[Auto-generated transcript. Edits may have been applied for clarity.] Today we are here gathered for what promises to be a very interesting discussion with some really

interesting folks who've been doing a lot of research on the topic of deeper learning for many,

many years. Today's talk will be about deeper learning then and now, past lessons and future directions in the age of AI.

And we're very fortunate today to have two very, very well

received panelists who know a lot about the topic and also are going to explore with us in

a conversational setting here at the Center for Innovation and Applied Education Policy

where we've been and where we're going. Today, we're moderated by myself and Dr. Carrie Holmberg,

and we look forward to having all of the folks who are joining us write

something into the Q&A if they'd like to. And if we have time, we will definitely take questions towards the end of the session.

But without further ado, let's get started. So we are here situated in Silicon Valley, and that is a nice picture of our campus at San José State.

There is a lot going on at the Center, but this "AI and Deeper Learning Series" is something that we've been pursuing for quite some time now.

We've been committed to the idea of deeper learning as we understand it

that has a focus on what we call the Habits of Mind. And the Habits of Mind for us to come out of our

work at schools like Central Park East Secondary and the Coalition of Essential Schools since the early 90s,

where we really want to know: Are kids in a position to work in middle and high school settings,

where they can apply and try out and engage their critical thinking, their problem solving, their collaboration and communication skills?

The goal in any education reform in our mind, is not only to do what schools typically do,

but to really push the boundaries a bit of what we've thought of as what's possible for young people in public schools in the United States.

Part of the process of situating our work is to look at what we call ambitious teaching.

This draws on some of the work of Dr. Lorrie Shepard and others who've written about the idea that to have an

educative experience with our students means that teachers are going to step into new frontiers of their own work,

and they're going to re-conceptualize their own ways of being in the classroom and facilitating what we're going to call deeper learning.

It shouldn't come as any surprise to people who know Carrie and I that we care a lot about assessment, particularly classroom assessment.

And we've written on these topics to look at the connection between assessment and assessment for deeper learning.

Assessment for deeper learning--just put quickly--will always have something to do with how we size up the zones of

proximal development for the learners in front of us that are evolving over time.

And that means really trying to prioritize dialogic exchange in any kind of assessment environment.

So whether we're doing portfolio assessment or whether we're doing performance-based assessment or project-based learning,

all of these particular modalities will lead us into thinking more and more about how to revise,

resubmit and rethink whatever we're working with with our students.

We are lucky here today to have our two panelists. And without further ado, Dr. Holmberg, do you want to...?

Yes. It's my delight to introduce Dr. Jal Mehta.

Joel Mehta is the Gregory R. Anrig Professor of Educational Leadership at the Harvard Graduate School of Education.

A sociologist by training, his work focuses on how to remake the industrial era school system into a modern

learning organization that creates passion and purpose for both students and adults.

He is the author, most recently, with Sarah Fine, of In Search of Deeper Learning: The Quest to Remake the American High School,

which won the Grawemeyer Award for excellent public writing on education.

Dr. Mehta is also a leading scholar on the need to professionalize education, explored most thoroughly in his 2013 book, The Allure of Order.

Mehta is the faculty director of the Deeper Learning Institute, which works with schools, districts, states,

and provinces across the United States and around the world to transform schools and remake systems in support of deep and powerful learning.

He is also the proud recipient of the Morningstar Teaching Award,

and is the co-host of Free Range Humans, a podcast about making schools fit for human consumption.

His latest book, A Chance to Solve Their Own Problems, was released in August of 2026.

Welcome, Jal. Thanks so much for having me.

Dr. Sarah Fine. Dr. Sarah Fine is an assistant professor of education studies at the University of California, San Diego.

Her teaching and research are motivated by the goal of transforming secondary

schools into humanizing and intellectually vital places to teach and learn.

Before joining the faculty at UCSD, Dr. Fine served as the founding director of the San Diego Teacher Residency,

an innovative and justice-focused Masters of Ed and credential program hosted at the High Tech High Graduate School of Education.

Her first book, co-authored with Jal Mehta, is In Search of Deeper Learning: The Quest to Remake the American High School.

Her second book, co-authored with Santiago Rincon-Gallardo and Michael Fullan

is Whole Learners, Whole Systems: Transforming School Districts for Adolescent Thriving.

Welcome, Dr. Sarah Fine. Thank you for having us.

And our guiding questions today for our hour together are these five questions.

How do we know about deeper learning?

Excuse me! What do we know about deeper learning based on your work and what have we learned about the conditions that make it possible?

Why has deeper learning in secondary school settings remained difficult to achieve at scale?

How might generative AI assist or derail the aims of deeper learning going forward?

How do generative AI tools reshape the pursuit of productive struggle and student agency that have historically been central to deeper learning?

And finally, looking ahead, what should schools preserve, rethink,

or redesign to ensure that AI expands rather than diminishes opportunities for deeper learning?

Well, with these softball questions in mind, which I'm sure can be answered just without having to do too much work,

let's get back to really where we want to be. And let me just say a couple of things before I ask both of you to share with

us the journey that took you through to this particular work in this book.

I'm just going to dial back for a moment and remind ourselves that some of us have been thinking about this deeper learning question,

for at least, I hate to say it, dating ourselves--myself--30, 35, maybe 40 years.

And maybe some would argue even farther back all the way to John Dewey.

