0:06

GRANT: Welcome, everybody. I see everyone's starting to trickle in.

0:09

GRANT: We're gonna give a couple of minutes for people to finish joining and kind of get settled. And then we'll go ahead and kick it off and get to some of the conversation and Q and A.

0:39

GRANT: Awesome. I see the attendee list is starting to level out. So we've got a lot to get through and we want to save as much time as possible for the Q and A. So, we'll go ahead and get started.

0:51

GRANT: But first and foremost, for everybody that joined, thank you all for taking time out of your busy schedules to join us. I know that this is one of the most trying and difficult times for educators across the country. And thank you for all the work that you're doing to keep students and teachers and staff as safe as possible. And we empathize with your challenge. And, hopefully, the content today in the Q and A and discussion that we have, will help provide some, perhaps, new perspective, new information, and ultimately help with some of the challenges that all educators around the country are facing.So, first and foremost, I'm Grant Morgan. I'm one of the cofounders and CEO of R-Zero.

1:32

GRANT: And I'm incredibly proud to have the opportunity to moderate today's discussion on a topic that many may consider the most daunting and challenging set of issues to ever face the public education system. And that's, you know, balancing the

health risks associated with re-opening schools during a global pandemic with the social and educational consequences associated with remote learning.

2:00

GRANT: There is no right or wrong answer. I think that there's there's a lot of suboptimal options, but, you know, we're here to talk through some of those risks and hopefully provide some more information and insight into how others are dealing with those and hopefully answer any questions that you might have. So today we get to hear from two very special guests, Dr. Richard Wade and Arne Duncan, who are two of, in my opinion, the most qualified experts in the world to speak about public health and education. So really, really excited to have them and we're really lucky to be able to interact with them and get their insights on this topic. So before we kick things off, I want to cover a few housekeeping items.

2:44

GRANT: Number one, this is meant to be interactive. This is for you, for the attendees who are here. And we solicited a number of questions prior to the event. But if you have questions at any time today, go ahead and put them in the questions tab. And we're going to be prioritizing and in surfacing those questions.

3:03

GRANT: Please ask questions as they come up and we'll try to get to them.

3:07

GRANT: The questions tab should be located on the right side of your screen. If you don't see it, look for the orange arrow in the top right corner of your screen.

3:16

GRANT: And click that and it should expand the tab. Go ahead and throw the questions in the question box whenever they come up, but we're gonna open with a brief round of introductions. We're going to frame the discussion with some high level context about some of the health risks associated with re-opening schools and frame some of the consequences of virtual learning and the detriment to students and teachers alike.

3:42

GRANT: So without further ado, let's go ahead and get started.

3:48

GRANT: Real quickly, some context about R-Zero, who we are, what we do, and why we're facilitating this webinar. As I mentioned, I'm Grant Morgan, one of the co-founders of R-Zero. And fundamentally, we are a biosafety technology company and our mission is to reduce the spread of infectious diseases from COIVD today to the seasonal flu, common cold, e-coli, norovirus,and any other type of pathogen that's endemic to our customers' spaces. So, we take the best-in-breed hospital-grade air and surface disinfection that's available today and we marry it with modern technologies, like IOT capabilities, machine learning, data science, and modern software experiences to help our customers ultimately create and maintain the safest indoor spaces possible and ultimately reduce sick days. So we work with organizations of all shapes and sizes from hospitals, like the Mayo Clinic, to professional sports teams, corporate office spaces, and really, everything in between.

4:47

GRANT: But we're also in thousands of schools across the nation, including some of the biggest school districts in the world and some of the smaller schools with smaller populations. We've had sort of a front row seat to the challenges and the trials faced by education leaders, by teachers, staff, students, and entire communities, really. And we empathize with those challenges and we're here to help. So there's a ton of conversation happening, as you all know, in the public that is sort of debating the public health risks associated with re-opening schools. So that's your risks to students, teachers, staff, and the broader communities that they serve, but also the social and

educational and other consequences associated with remote learning. And so, as mentioned a little bit earlier, we have two of the most qualified individuals in the entire world that I'm excited to introduce.

5:46

GRANT: So we have Arne Duncan, who's joining us today. Arne's reputation precedes him, but he was the ninth US Secretary of Education.

