

[Auto-generated transcript. Edits may have been applied for clarity.]
Hello, everybody, and welcome to the center for Innovation in Applied Education Policy.

We are very grateful today to be able to host another one of our series of Assessment for Deeper Learning talks with two wonderful experts,

who have been doing some national and state level work in the area of AI and instruction and assessment for deeper learning.

Actually, today, as part of our series, the talk will be titled, "Blending Instructional and Assessment Purposes in the Age of AI."

What we are learning in California public schools from the wisdom of practice straight out of Southern California and our friends at Orange County.

Our panelists today will be West Kriesel and Kunal Dalal.

And we are moderating straight here from Northern California.

Myself, Doctor Brent Duckor, and of course, Doctor Carrie Holmberg.

We're grateful to be here. And before we get started with our conversation we always like to do a little bit of

putting to table together and figuring out exactly what some of our terms are so that we can agree that as we get into AI,

we have a little bit of a sense of what we mean by the concept of deeper learning.

Quickly, most of you already know this,

but deeper learning is about the skills and knowledge that students must possess to succeed in 21st century jobs in civic life.

And that has to do something with unpacking for our students and our k-through-12 systems, how they can go deeper with critical thinking,

problem solving, collaboration, communication, and even being able to evaluate and synthesize and make sense of knowledge in new contexts.

That's what's important, is the ability to transfer what they learn in our schools to the real world.

We also put an emphasis in our center, on the idea of assessment for deeper learning, or AfDL, which prioritizes our ability to assess,

augment, and support our students as they engage the world, as critical thinkers and problem solvers and collaborators and communicators.

And of course, this intersects with core content and the basic skills coming out of all the subjects that we teach in our K-12 systems.

The big idea between assessment for deeper learning is to make sure that it's formative in nature,

and that there's an emphasis on continuous improvement and the way in which we work with our students and schools today.

Well, with that out of the way, let's go ahead and have Carrie introduce our esteemed speakers.

Yes, it's my pleasure to do so. I'm going to start off by introducing Wes Kriesel.

He is an administrator of artificial intelligence and innovation for the Orange County Department of Education,

and he's bringing over 25 years of experience with him to public education

His work in advancing outcomes for students, families and staff is guided by inclusiveness, storytelling and innovation.

Previously, he served as director of Innovation and Instructional Support at Fullerton School District,

leading innovative and personalized learning initiatives.

And he held roles focused on 21st century learning and virtual education development at Santa Ana Unified School District.

Kriesel holds a Clear Administrative Services credential and both an M.A. and a B.A. in English from UC Irvine.

His expertise spans educational innovation, AI integration, and personalized learning approaches. Outside of work,

Wes enjoys photography, his dogs his Jeep and spending time with his wife.

But in reverse order of what I just read.

Welcome, Wes, today.

Thank you, thank you. It's also my pleasure to introduce Kunal Dalal.

Kunal is an experienced educator and leader in the field of K-12 education, focusing on AI integration.

He works with the Orange County Department of Education as well leading AI initiatives across multiple districts.

I think we determined 28. We were talking about that.

Kunal serves on the board of the Boys and Girls Clubs of Oakland, and he has a background in entrepreneurship,

including founding Accidentally Extraordinary, a small headphone company.

Yes. And he's using them now; he's got them on.

So yeah, so he's hearing you really well now and we're hearing him great too

He holds two master's degrees in education from Harvard University and UC Berkeley.

In his personal life, Kunal enjoys rock climbing, snowboarding, cooking, and dadding.

Well. Welcome everybody. We decided today that we'd give you some softball questions.

The really easy ones. The ones that don't require too much thinking.

But of course that wouldn't work, would it? Neither would you be excited about this talk or would we.

So we decided to give you four questions. And we'll take these four questions in parts and pieces,

and we'll sort of slow it down a little bit to allow you all just to kind of riff and tell us what you believe is

is a way to start to think about these questions. The first question is: What do you think students see as most promising about AI?

And exactly how are they using it today?

Another interesting question we think is: What is most promising about the age of AI

for the development of deeper learning in today's middle and high

school settings?

And what kind of examples and stories can you tell us about what's going on?