But let's at least say that in the 1990s, as far as I understood it, the work that we were doing at schools like Central Park East Secondary School,

the Coalition of Essential Schools looking at even school reforms and redesign through the Gates Foundation funding work.

We've had authors like Debbie Meier, Ted Sizer and certainly Linda Darling-Hammond in The Right to Learn

tell us a little bit about what deeper learning might have meant in the 90s.

And so I'm really curious and really excited to hear about the seven-year journey you took in 2010, as I understand it,

understand to 2017 to really kind of ten years later, take a look at what you could find in this space.

And so maybe, Sarah and Jal, you can just kind of get us into the picture of why this engaged you at the time that it did.

And maybe what you learned to remind us all. Yeah, I can start us off on that and then, Jal, feel free to, to jump in.

So, yeah, 16 years ago, I was a brand new grad student.

Jal was an assistant professor at Harvard. I had just come out of the classroom and I think, just to kind of situate in 2010,

it was sort of the height of No Child Left Behind and sort of the test-based accountability movement,

which for me as a teacher really bothered me.

I was teaching 10th grade English at a Title I school that was in danger of going into state receivership.

And so all of the pressures of that moment were falling on me.

And it's one of the reasons I eventually left for grad school, because it just didn't feel good for me or the kids.

And I know Jal was in a similar way from a different vantage point,

very bothered by the kind of constriction in the conversations about what schools could be.

And so we found each other somehow. I don't even quite remember how.

And

quite quickly realized that we both had an interest in figuring out what else was out there and trying our best in our small way to kind of like,

open back up the conversation beyond foundational literacy and math, which matter,

but were kind of like looming so large that it felt like everybody had forgotten about all the

other things schools can do and all the other things and learning and development that matter. So we kind of launched on this journey.

We didn't know at the time it was going to be an epic journey. It took us almost a decade between starting the fieldwork and publishing the book,

but we had a chance during that time to see so many schools and so many classrooms.

It was really remarkable. Jal, you want to take it from there?

Sure. It's funny, Brent, that you mentioned, Linda Darling-Hammond and I think one thing that I've always

realized about Linda when I first talked to her, was that she was a lot more optimistic than I was about schools,

and I realized that that was because she had been in a lot of schools in the 80s and the 90s,

and I started my school visiting with Sarah in the aughts and tens.

And by that point, the influence of No Child Left Behind in standardized testing

while, you know, important for making sure that kids learn basics in reading and math had,

you know, really constrained what was possible in many different schools.

And so, perhaps because of that, perhaps because it's just really difficult to mount ambitious instruction or deeper learning,

when Sarah and I were in schools, one of the big findings of the book, as you know, is that a lot of the most powerful learning was in the

in what we called the periphery of the school, the electives and the extracurriculars,

because those were the spaces where students could take...students had

agency, students could take leadership over their learning,

where there were communities, where they were driven by the standards of the field, not the standards of can I get an A or an A+?

And so that was a really sort of powerful space.

And I think in the years since, both Sarah and I in different ways have been, working with places

Sarah was training teachers and I was working with schools and districts,

trying to think about how we could get more of those qualities into the kind of the core part of the day.

You know the "depth over breadth" mantra that's so typical of progressive schools.

I think about the work in the 90s,

I participated in that work at Central Park East, but I also listened to observers and researchers write about it like Linda.

What we did a lot back then was depth. So it was a lot of dives into particular schools and telling the stories of particular schools.

What you all did was I think of his breath. You surveyed a larger pool, and were asking harder questions in some ways about reform.

And so I think one thing that we're setting today up about is we're always, as Larry Cuban would remind us, in a cycle of reform,

we're always in some space of reinventing what was already invented or rethinking what we already thought we knew something about.

So I'm just grateful for your anchored experience.

Are there a few things you could say before we move into the questions that sort of stand out for you today, looking back and say,

you know, there's a couple of things that are still really true, even though now No Child Left Behind has been effectively sunsetted.

And ESSA now is, in my mind, completely unclear what that even means.

So what? I'm just curious about what what stands for you as before we move forward.

What's still true in a way.

Sarah, you had an interesting observation about some things that maybe were the same and also that we're changing based on recent observations in schools.

Maybe we could start with you sharing that. Yeah.

And we can always come back to that later, if it makes sense.

I think in some ways we're in a different, like you say, Brent, in a very different moment, maybe in a kind of flux or kind of pivot moment.

Right now it's not quite clear where the field is heading,

but we definitely have moved beyond or we've kind of like broadened out the logic of No Child Left Behind to imagine a kind of more,

portfolio way of thinking about what happens in schools.

And so one of the things I've been following recently is there's a surge of interest at the high school level, especially in

now what's being called college and career technical education, formerly CTE or tech-voc or manual education from way back when.

And I've spent a lot of time in high schools that are really leaning into these CTE pathways that are sort of career connected in some ways.

And I think the truth is, all the same things that Jal and I have found that we might talk about,

the qualities that describe powerful learning in classrooms are still true.

I think what's interesting is that career technical education has a very different history and set of traditions around learning,

and it also has some really problematic relationships to tracking, of course.

But this new wave of CTE is interesting in that there's the possibility for some of the things we've written about,

and there's the possibility to tie together,

work with working with your hands, doing work in the real world, with working in the classroom and developing your mind.

