a threshold where you just can't go any lower. And I think to your point, virtual programs are all very different.

You know, Florida Virtual School, 100 percent of the instruction is done by teachers. There's a wide variety of methodologies and programs out there, and they're all very good in the environments that they serve, but you can't – it's not a one size fits all funding model, in my opinion.

MR. ROTHERHAM: So I would just – I would add – I worry about a race to the bottom on cost a lot, and I think, as I said, I think there's going to be much less cost curve bending, I think technology actually has some back office ways that could help think about productivity and some other things, but there's going to be less of that.

Two big thoughts, though, you do want to compete not on cost among quality, we're not yet good at that. I worry there will be a race to the bottom. And second, we're going to have to find a way, and this sounds horrible to say, but – make investors whole. If you really want to see sort of sustainability and dynamism and so forth, people have to be able to come into the space and make money.

I mean one of the things we didn't talk about is the potential obstacle, this is how public money flows and how little there is for sort of R&D in innovation. Private dollars are going to have to play a big role in that. There's going to have to be – so I'm for full funding. And then finally, we've just got to think about sustainability. I mean the open – that's the open source conversation, it does get a lot of attention, it's sort of a huge

ignorance of the realities and economics of the publishing industry and what that money and so forth actually goes for, and I worry that sort of, again, we could run into sort of a competition on all this around the price that ignores these really key issues and drivers of quality.

MR. WHITEHURST: Okay. We'll take one more question and that will be it for the day. We'll take the woman with her hand up on the row here, just back there, good.

SPEAKER: (off mic) I have a question for Julie.

MR. WHITEHURST: Would you tell us who you are, please?

SPEAKER: (off mic) Yeah, my name is – from the McHale Institute, and I was just wondering, Katherine and Andy both – more prevalent – has that been – created, and if you have that pushed back, where –

MS. YOUNG: I don't necessarily think there's been blood drawn, but a few scratches. You know, initially, again, you know, my disclaimer is, we had a bit of a perfect storm in terms of the political climate when Florida Virtual Schools started. Between the Governor and the legislature, they designed laws that enabled Florida Virtual School to grow, they created choice laws that required that students be able to have this choice, that they could not be denied this option, and so there was a –

don't get me wrong, a lot of hard work to sell it and to become credible, but at the same time, it had a lot of help from the lawmakers and decision-makers in the state of Florida.

Over the last few years, now that, you know, Florida had a lot of money then, nobody has any money now, the last few years, I think where the blood is coming in is what we were just discussing in that, you know, we're pushing people to use virtual education whether they want to or not, and I have mixed feelings about that, you know.

Do you force a child into a virtual education experience when they hate computers, and we're talking so much about the money that the quality issue is getting lost, and so then what happens is, you have bad experiences with kids and parents, and then all of a sudden, it becomes, is this really a credible way to educate kids. So I think that the blood is coming in for the fight about, you know, how to sustain this in such a way that it is done well, so it is good for kids, and not just a cheaper way to educate kids when all we sit around and talk about in education is a failing system. I hope that answers your question.

MR. WHITEHURST: Paul.

MR. PETERSON: Just a word on the cost and the model in Florida. I think it's extremely important that it was set up as – you have a choice of which course you want to take where and not which school do

you want to go to. Around the country, you go to virtual school or you go to your regular school, it's either one or the other, that's not the way to move forward.

The way to move forward is the model in Florida, where you can pick by each course, so you can create this hybrid educational experiences and let each student choose the package that makes sense for them.

I know there's all these issues of quality and trying to find the balance between having a good course, and it's going to require a lot of capital to create the curriculum that's needed. So the idea that there's no capital involved in virtual education is, unlike the brick and mortar school, is just the wrong way to think about it, it's capital being used for another purpose. So there's got to be a lot of intelligent thought to be brought to bear on this, but I think this, in the long run, these kinds of issues will get sorted out and we won't have the race to the bottom that Andy anticipates.

MR. WHITEHURST: Thank you very much for being here. It's been interesting for me, I hope it has been for you. And I hope you'll join me in giving a little applause to Paul and the panel for the good presentations.

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