5:56

GRANT: Prior to that, he was the CEO of Chicago Public Schools, and he does a ton of work in the education sector. Many would argue, that he has had the single greatest positive impact on the public education system in the United States, more than any other individual in history. So we are incredibly lucky to have Arne join us today and have had the pleasure of getting to know him a little bit over the last year or so.

6:24

GRANT: I can say confidently that he is the most passionate individual about improving the quality of education and creating an environment for students and children to learn and have the highest quality of education that we could possibly give them.

6:42

GRANT: The other person we have here, to cover some of the health science associated with this conversation, is Dr. Richard Wade. Dr. Wade is R-Zero's Chief Scientist and he's a world leading expert in toxicology and risk management. He's the former Deputy Director of Cal OSHA, he's an elected member of the National Academy of Sciences, and so much more.

7:04

GRANT: We're lucky to have Dr. Wade here to weigh in on some of the health risks and consequences associated with schools specifically.

7:13

GRANT: But both of them are going to be the stars of the show.

7:18

GRANT: I'm sure you want to hear from them more than you want to hear from me, but just to kind of set context for this conversation, a couple of data points here. So you're all acutely aware of this, but school disruptions have impacted over 1.6 billion children worldwide, and schools have been closed for for almost two full years now, going on three years. And during the first week of January, we had over 6200 school closures, disrupted again, by COVID, now the Omicron variant.

7:55

GRANT: So this has massively impacted virtually every school district in the nation, and for good reason. We're in the middle of a global pandemic and there are health risks associated with with re-opening.

8:08

GRANT: The recent surge of Omicron has sort of resurfaced some of the challenges and the questions associated with what we do about re-opening schools. There are teachers that are scared. There are students that are scared, the community members, the parents, everybody's scared and for good reason. There are significant risks associated with opening schools, but there are also consequences to keeping them closed as well, so we're gonna tap into this topic quite a bit here as this is a massive, massive challenge for everybody on this call, I'm sure.

8:48

GRANT: The flipside of the coin is with closing schools, there's a lot of data and evidence historically, and I'm sure it's not a surprise to many people on this call, that being in person for learning for teachers and students alike is a huge factor that impacts the quality of learning.

9:09

GRANT: And so over the past two years, we've experienced significant learning loss from the school closures, and that's happening disproportionately to schools across the nation.

9:20

GRANT: So, you know, there is no good answer or good option here. We have two less than ideal options in keeping schools closed versus keeping them open.

9:35

GRANT: There are multiple dimensions to the losses that are incurred by students, namely, we talked about the learning loss, but also the social impacts and the academic impacts to closing schools as well.

9:51

GRANT: Those gaps have been exacerbated by the pandemic and the gaps are only getting wider.

9:58

GRANT: So, this is a massive challenge and a gap that we want to start closing and, and get back to the higher quality of education that we were experiencing before with in person learning.

10:11

GRANT: There's also mental health challenges. Students not being able to socialize, not being able to to develop those social skills associated with being in person and interacting with other classmates and other teachers, and it is massive. So, there's mental health challenges that are unprecedented. I promise, this is the last slide and then I'll get into the questions so you can hear from the two people that matter most here.

10:41

GRANT: But Arne had a fantastic quote that really frames the problem incredibly well. With that, let's go ahead and dig in.

11:01

GRANT: I want to kick off with a question to Dr. Wade to set the tone here. Dr. Wade, given what we know about the Omicron variant, what are the types of things that should influence decisions about school closures?

11:24

DR. WADE: I think you've really highlighted the importance of education. My personal perspective from a risk management standpoint is that we have sacrificed 2 to 3 years of children's education. Everybody has been impacted by COVID, no parts of society have been immune.

11:42

DR. WADE: However, as COVID has mutated from the Delta into the Omicron strain, it's less severe. We're seeing less impact on children and less severe health impact. I think we need to take a really hard look at the importance of keeping the schools open and how we minimize the risks to children.

12:08

DR. WADE: Children, even with Delta constituted only 17% of all cases. This is children less than 17 years old. They were 8% of the hospitalizations and 0.1% of the deaths.

12:21

DR. WADE: So even though they don't reflect the total numbers of the population, the incidence and the amount of disease is lower in children.

12:31

DR. WADE: We also see that the public health practices that have been put in place of the social distancing, the pod learning, the masking. And obviously, the vaccination. Vaccinations have really helped us a great deal.