And it's sort of an open question how well schools will leverage the moment. But I think there's some real possibilities we can come back to.

And it's quite exciting as well as quite...

I feel sort of cautiously optimistic that good things could come out of bringing back more hands on, world-connected education into our high schools.

I'm glad that you made that connection.

When Larry Rosenstock invited me in 2000 to High Tech High, and as well with, Dr. Norton Grubb and Dr. David Stern from UC Berkeley,

who had just finished up a massive career technical education vocational grant from the federal government in 1996-97.

It was as if we were watching, High Tech High where I know you hail from,

Sarah, really lay out a vision of how to blend academic and vocational purposes in a new way.

And it's very exciting to hear that you're seeing schools lean into that.

Another example of how reforms are churning back to to maybe some wisdom of practice.

And, as you said, maybe avoiding some of the problematic things. I look forward to, as we talk today, about whether AI has anything to do with it,

you know, kind of the "What's AI got to do with it?" Because it may turn out it has a lot to do with it.

But before we go there, let's talk a little bit about this.

What do we know about deeper learning? Based on your work and again, what are the conditions that kind of make it possible?

Like today? As far as you can tell. So I guess I'm up.

So we saw deeper learning as emerging at the intersection--as those

who've read our book will know--of mastery, identity and creativity.

So mastery, developing knowledge and skill in a domain, identity,

coming to see yourself as the kind of person who does that kind of work, and creativity, not just taking in what,

other people have said about something, but actually creating something on your own,

which doesn't mean it has to be, you know, world original and could be published in a journal.

It just means that it's like a creative interpretation at whatever level that you're at.

And we came to that definition, from several different vantage points.

I think we sort of triangulated our way to that definition.

And one was that some of the thematic schools that we visited were stronger on one corner of that triangle than the others.

So there were some pretty traditional, strict schools where we thought students had learned some conventional academic content,

but they had not discovered the joy of learning.

And so, you know, mastery, lacking identity and creativity.

And then, you know, sort of harder to hear for some of our progressive friends,

But I think just important to note that there were also schools where students were very comfortable and seen and known and heard,

but we were worried that they weren't developing knowledge and skill that would help them move forward in the world.

So that's sort of the definition.

And then the conditions that make that possible.

There are many, many conditions.

But at the top of the list would be one that you said before, of enough space to explore things in enough depth to really do them.

You have to get off the kind of conveyor belt of American schooling.

And then another is

teachers need to have had some experience with the kind of learning that they're trying to create for students because most teachers were trained,

experienced a fairly traditional way of learning.

And so unless they're given other experiences, it's hard for them to create things that they themselves haven't experienced.

We'll pause there. Sarah, did you want to add to that?

Is there anything that we should keep in mind? There's a lot more we could say about that.

But no, I think you Jal did a great job framing it up. Okay. So, Carrie...the next question.

Why has deeper learning in secondary school settings remained difficult to achieve at scale?

I can start that one off.

The answer is sort of all the reasons which are entangled with each other and sort of collectively form this somewhat impenetrable thicket of

barriers, some of which people are working on right now. So we can talk about that too.

But I was at a I was actually at a convening with Linda (Darling-Hammond) recently. And, one of the very striking aha moments for the audience was

she put up a side-by-side high school transcript from I think it was like 1927 and 2026,

so, you know, 99 years apart and asked, "What do you notice here?"

And, you know, they are effectively the same. Right. So we have all of these parameters that were decided by the Committee of Ten and others

who were kind of thinking about what secondary education at scale could look like.

As the US was kind of getting its act together and asking more and more young people to make it through secondary education.

So we have Carnegie units, we have seat time requirements, we have the

organization of subjects into these siloed areas that are, frankly, you know,

while I am a former English teacher and not a social scientist, and I deeply value disciplinary thinking,

those subject areas no longer map onto a lot of the things that people do in the world these days.

So we have these disciplinary silos. We sort and we track kids by perceived abilities.

We still do that

by and large, in most high schools. We don't have high schools that have a mission other than serving the geography that they happen to be located in.

We could go on and on. We have teachers trained in their discipline areas, but not necessarily trained in learning and pedagogy.

And like Jal said, we have very few teachers who have themselves experienced a departure from the traditional model.

So we basically have all all the things. We have bells, we have lockers, we have seven period days, you know, we have in California, we have

A-G requirements which map on to being able to apply to our state university systems.

And all of those things kind of combine in most cases to mitigate against the kind of depth and power that we would hope to see.

I'm pausing only because I want to make sure I give folks a chance to continue.

Jal, did you want to add to that or can I say something? How are we going?

Go for it. So what I was thinking about, Sarah, when you said that is one of the interesting bottlenecks that continues to persist.

And you pointed to it was, where teachers might get the experiences that would allow them to rethink,

improvise, or imagine new futures for themselves.

And of course, we're sitting at San José State University, and we know that the CSU system, with 23 campuses,

is probably the largest teacher training system in the United States, with about 10%,

according to some estimates of folks who go into a fairly large state.

They don't come from private schools. Typically. They don't come from even, you know, LEAs, or other sorts of configurations.

So what I'm trying to say here is, one of the challenges about scale for secondary schools is not the secondary schools themselves.

It's actually the pool of teachers who are coming through.

And what kinds of opportunities can people like Carrie and I give to them to rethink their own positionality?

So I just think it's, again, a complex problem. It's a policy problem that we all know about.

But we still do what we can when we do it.

Do you see some pockets of hope? Though, again, in terms of momentum, you mentioned the career technical work.

Is that a place of hope for achieving more scale? Yeah, I'll answer that.

And then I want to kick it to Jal. Yes, I see a lot of hope right now.

And it's actually I'm holding on to it tight, given all the other things happening in our world.

But I don't know. I'm sure you two are aware there's a lot of movement across a lot of different states in

different ways to start to unwind and even dismantle some of those barriers I just described.

So, for example, New York State just committed to eliminating seat time requirements for graduation and replacing it with competency- or mastery-based,

performance-based requirements, which, you know, that is a tall order and it's probably going to be a hot mess for a long time.

But that's a really bold signal of probably the most important state.

Sorry, Massachusetts, Jal. Next to California, in terms of a signal that the system some of these the underlying logic of the system may

be,

finally starting to to shift. And in California, we have very similar work going on.

We have a ton of momentum around, shifting some of the requirements we just eliminated, not eliminated,

we just reduced some of the seat time requirements.

for high schoolers to allow more flexibility and work-based learning and learning outside of school.

there's a lot of emphasis on trying to find ways of giving school credit for out of school learning opportunities.

There's a real emphasis on development, not just learning and wraparound services, community schools.

So there's there's a lot of things happening. It's sometimes overwhelming.

I sometimes think the problem now is there's so much happening that educators kind of don't even know how it all fits together.

But that's certainly better than the alternative, which is when I became a teacher and there was only one thing happening,

and it was made sure that you get enough of your kids on the test score bubble to pass the test.

Yeah, I guess the one...I agree with what Sarah just said,

though I'm a little worried and we'll probably get into this in the AI conversation that there are some folks who are reinventing schools,

who haven't learned some of the lessons that you learned at Central Park East and other places.

I will say that when I work with teachers, they they may not have had like quote unquote deeper learning experiences in school.

But if you push people a little bit and you let them talk about the arts, athletics,

clubs, passions, things that they themselves are deeply knowledgeable or skilled about,

which generally accrue through some mixture of doing, learning, getting feedback,

being part of some sort of team or organization that does that thing with some people who know more about it than you and learning.

I think people actually, like, have a much wider array of learning experiences in life that they can draw upon.

And so that can be helpful if you help people make the connections between that and what they might do in a more traditional classroom.

Jal, I really appreciate that. Isn't that a funds of knowledge approach, really?

It's saying that there are multiple funds of knowledge in any human being's life,

and if you can tap into those, you might transfer them over to more, you know, traditional places.

I love that, that's interesting. All right. Well, let's go with this one.

Carrie, I think this one's yours. Yeah, this is. How might generative AI assist or derail the aims of deeper learning going forward?

Well, I'll say we want to hear from you, two on this, as well as offering our own thoughts.

Just because I know you've done a ton of good thinking about it. I'm curious to learn from.

I think there's so many hot takes out there now on AI, I don't I don't know how to offer a new one.

But I do think that just like the pandemic and just like all these other disruptions,

AI is kind of pulling back the curtain once again on some of the ways that our system is poorly constructed,

namely, that the types of tasks, especially in core academic classes that teachers tend to ask students to do, are, by and large, the types of tasks

AI is really good at doing, which is, you know, those are the wrong tasks.

They always were. Arguably, they always were. You know, they're not asking learners to connect who they are and what they've lived through and,

and asking them to go out and experience the world and then reflect and, sort of think about what has changed in them and in their understanding.

They're asking kids to kind of like, you know, rehash the meaning of the white whale and Moby Dick one more time.

So, you know, just like when the internet came online...English major!

You should really should be like, uh, stabbing yourself in the heart there. I actually don't like Moby Dick.

And I do believe kids should read Shakespeare

but I don't believe necessarily we're asking them the right questions when they read Shakespeare...Sorry, keep going.

No, I was just going to say I think it's it's complicated.

And I worry a lot about that cognitive offloading piece. I see it in my undergrads.

I see it in my children. I see it myself.

I do think AI is capable of doing a type or emulating a type of thinking that we often engage in.

And when we shortcut it, there's just learning that we're missing.

But I also think that there are ways that we should be asking kids to do things in schools that AI can't do.

And that's, you know, that's always been true. And it's more true now.

It's an open question whether it's actually going to happen,

because I think there's been so many times, you know, from the calculator onward where

you know, some new technologies come online and everybody says, "Oh, you know, now we're going to have to fundamentally change what we do in school."

And it hasn't really happened. So, but that's kind of my set of concerns right now.

Jal, how about you? Yeah. So not surprisingly, Sarah and I are fairly, fairly aligned.

I mean, I think one way that it differs, as you mentioned, Brent, Larry Cuban before.

Right? So the kind of historical story about technology is that schools change technology more than technology changes schools.

So we give kids whiteboards or iPads and we give teachers whiteboards or kids iPads,

and they just use the whiteboard as like a virtual chalkboard. And they just use an iPad as a virtual worksheet.

I think one thing that's different here is that the sort of basic equation of schooling,

which is the teacher gives the student some assignment, the student does that assignment whether they want to or not.

And then the teacher takes that as a mark of how well the student knows the content, is broken by AI.