12:45

DR. WADE: When we went into this 2020, we didn't have the vaccines so we took more drastic actions. I think now it's time to hone in what we can do to prevent the disease, reduce the risk. We're going to have to learn to live with this virus, it's going to be around for some time. This coming year, we're going to be adding on the flu. Influenza was significantly depressed last year because of the public health practices. It is going to be coming back this year. So we need to take a hard look at that.

13:20

DR. WADE: From a health standpoint, we have tools. What we need to do is get those tools in play, throughout the school systems, to get our kids back in school.

13:31

GRANT: Thank you, Dr. Wade and then Arne. Can you sort of summarize the impact of students and teachers not being being in school and some of the detriments to the quality of education and the correlation there between in person learning and those consequences?

13:50

ARNE: I think we don't fully understand how large the outbreak impact has been. First, Grant, I want to thank you for pulling this together and really framing this as an extraordinarily important and complex and complicated topic and appreciate Dr. Wade's wisdom. And also I think you probably have mostly educators on the call, and I just wanted to thank them for their hard work. This has been just an incredibly difficult time to be in education and teachers have had to bear the brunt of, I'm just trying to be honest, for better or worse, very misguided leadership at the federal level. You know, in the early parts of the pandemic it just had a devastating impact on all of us. All of our families, of our communities, all of our schools, and I hate that you've had to go through that. And so here we are, and where do we go? I'll just say a couple things.

14:34

ARNE: I ran the Chicago Public Schools for 7.5 years, and one of the things I'm proudest of is that we never missed a day of school. We never had a teacher strike. And we never had a snow day. People used to get really mad at me, it would be freezing here, snow drifts. And these are not decisions I made easily or lightly.

14:52

ARNE: But again, as everyone on this call knows schools are so much more than places of learning.

14:57

ARNE: They are social safety nets.

14:59

ARNE: They are often the safest place that a child is at any given point during the day.

15:05

ARNE: We didn't serve just two meals a day. We had tens of thousands of kids. We served three meals a day, breakfast, lunch and dinner, because we worried about them not eating at home.

15:13

ARNE: So schools truly are the lifeblood, the heart of a community, and schools, yes, educate, and that's critically important to schools, but they also often literally save lives. And so every day of being around peers in a normal way, anytime any day where kids can be around positive role models and mentors any day in which they can be safe and fed and cared for and supported.

15:40

ARNE: Those are just those precious days. Every single day is a precious day.

15:45

ARNE: And so, whatever we can do to not give up those days, to not give up those opportunities for kids, I really want to emphasize, particularly for the most disadvantaged kids, for the most vulnerable kids, most at risk kids. Whatever we can do to give them a chance to be in that positive environment with their peers, with fantastic adults who care about them, surrounding them, and teaching them and loving them, I can't overstate how important that is.

16:10

GRANT: Thank you, Arne. Speaking of the precautions that we can take to reduce risk. Dr. Wade, can you touch a little bit on what are some of the tools or mitigation tactics that schools might think about employing to effectively mitigate risk as best possible, not only for students, but for teachers as well?

16:35

DR. WADE: Thank you for the question.

16:36

DR. WADE: The objective obviously, is to reduce risks. We can't eliminate it. We're going to have to learn to live with this disease, as we have learned to live with influenza and other respirable diseases, which affected children for many years.

16:51

DR. WADE: The things that we can do are two things. One, the public health practices of vaccination, of social distancing through pod learning, keeping kids segregated to the maximum they can in small groups within the schools, using masks and hygiene are all important and they are shown to be working because kids are safer in school.

17:16

DR. WADE: The transmission in school is about 2% within the classroom versus the community is 20 to 30%. So, kids are safer in the classroom because of the precautions that have been taken. But we need to do more.

17:31

DR. WADE: We need to do more, and there are a number of environmental engineering technology applications that we can make, such things as increasing air flow in the classrooms. Air movement is very important.

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DR. WADE: The old adage that the solution to pollution is dilution.

17:49

DR. WADE: You can dilute the air concentration of viruses by increasing air.

17:55

DR. WADE: Not all schools, a lot of classrooms can't do that because of the type of systems that were designed, a lot of the systems that were put in, in the seventies, eighties, and nineties, and up to today are designed for energy conservation.