So it's a disruptive technology in that sense. And that's why, you know, you're seeing not only K to 12, but MIT, Chicago,

etc. you know, saying, "Well, crap, like we can't do CS50 the way we used to!"

Like we can't, we can't, we can't. We need to like rethink these things.

So I do think it's, it's a different kind of technology because it's disruptive.

I think in my optimistic world, if kids are doing authentic work, authentic projects,

things that they are invested in, where they have some intrinsic motivation, where they are producing something,

where there are drafts, where there is feedback, where there are strong relationships with teachers,

then AI can be a tool just the way it's a tool in professional work.

And with the caveat that there are developmental considerations,

i.e. you don't want it to become like GPS, like you got there, but you don't know how you got there.

I could see it working in a sort of positive feature.

My fear is that if people will do that in some pockets.

But we're kind of bad at doing the hard thing when there's an easy thing.

And so I worry a lot that at scale there will be the kind of cognitive offloading that Sarah describes.

Okay. So that was our sort of like, lay take as people who know deeper learning, but learn most of our AI from reading the newspapers.

What say you as folks who've written about this?

Well, it should come as no surprise. Or maybe it will come as a surprise to some of our friends and colleagues that

we've decided not to be in the camp of the detractors, and we've decided not to be in the camp of the overly optimistic advocators.

Instead, we're taking what we're calling a Deweyan approach, which is a radical pragmatism and a radical pragmatist approach

says that question itself may lead us into either-or categories that don't even make sense.

Maybe there will be assists that make sense for supporting students and project-based learning environments that we could have never imagined before.

We interviewed people for our book that come out of that world and have worked in various settings and project-based learning,

and they had some optimism around new ways of working.

Similarly, Carrie, when we were in New Zealand presenting some of this work last year,

one of the principals from a Wellington school district said, "We have entrepreneurship programs."

"We have kids doing very interesting social entrepreneurship projects."

They need access to new ways of thinking about everything from business plans to marketing,

to even how the bots might be useful to help them gather data on market demand.

So the idea was there again a co-agentic use, right? A co-agentic approach.

The agent isn't just the teacher who's driving learning, nor is it just the student.

But there might be a third or fourth partner in that process. On the other hand, we heard from teachers across California.

Hawaii. Michigan.

Where am I missing? New York. New York.

Who said, you know, what I'm noticing in my traditional classroom is that people are taking a formulaic, one- and-done approach to that Hamlet essay.

I'm making up Hamlet. They didn't talk about Hamlet, but whatever that essay was, Sarah, you know,

it was a five-paragraph essay, and it was easy to punch out very quickly, and it could be done from home.

You didn't even need to tell the teacher in class that you were on your Chromebook working on your essay,

you just simply did most of the work with your parents' GPTs at home, and you could then bring it in and say, this is my first draft.

So, this idea that we have an either-or space or that we know much about the dimensionality of what can happen, I think it's evolving.

Carrie, is that your take on it? What would you say?

I mean, what Jal and Sarah have said comports with what the teachers we interviewed for our book about this

said themselves, but I'm thinking of

one thing I haven't heard yet so far was that the teachers were super concerned

about a degrading in the relationship between themselves and their students,

and they said conversations are--and just the orientation is--so much more transactional than it used to be.

So Jal mentioned, students do assignments they don't necessarily want to do, right?

Public school. That's the truth of most assignments, I would say, right?

The majority of students don't necessarily want to do them. So I don't know how to get around that.

And a second thing that teachers brought up that I want to bring up now is that,

for example, in a concern for: Will, increasing the use of AI affect students' agency?

One of the teachers we interviewed says said to us, he said it's a mismatch in many cases because like you said,

depending on what assignments the the students are tasked with, they're not exercising much agency already.

And so it's just this complex because from classroom to classroom,

it was different concerns by different teachers about what increased use of AI was.

And you add that to the fact that students are using it outside of class time,

so teachers don't necessarily get to see or have any influence on how it's used,

and so they would say to make the learning process more visible, I can have my students write,

you know, this reflective log, or they're logging every prompt that they use.

And did I take up that suggestion from AI or not?

And that just the burden that, how that felt, it was so different from what they were used to doing.

Teachers and students alike didn't didn't like it.

I don't know what to do about that.

I'm glad we're among researchers here and and practitioners with some experience in schools, because if you hang out over in LinkedIn Land,

which we spend a bit of time on--about six months--in LinkedIn Land,

you'll learn some very different things about how people would answer this question.

And part of that is because some of them are corporate and they have a very particular agenda

around promoting the use of everything from Anthropic tools to ChatGPT, OpenAI AI tools.

And so one of the I think noisy parts of this conversation is how much of this

is about us as educational researchers and/or teachers and/or students,

and how much of this is really about a corporate framework for understanding productivity, which is now increasingly,

I would suggest, Sarah, going to intersect with ideas around career and technical education preparation.

It's very quickly can go in the direction of teaching students how to do better workflows, teaching students how to do better

prompt engineering, teaching students to take everything that the LinkedIn folks know, and simply driving that straight through our high schools.

And I don't think we yet know much about whether that's going to be where it goes or it goes a different direction.

So it's just a thought. Should we go on to the next question? Answer that one, Sarah.

Oh, okay. Good. Well, Jal knows one of my many concerns about career

technical education is kind of like tripling down on what is already a fairly, like,

narrow capitalist approach to schooling, as, like, you know, producing workers for our economy.

And I think you're right.

I think there's, there's a danger of the private sector getting too involved and too entangled in schooling for its own purposes and so forth.

And I think AI can be one of many ways that that happens.

I would I would also just say I've just been reading some David Labaree and he's so good.

And I read this old piece he wrote that just felt so true now and relevant to this question, which is, you know,

thinking about how schooling, especially secondary education in this country has evolved to become something incredibly transactional,

where kids are there to get ahead and to compete and to, you know, and as such, they're there to get a grade which is a signal,

and then a GPA, which is a signal and a degree to be able to move on to the next echelon.

And that when you have that as an underlying logic for the system

"I'm just here to get the highest possible signal so that I can kind of rise to the top and move forward."

Then of course, you're going to have AI use being rampant because

if the goal is simply to get the highest grade and you can get the highest grade using AI, why wouldn't you do that?

Right? So and I think Jal and I write about this in the book in terms of thinking about cultures,

of learning versus cultures of performance and the ways that in the classrooms we've seen

and the schools we've seen that are the most powerfully aligned to deeper learning.

There's a real effort through structures, through culture, through pedagogies to dial back...

to try as best you can inside of a larger system that's very performance oriented,

to try to create a culture of learning and growth and development where the what's being centered is like,

who you are becoming, who you are, who you're becoming, how you're getting there,

you know, these like educative experiences that shape you.

And it's not about some signal at the end of the day of how well you did compared to other people.

It's more about us as a community becoming ourselves together.

And that's a really hard thing to hold on to in this larger context.

And I think if you can do that, I think to Jal's point and to your point, I think I think the risks of AI sort of distorting the purposes get lower.

Not they're not they don't go to zero, but they get lower because all of a sudden,

if it's about who you're becoming, AI may play a small role in that, but it's not

you know, AI is not producing the thing that you're turning in for the grade,

for the GPA, for the diploma, for the college admissions and so forth.

So, yeah, so building on that, I mean, I like your stance of radical pragmatism.

I think that we're also big fans of Dewey and pragmatism and inquiry in situations where things are really unknown and uncertain,

which makes a lot of sense to me. I think part of the question that I think is difficult is

time horizons, that there's like a lot of encouragement by some folks that

we should do a lot of experimenting with AI,

and there's a lot in the sort of continuous improvement world about these short cycles, and there can be a place for that.

But Sarah and I each have, I have three, and Sarah has two,

so between the two of us, we have five, five kids of our own.

And, you know, we're watching them kind of grow and develop over a very long period of time.

And so I think it's right to take a pragmatic stance, but I also think that it's hard to necessarily

know where and how to course adjust, because the sort of significant things in growth and development often take place over, over long time frames.

My middle one started being unable to, like, literally say hello to a teacher when he was 3 or 4.

He would just sort of stick his head down and turn away when they would say,"Hello, Nico."

And now he hosts his own podcast at 13. So like, that's like development.

But what contributed?

That's the kind of development that I think sort of matters more than a lot of the sort of smaller developments, but like what,

what contributed to that as parents were endlessly second guessing ourselves what we did right and what we did wrong and so forth.

But somehow as we as we go through this sort of massive social experiment we're going through as a world,

we need to keep these sort of longer time frames in mind. It's an excellent point.

And I think also it shouldn't be a surprise that our first two chapters are on learning and development in our new book,

and they evoke longer time horizons, and Howard Gardner probably would have not signed along for that blurb.

You know how important it is to get those blurbs, you all, from our folk.

And I think part of the reason we got that blurb from Howard, who we don't know,

is that we did take a lot of time to exactly unpack what you're saying, Jal.

And I think the way we frame it, very simply is: novices are not experts, and experts are not novices.

And whether you're three years old or 13 years old, you're on a developmental path that we only know a little bit about as teachers

and we're working our best to focus on supporting the growth of human beings who are moving through schools.

But they are not exhausted by schools.

And so there's a lot to think about here that cannot be reduced to a quick solution or a let's break the mold and see what happens with some AI tools.

We completely agree with that point of view.

Let's take the next question on how do generative AI tools reshape the pursuit of productive struggle?

This is related, of course, to the idea of cognitive offloading. We've reframed it as productive struggle.

So we hear a lot about friction. You know, the idea of offloading, what we know about cognition.

But we're going to say, you know, productive struggle, the struggle that yields exactly the podcast or the struggle that yields something like,

a portfolio or the struggle that allows a student to do an internship and turn that into something like an interest in a lifelong vocation.

So what do we know about productive struggle, student agency,

which is historically we know has been central to deeper learning and the claims for its benefits.

Let's throw it out to everybody and go for it.

I mean, I can start by talking about my college courses that I teach, which, you know, my college students are really overgrown high schoolers,

which I love because I love teaching high school, and I'm so aware that the, the sort of the the grappling

is where the learning happens that, given AI at this point,

I'm not interested in being punitive about AI use when it might serve their goals,

but we just spend a lot of time like I've sort of doubled down on

we're sticky noting on charts around the room and we're having Socratic seminars.

I mean, I'm leaning on my secondary education tools more than I ever would have expected.

Where, you know, learning is social, learning is often verbal.

Sometimes it's nonverbal, but you're in community with others.