18:09

DR. WADE: So they've severely limited by how much air flow you can have, and that brings us down to an important distinction to be made in classrooms.

18:18

DR. WADE: You can look at the big HVAC system and hear heating ventilation and air conditioning. That will treat the far air.

18:26

DR. WADE: That's what's moving through the class, and that's all good.

18:30

DR. WADE: But we're not getting transmission of disease through that big air, moving through the classroom.

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DR. WADE: You're getting it in what's called near air.

18:38

DR. WADE: It's an air that you and I share when we're sitting across your desk in a classroom or a conference room. It's that near air.

18:46

DR. WADE: And that's why there's lots of technology out therE that R-Zero is bringing to the table based upon UV light, which is effective at sanitizing that air real-time, not passively, but real-time. So that we're reducing the viral concentration.

19:03

DR. WADE: The objective is viral concentration reduction.

19:07

DR. WADE: And that on top of the public health practices that have been in place that we know work will allow us to live more safely with the disease. R-Zero has focused on UV light because it's cost-effective, it's safe when used properly. It's recognized by CDC as an effective mitigation measure. It's been used in hospitals, most of us drink water that's treated with UV light to kill pathogens in the water.

19:35

DR. WADE: So, we're bringing new old technology, that is shown to work, but bringing it to the 21st century, and we're doing that to get away from some of the excessive chemical use.

19:47

DR. WADE: Poison control centers have been inundated in the last two years of people, not only children but applicators, custodial staff, using chemicals and misusing chemicals, trying to do the right thing but doing overdosing. So UV light is what we decided to work on, and it is an effective tool to add to the other tools out there.

20:11

GRANT: Thank you, Dr. Wade, and I think that to kind of summarize, one of the points that you made that's super important is there is no silver bullet. It takes a layered approach. You have things like masks. Vaccines are definitely important tools, but then layering on the additional precautions, the mitigation strategies for the classrooms themselves and things like that. But, that brings me to another question. This one is from Janet from Pennsylvania. So, you know, this one's for you, Arne, but one of the things that we've heard consistently, that really resonates and aligns with what Janet is asking is there's a lot of consternation about how and when to communicate to parents, teachers and students about the changes that are being made.

21:01

GRANT: And, it's difficult to, sort of, galvanize alignment within a community around some of the changes that are being made, but what would you recommend in terms of what to communicate, who to communicate to, and the cadence of communication for the changes that schools are making.

ARNE: Such an important question. And, again, it's such a complicated topic. I'll just say again, always speak honestly. I think what has driven this virus is not, just, the virus itself, it's been misinformation and disinformation.

21:36

ARNE: And we've had far too many deaths, far too many families who've been severely impacted, where that didn't have to be the end result had we communicated openly and honestly. I feel strongly on this, and I think too often school districts feel they have to have the perfect answer. Present everything wrapped up in a bow to parents, and if this virus has done nothing for us, it's humbled us. and we're all struggling with this. The information is changing in real-time day by day.

22:07

ARNE: Very early on the pandemic I thought it would be 2 or 3 weeks. If somebody had said two years later and you'll be sitting here, I would say that's impossible, it can't happen. My whole family has been sick, you know, there's things that you couldn't couldn't have thought were possible.

22:24

ARNE: So, to answer directly, my strong advice would be to communicate openly honestly, transparently, as frequently as possible and as you said, there are no perfect answers here. What we have lost in far too many places country and in school districts, school systems, is trust.

22:44

ARNE: And what parents are looking for is authenticity and honesty.

22:48

ARNE: And for a principal or school superintendent, to say, here's what we're struggling with, here are the pros and cons. And here's what we decided and why. Not just say, here's what we decided, this is a great thing.

22:57

ARNE: And then, you know, information changes a week later, two weeks later, so we've adjusted our thinking, because we have new information, or cases are surging in our community, or cases are going down. And, so there's a level of vulnerability there that, I think sometimes, you know, we, as adults, we, as educators, feel uncomfortable with. I just think there's tremendous power, particularly today, in vulnerability and honesty.

23:20

ARNE: And so, I would maximize communication with parents, with faculty, staff, with kids themselves, with the broader community, and we're all learning in real time, and let us do that, with real urgency, you know study the science, study the data, but with real humility as well.