You are making sense. You're making your own sense. You're engaging with other people, sense making.

You're thinking about where you get to afterward. You're reflecting. You're writing it down.

Sometimes I'll you know, it's really easy now to get transcripts of what students are saying.

It's great. AI is great at that. Actually, it's one of the use cases I'm excited about because I remember as a high school teacher,

one of my students had a seminar I used to be typing like a crazy person,

trying to get their words down so I could give them the transcript of what they'd said, and they could use that to as a scaffold for writing.

So that's all to say. I think there's some kind of like age old tools for when you're in a community

of learners to kind of just do some of that struggling together in part,

frankly, because I'm not sure anymore. When I have 70 undergrads, I'm not sure how much struggling will happen at home, because if they use AI,

chances are, even if they're using AI in the the ways we've talked about that might be supportive to them.

I still think that some of that struggle is being removed for them.

And so while I'm not opposed to all uses of AI, and I talk about it a lot with them, and I, to be fair, it's not like I've solved this.

I just have re-centered the struggle as something that happens during our time together.

Yeah, yeah. I think where we should be worried about it...

Maybe not so much agency. Like I mean, again, I should...

I'm working on a book right now on human flourishing.

Like education for human flourishing.

And a lot of people are talking about flourishing these days, and I'm trying to give some shape to that conversation.

And AI has been like a a fabulous companion as I've researched that book, because, you know, like the literature on flourishing,

there's like seven different branches of philosophy and there's sociology and

there are examples and there's feminist approaches and critical approaches,

and it's like pretty much endless.

And my ability to pursue different, like a range of different strands, like fairly quickly, definitely has been accelerated.

I mean, AI kind of guides me to the which parts of the library I'm going to dig into.

So it's like it can be an amazing tool, clearly.

But I think the, the fear of offloading productive struggle like the

the most significant learning comes in the that sort of period of disequilibrium.

Like Piaget said it he says it when he talks about paradigm changes.

Hegel says it when he talks about synthesis and antithesis, like, no matter who, there's like six different versions of the same idea,

but like, basically like you, you live in some equilibrium, some set of events like dislodge the way that you see the world.

And then it's like fairly miserable because the things that you have held on to before no longer guide you,

and then eventually you come out somewhere else. And that's like really significant, transformative learning.

Like, there was a woman, a young woman in Sarah's and my study I met in a school and I said,

"You know, what's the most significant learning experience you've ever had?"  And she said, "You know, I'm, I'm Jewish."

"And I learned that there's like at least two sides to this Jewish-Palestinian conflicts,

and my parents might not be on the right side." That is painful learning.

And so it's just like, so much easier to sort of skip over the hard parts.

So I think that the future is going to require a lot of wise and caring adults in relationship.

I mean, one one thing I see coming out of this is a sort of and this was, I think, a principle of, Debbie Meier and Sizer and so forth.

It's like human scale. Like if things happen at a like a small size where people really know each other,

I think all of these like the upsides, the possibilities go way up and the downsides are, are much mitigated.

Whereas, you know, you like bring 500 people to like a freshman lecture course and you tell them,

not to use AI or you're going to use an AI detection software. Like you're just caught in a terrible, negative feedback loop.

But like the reality is like, you never should have done that in the first place.

And it's not really that different than, like, you know, there being a file cabinet in some fraternity of

lexams from previous years that kids look at, like it's the same principle.

It's like you're in a huge, impersonal, transactional system.

So, like, why not just try to find the easiest way to get the the answers?

I want to just double down on that, Jal. I know you and I were talking about this earlier this summer, but I'm going back to high schools.

The small school movement came out in many ways came out of some of the early success of the Coalition of Essential Schools.

And then it kind of fizzled because they didn't have the test score outcomes that would justify the investments and so forth.

And the data was mixed and the evidence was mixed. And I've spent a lot of time in comprehensive high schools recently.

And there's some really cool stuff that can happen in those schools.

But frankly, the ones,

the comprehensive settings I've seen that are functioning really well are ones where there's been an intention to break comprehensive

schools into small learning communities of various types so that you have small groups of students getting to know their educators deeply,

getting to know each other deeply so that it's manageable for educators to actually

have a real handle on that growth and development and grappling that happens,

and they know the students well enough to know when something's wrong.

LikeI know that student's writing voice and this is not that.

So let's, you know, and I have a relationship with them.

So let me sit down and talk with them about whether there was AI involved and if so, why, and what do we do about it?

How do we make sure you're not skipping the learning? So I think I think that piece around small learning communities is always has been like Jal said,

and is even more profound now because it's the relationships that AI can't replace.

So it's good, Carrie, that we put that into our book.

I don't know if we were as articulate as Jal and Sarah were to name it as "small" or "school within a school" or, you know,

thematic focus that scales it down by advisories or by even just reconstructing what school looks like.

But I have to say, I think we're on the same track there. There's a bunch of great questions in the Q&A, and just be patient.

We're going to do our best to hold on some of them, but we're getting close to the end here.

So let's just sort of not not give our selves a chance to think about looking ahead a little bit.

I think we've already hinted at some of this, so maybe we're okay.

We're asking what should schools preserve or rethink or redesign to ensure that AI expands rather than diminishes opportunities?

And one thing we know is that the structure of schooling needs to be examined, right?

We can't just act like we can do AI as we've always done everything else,

and there's no worries about small versus large or standardization that doesn't lead to any real actual personalization or

a lack of ability to let students break outside the mold of the curriculum and explore it from another angle than we had imagined.

So I'm just thinking out loud right now. Is there anything else we can add to the mix?

What do we want to make sure we're redesigning for?

So that we don't lose track of what we've already learned over the last 30 or 40 years about what makes schools work for kids.

I'm curious in your voyage whether you saw sort of both ends of the spectrum.

Like, did you see sort of techno optimists who had unrealistic conceptions about relationships or student motivation,

and did you see things where it was kind of embedded in good ways?

Well, I like that you used that term techno optimist, because we did throw that in, I think, in one of the chapters and it was,

I'm not even sure, what motivated us within the interviews because, Carrie, I don't remember anybody being

"Yeah, yeah. Rah rah." Most of the teachers were quite concerned, and they had a lot of things to say in that direction.

There were a few schools, and there was a particular teacher I'm thinking about that did say that for supporting

newcomers and language learners in a relatively large Central Valley school district,

that they felt that the tools could use and help students move quicker into the discourse because of translation, for example, accessibility.

And they were actively using in their classroom, which was not, I would think, a reformed school per se these tools to generate more access.

Their argument in one of our chapters in the book was around accessibility.

So techno optimist, I don't know if they would frame it that way for themselves,

but I do think they would say for very targeted interventions in California,

they felt they got more out of using those tools than if they hadn't, and teaching their students to use the tools as well.

Does that help a little bit, Jal, to answer that? It's a concrete example,

I hope. And I appreciate that you went to teachers as opposed to, you know, like somebody who,

made a lot of money in Silicon Valley and decided to open a school. But yeah, go ahead.

A different model. There's a question in the chat about whether AI could help teachers plan.

And I also have some use cases there that I think give me some cautious levels of optimism about AI.

I spent many, many years, as you all said at the beginning,

working with pre-service teachers who were learning to plan project-based learning that also had equity considerations baked in,

also aligned to state standards and so forth. And one of the things that's incredibly difficult for teachers who are not

supported with high-quality curriculum resources is especially young teachers,

is it's a huge, it's immensely complex to hold on to all the things that you're supposed to be doing as you're planning,

embed MTSS, make sure you have UDL supports, make sure you have the ML supports,

make sure that you're cross walking to the state standards. Make sure that you're also aware of the upcoming state...

You know, there's just you can go on and on and on and all teachers but but novice teachers especially just it is too much.

And it's extremely difficult until you've gone through the productive struggle of many years of planning to see how

those things can fit together and get sort of actualized in the course of a sequence of lessons or a unit or a project.

And so there was a tool. This is just one example.

I mean, I think it's a great tool, but I'm not trying to promote it. There was a tool that was really thoughtfully created recently called Inquire

that was an AI specific to planning projects aligned with a particular conception of project-based learning.

But it allows teachers to basically sort of ideate with all of those parameters built in, like, okay, here's my standards,

here are my learners, here's what I know about them, here's the time frame, here's the financial constraints, here's my time and so forth.

So and it will come out with here's here's the beginning of a project idea for you.

And so the novice teachers I used to work with would have loved to work with that tool.

I don't think they would have just accepted what AI was telling them on, you know, on site and gone and tried to do it.

And of course, curriculum doesn't enact itself. There's a huge amount more than just the plan,

but I think there are some use cases where AI can grapple with a lot of information in ways that's really, cognitively intense for, for us humans.

And it can help us integrate lots of things into a single thing, the way that teachers have to learn how to do.

So. That's one of the things that gives me a little bit of hope. Excellent.

It's a whole 'nother set of questions, isn't it, about whether or not pre-service education

and to answer the question of one of the folks in the chat area, planning, enacting, reflecting, we

had the good fortune of interviewing commission directors in California and asked them what's AI and the TPA got to do with it?

That is the Teacher Performance Assessment,

because now we're seeing generations of teachers coming through the system who are utilizing AI to construct their licensure exam portfolios.

I taught to the TPA for years, long before AI came online, and it was already a test that was easy to game.

Not the part where you video yourself teaching, but all the written parts.

I remember thinking, I get the intent here, but this is another standardized test that we can teach our learners how to game on some level.

And so and I know that defeats the point. So so I think this is exactly the question.

Deeper learning doesn't just happen for our students. It happens for us as teachers and those who are committed to teachers.

And we are so grateful that your work continues to highlight and uplift the teaching profession and really take seriously

the fact that whatever anyone outside or inside of school system has to say about learning and development and growth

teachers are the ones who are going to live every day with realizing the dreams of their students or not,

or struggling to realize those dreams and their own heavy workloads.

So we just want to appreciate everything that you've brought to the conversation of deeper learning.

I don't know if there's any easy way to answer this except to say, could you come on back,

maybe, and talk about your next books and the things you've been working on?

Because we're very interested in your approaches to system change and hearing more about what you're learning about flourishing,

what you're learning about systems development, and whether or not AI is intersecting in those spaces, for better or worse, as you play along there.

So Jal and Sarah, we appreciate you at the Center for Innovation and Applied Education Policy.

It's been a really fun hour. I hope you've had a good time too.

And thank you so much. Thanks so much for having us.

Thanks for having us. It's been great. Looking forward to reading your book.