23:39

GRANT: Absolutely.

23:39

DR. WADE: From a science standpoint, the science hasn't changed. Our understanding has changed. We've been using scientific principles to evolve answers.

23:52

DR. WADE: One thing on which Arne is absolutely correct, is that this virus has taught us a great deal of humility because remember back two years ago, we were wiping cartons of milk coming into the house. We're putting bags in the garage and we wouldn't bring them in the house.

24:09

DR. WADE: Those had very little to do with transmission of disease, but it wasn't until maybe a year ago that we fully understood the issues.

24:20

GRANT: I love that, and I'll ask this to both of you starting with you, Dr. Wade and then to Dr. Wade.

24:28

GRANT: Dr. Wade, where should people be looking for credible sources of information and recommendations to inform some of the changes that they're making on a regular basis?

24:41

DR. WADE: Well, as Arne pointed out, we do have a pandemic of misinformation that this pandemic could have been brought under control much, much more easily if people hadn't been doing their research with their iPad.

24:55

DR. WADE: Look to CDC, look to National Institutes of Health.

24:58

DR. WADE: These people know the science. They're looking at these issues in very granular detail every day. And it's important to go to these authoritative sources. Look at your academic faculty members in your community, the Professors of Medicine, the professors of Epidemiology and Microbiology.

25:18

DR. WADE: They understand the disease. They should be advocating the science in your local community.

25:25

GRANT: Then, Arne, same question, if you have anything to add to that. Plus, maybe through the lens of are there education-specific sources of information, or bodies, or groups that you think we should tap into and are credible sources of information, as well?

25:44

ARNE: I think Dr. Wade answered it perfectly, and I just want to apologize to all the educators out there, the fact that when the pandemic began, we did not have a national response that was open and honest, and clear.

25:57

ARNE: This virus didn't know geography, or boundaries, or states or districts.

26:01

ARNE: The fact that we had 15,000 school districts trying to figure this out by themselves, and probably not one of them had an epidemiologist on their staff.

26:10

ARNE: We put adults in charge of kids' lives and worried about their own lives in just an untenable position.

26:17

ARNE: We're still trying to correct for that, and so I just hate that, that had to try to be figured out, locally, across the country.

26:24

ARNE: This was a national disaster that needed a national response and the absence of that has been devastating.

26:31

GRANT: Yeah, I couldn't agree more, and it's unfortunate, but I think great advice. You know, follow the science, go to those credible sources of information, make evidence-based decisions, science-based decisions.

26:45

ARNE: And, and it's oftentimes hard to decode that. Really quickly, Grant, something Dr. Wade said that I think is really important to make sure we maybe repeat it. My understanding, again, I'm not the expert here, is this virus has really been spreading outside in from outside the community into schools. The schools are often the safest place because they're controlled environments and people are taking care of kids. So, for me, school should be the last things that close. Everything else can close in the community - bars and restaurants, sporting events, everything else, before schools but Dr. Wade, is that correct? Generally, across the country, virus does not spread from within schools but spreads from the community into schools? Is that accurate? Absolutely. The community infection rate is around 30%, you know, it ranges from areas of 10% up to 30-40% in subcommunities. But there's a lot of virus in the community. The transmission in schools, there's 2%. So it's a fraction of what it is in the community. And the virus is being brought into the school. But the interventions in the schools are making it safer for those children to be there and get the education they need.

27:57

GRANT: Thank you for for summarizing that. That's a really important detail for us to understand and really inform the decisions that we make.

28:06

GRANT: And one thing to highlight that Dr. Wade said, as well was the interventions that are happening within schools. Whether it's vaccines, whether it's masks, social distancing, whether it's the air filtration or disinfection, whether it's, you know, enhanced cleaning and disinfection protocols. All of those things are layers to effective solutions that are contributing to that reduction in spread within schools. All humans are susceptible to coronavirus. It has a lot to do with the behavior of those humans and, in the end, the safety of the environment that they're in, that influences the transmissibility, and the transmission rates.

28:48

GRANT: Switching gears a little bit, we got a question that's specific around teachers and teachers' mental health.

28:58

GRANT: I can't imagine the things that go through teachers' minds as they're thinking about their own health and their family's health and wellness. But, Arne, in this time of extreme adaptation and planning challenges, and uncertainty, what message would you have for school district leaders on supporting teachers and their physical and mental health?

29:23

ARNE: Yeah. You're such a thoughtful audience here and I will speak honestly, for myself, and probably for everyone in the country. We've had some really dark days and sometimes real doubt or fear or anxiety, depression, whatever. And the more that school districts, yes, they absolutely have to look out for the mental health and social emotional well-being of our students with so many of our children dealing with trauma

way before the pandemic and started now that, you know, we've had about 150,000 children lose parents due to this. The food insecurity is staggering, the number of families who were living, you know pretty okay check to check but then those checks disappeared, and they had no safety net. So, our children's lives have been just dramatically impacted.

30:12

ARNE: But, so, too, as you said, Grant, are teachers, and whether it's their own concerns about the stress of the job, their own concerns about health and safety of themselves. You know, parents.

30:21

ARNE: How do you teach a set of kids on Zoom, when your kids are at home, and you've got 2 or 3 little ones?

30:25

ARNE: It's, um, it's way too much. And so, school districts historically have not had enough money, I'm largely one of the biggest fighters for more investment in education, but with the federal money that's come down school districts have never had more money than they have today. And some of the physical infrastructure that you've talked about, that's obviously a fantastic investment.

30:44

ARNE: But if I was again running the school district right now at the top of my list would be taking care of my team.

30:49

ARNE: Taking care of my principals, my teachers, my bus drivers, my custodians, my lunchroom attendants, and whatever we can do to help their mental health and give them the supports they need. Give them access to counselors, therapists, physically, virtually or whatever it might be. We have to do that, and again, the more we're open, and honest, on the struggles I think every single one of us has faced and doing what we need to take care of ourselves and get to a better place. That's the least we can do for our teachers. We owe that to our teachers and again, school districts have the resources now to do it. I never like to say, like, you know, people say, you know, take care of yourself.

31:29

ARNE: For me, it's really not about taking care of yourself.

31:31

ARNE: We have to take care of each other, and for me, a teacher, it's not their job just to take care of themselves. It's our collective responsibility to help everybody, and so for me, I want districts to own that. I want superintendents, school boards, principals to own that, and it can't be up to every teacher or every custodian to just take care of themselves. We're too interconnected, we're too interdependent.

31:54

GRANT: I couldn't agree more.

31:56

DR. WADE: Important to add on to that is that about 30% of the population have preexisting conditions, and we know that this virus searches out and has more devastating effect on people with preexisting conditions.

32:10

DR. WADE: Teachers and staff within schools are part of that population. So, we need to look to protect them and that's why the layered approach, vaccination being at the top, the intervention, public health programs, the environmental programs that we're talking about. Those are all important to protect not only the healthy child but also the more vulnerable population within the schools.

32:37

GRANT: I couldn't agree more and I think Arne touched on a really important word: investment.

32:44

GRANT: The idea that a lot of these interventions can actually live long beyond the pandemic regardless of whether this becomes endemic, which, I think the scientific consensus is that it probably will. But the idea that we can make changes to the infrastructure, and the environment, the learning environment that actually help keep students healthier beyond the pandemic, So reduce the incidence and the spread of things, like seasonal flu, or norovirus, which can rip through an entire class or, even at school, very quickly. It's the common cold. All of these different things that these pathogens that are endemic to school environments.

33:27

GRANT: And cause loss of learning from the absenteeism and the sick days that result from it. There are ways to deploy these funds in ways that have longevity.

33:39

GRANT: And that will continue to pay dividends long after the pandemic as well and so, that's one consideration here, that we think is important as you're thinking about the distribution of those funds.

33:51

GRANT: And, I think, I'll turn this into a question for Arne, around continued funding, or or federal support for improving the classroom environment, and the learning environment, and optimizing that environment for the health and safety of students and teachers. Do you see any sorts of policy changes, or changes in funding for schools that would allow schools to make these types of investments on an ongoing basis?

34:29

GRANT: And, if so, what do those look like, do you think?

ARNE: I do not like to use the word silver lining, because for me, this pandemic has been beyond devastating.

34:39

ARNE: But of the things we've learned, I think we've all learned as parents, as educators, is that teachers are just heroes, they are just absolutely critical. And if folks didn't understand how hard and how complex and how difficult that job was on every parent who has tried to home-school their 2 or 3 kids, let alone 25, or 30, or 35, have an appreciation for teachers that they didn't have before. So, I do think at the local level, at the state level, at the federal level, and obviously there's an attempt now to get a lot more money into school districts that Congress could pass from President Biden's bills and work together. And for me, there's never anything Republican or Democratic, liberal conservative, you know, education is the ultimate non-partisan issue. We all want our kids to thrive.

35:23

ARNE: We all want our teachers to be supported, and to feel great about what they're doing every single day. For me, this is nation building work. And so, continuing to invest in our educators, continuing to invest in our support staff.

35:38

ARNE: Continuing to make sure that they're feeling their best so they can give their best. I think there's probably never been greater consensus, never been greater understanding for that.

35:49

ARNE: There's never been greater appreciation for the transformative, life-changing, heroic work that teachers do every single day. And so I would be stunned and heartbroken if somehow that sense of urgency disappears six months from now, a year from now. I hope we've crossed that Rubicon and it's been a really painful lesson. But I think we have learned a very important lesson as a country, of how critically important our teachers are, our schools are to the functioning of our society. And for me, this is the heart. If schools don't work, if schools aren't open, nothing else works. If teachers aren't cared for and supported then our kids suffer.And there's not a parent, anywhere in the country, I know, who wants their children to suffer.

36:34

GRANT: Yeah, I couldn't agree more. And our stance is that we as a society have a new awareness of the relationship between indoor spaces where we, as humans, spend 90 plus percent of our time and human health. And to the extent that we can carry the momentum and the investments that we've made in creating safer spaces. And by virtue of that creating healthier, more productive humans, that translates very directly to the education system, given that's where students or children spend the majority of their time, is in the classroom or in the school environment. And so, you know, indoor air quality is going to be a huge focus, or we believe it should be.

37:19

GRANT: For example, one interesting statistic is in a classroom, every time you take a breath, which we take 18 to 20,000 breaths every day, but every time you take a breath, statistically about 4 to 6% of the volume of that air that you're breathing in, was in someone else's lungs in that room.

37:38

GRANT: And so it's important for us to keep the pressure on it and make the policy changes to start to improve the indoor air quality and invest in the infrastructure that, in a lot of cases, is old and outdated. And inadequate frankly for modern day practices that we want to employ.

38:00

GRANT: So turning that into another sort of question that we're getting a couple of times in the question box here. Dr. Wade, can you speak to the comparison of the safety of, say, chemicals versus UV-C light and some of the other interventions that that exist? So, I guess specifically, Ferko from Wisconsin asked, how is UV-C safer for students then spray disinfectants? And what are the safety concerns with UV and how can they be mitigated?

38:35

DR. WADE: In 2020 we started using more and more disinfectants which are in fact really just pesticides, pesticides that kill micro-organisms. We started using lots and lots of applications of wiping everything down. Desks, walls, doorknobs.

38:56

DR. WADE: But the concentrations, the amount of these pesticides, chemicals being used, went up and up, but then about mid 2020, when it was recognized that air was a more significant contributor to disease and caused the transmission, they started spraying into the air. So, you get the same chemicals being sprayed in the air, which is exacerbating the problem and making it more risky to all the employees and students in the classrooms, and any institution that's using sprays. So there's no question. Chemicals are expensive.

39:32

DR. WADE: They're dangerous if you don't use them properly and they're being overused to help us combat this terrible pandemic.

39:41

DR. WADE: And that's why use of UV light, which has no chemicals, has no residues, is proven technology going back to 1908, winning the Nobel Prize, finding a cure for TB on skin. There's a long history, it's safe. You can't, in some applications be present when it's being used. But, in others, with the new technology - Far UV with LED lights and the Far UV R-Zero has - you can be occupying in this space safely. No chemicals, No residue, no, harmful effects.

40:20

GRANT: Thank you, Dr. Wade. So Arne, switching gears a little bit. Can you talk a little bit about the magnitude of learning loss that's happening sort of at scale. And what some of the consequences of, you know, a couple of years of education being done remotely. Who is that going to impact the most?

40:44

GRANT: And what are some of the things that we can start doing now to mitigate some of that impact that's sort of already taking place.

40:54

ARNE: You know, I said at the start of this conversation that I honestly think we don't begin to fully comprehend the severity and the degree of that academic loss.

41:05

ARNE: All I can say is that, I think there are probably a very small percent of kids who might learn better virtually, for whatever reason, but for the overwhelming majority of

children, it's not a great situation. And, so, you laid out some of the math and language arts stats there.

41:28

ARNE: Um, we know many kids have fallen half a year, a year or more behind. We know that means - we have 52 million children in public schools approximately here in the country - so that means literally tens of millions of kids who are far behind. For so many kids who are living below the poverty line, who are potentially first generation college goers.

41:52

ARNE: We're fighting for their lives here. This isn't just about education, we're fighting to break cycles of poverty, we're fighting to give people a chance to have some upward mobility.

42:01

ARNE: And if they are unprepared for college, if they don't have the skills necessary to be successful. There are not too many good jobs out there

42:12

ARNE: if you're a high school dropout today. And there are very few jobs out there if you just have a high school diploma so the importance of this fight I can't overstate. But for me, I just want to say, again, the academic part, as critically, critically important as that is, is that's just one piece of the puzzle that I'm worried about.

42:29

ARNE: The second one we've talked a lot about is the social emotional piece, and the trauma that our kids are dealing with, and how they have to grow up in a normal way.

We are all social beings. That's how humans are and our kids have been denied so much of that normal, healthy, child and adolescent development. I don't think we know the impact of that, and we have to try and keep that going as best we can.

42:50

ARNE: And, the third one, Grant, that rarely gets talked about, is when schools close, you automatically try and keep going with your math and language arts and foreign language via Zoom or whatever, virtually.

43:02

ARNE: What you basically lose that day is all the extracurriculars. So, dance and drama, and arts, and sports, and yearbook and chess, and debate and academic decathlon. And we know for so many of our kids, that's the reason they go to school. That's the connective tissue. That's what excites them on a snowy day like here in Chicago today when you don't wanna go school and I know, when I was in high school. I didn't necessarily go to school every day because I loved biology, or whatever it might be. I went because I wanted to play on the basketball team and to do that, you had to do well academically. And so, those three, the academic part you talked about, the social emotional health of our kids', and then the extracurriculars, You put all of that together, it's just monumental how important it is we try and not just, get back to some sense of normalcy.

43:46

ARNE: But accelerate all of those benefits for kids. And for kids that have fallen behind, we have to do everything we can to help them catch up and accelerate their learning.

43:56

GRANT: Couldn't agree more.

43:58

GRANT: So, just a quick time check. I'm gonna go ahead and wrap this up, and in closing, I just want to reiterate something that Arne said a little bit earlier.

44:07

GRANT: For all the teachers, the staff, the administrators, everybody on this call. Thank you for everything that you're doing through this pandemic. You are the glue that holds society together. And we couldn't be more grateful for the work that you're doing through these trying times. And at R-Zero, our job is to be a partner.

44:29

GRANT: You know, we, first and foremost, want to be able to help in whatever way we can, whether it's, you know, bringing world leading experts like Arne and Dr. Wade to the table to answer questions and interact with everybody.

44:45

GRANT: Or whether it's, you know, providing information about what we know about our particular products, or others that you may have. So, I know we didn't get to all the questions, but we're gonna go ahead and send the deck out, just for reference. We're also going to have a member of our team answer some of the questions that we didn't get to more specifically.

45:03

GRANT: But by all means, if you guys still have questions about really anything, feel free to reach out, drop us a line, rzero.com, and reach out to us. And we'll do everything that we can do to support all of you on this call and just the education system more broadly.

45:19

GRANT: So, in closing, thank you, guys so much. Arne, do you have any closing words?

ARNE: No, again, thanks, you, guys, for the leadership, the insight, the concern. And thanks to everyone who is working so hard to make a difference in our kids' lives every day. I can't tell you how much it means to me personally.

45:36

GRANT: Awesome, and Dr. Wade, anything?

45:38

DR. WADE: Follow the science, follow the true science and keep the kids in school so we get more scientists in the future.

ARNE: Amen. Amen.

GRANT: Amen. Awesome. Well, thank you guys so much for coming. Really appreciate the work you're doing, and if there's any way that we can be of help or service, please don't hesitate to reach out, and we'll hopefully see you at another one of these in the future.

46:05

GRANT: Thank you, everyone.