How if, at all, are AI technologies supporting particularly assessment for deeper learning, what some people call formative assessment, the idea that part of the assessment process is never just external, it's always internal to what goes on inside the classroom and in the projects that students are working on.

And last but not least:

What do we still not know in instructional and assessment contexts about AI-assistive technologies to support deeper learning?

So let's take the first question and play with it a bit. What do you think students see as most promising about AI and how are they using it today?

Interesting. When we came to Orange County, we had an entry plan called "100 conversations in 100 days" about AI.

And about the first 20 or so were adults.

And we asked: what was your first experience using generative AI?

What about people around you? What are the benefits for education?

What are the barriers or obstacles? But when we got to students, the thinking about AI brought in from 9 to 5,

like my day job, into they were thinking about it as all, all hours of the day, every aspect.

And so, student Sofia at Westminster High, she said, "I am concerned about my elders."

She is Vietnamese. And she was like, "How do how do my elders in my culture view it?"

And she wanted to have that dialog. And so we started incorporating some of the student questions into our adult interviews,

because we're realizing adults were very limited about their curiosity

or they felt, "I'm only empowered to talk about efficiency and making lesson plans and time--very narrow.

And the technology is such that it's not a narrow technology.

It's not a Google Classroom, it's not a Gmail. It has all sorts of applications across all walks of life in all industries.

And so the student curiosity piece, I think, is one of the most interesting things adults could do is ask students this exact question.

So I think we found students were ahead in talking about image generation.

No adults we interviewed talked about that. I think there's stereotypical right answers that students will give you when you ask them: How are you using AI?

Right? They'll go to that like, "I use it for ideas."

"It's a brainstorm partner," because they they think that's a safe way to talk about it with adults.

So I think we're not, unless you're kind of living and breathing with students day in and day out...

I'm not exactly sure. I think one of the things that they...

...this is not actually the word "promising." I'm thinking about Sofia, who says, "I want to be a doctor, but I don't..."

"...I'm not sure I want to be what a doctor will be in ten years when I get out of medical school."

Because AI is going to transform what doctors are supposed to do.

So that's actually more on the threatening side.

Like, this is a dream I have to serve in the medical community, but AI will change that in such a way.

So, I mean, the students are seeing that it's morphing the world around them, whereas adults are a little more,

seeing the world as it has been and are not able to think as creatively, I would say.

But I, I definitely think they definitely see the efficiency piece, being able to generate text, as promising.

But again, there's a disconnect from what adults are asking them to do.

And they're like, well, I can easily do that with AI, but that doesn't mean I learn anything.

So students are seeing the disconnect from what the technology will let them do, what adults are asking them to do, but they still want to learn.

They value that. I don't know, Kunal, what do you...? Yeah, yeah, yeah, that's a great that's a great sort of summary here.

And I'll kind of morph along with some of the points that, Wes mentioned, the 100 conversations in 100 days.

It was so illuminating when we first started talking with students because

as Wes said, when we were talking about it with adults, it was about their job.

When we were talking with students, it was about their life, and they weren't thinking about AI for work.

They were thinking about AI. That's my life. And so what does that mean for me?

Not just career wise, but everything wise, right?

And so that was, that immediately shifted our thinking because now we were thinking and we realized that

our role as an educator or our roles in schools with these young folks,

if we're going to talk about AI, we can't just sort of cordon it off in this

like learning theory or educate pedagogy or in that lens, we really have to broaden it to a much larger lens.

And in a way, and I think this was this was demonstrated through our student convening, which I'll describe just in a minute...

But the student convening led by students, students did the keynotes, students did all the breakout sessions,

a conference just about AI and students, 600 students in the room, or in the in the hotel, I guess,

but what I realized was that it wasn't actually about AI.

It was about students being able to share their vision for what the future of education or what the education of today looks like.

AI just happened to be the excuse. AI just happened to be the thing that has shaken us up so much that we actually have to sit now and listen.

We could find ways, like, students have been like...we just heard this last week where a new graduate,

she's not a student anymore, but she was just last year, and she said, "I've been waiting to have this conversation."

"I've been waiting."

I think that's a general feeling of students, especially in high school, is like, are they ever going to hear what,

our version of good education looks like or what I need through schools, or are they going to keep trying to like design this around us?

And that leads me to this moment where, we were at an AI conference in Anaheim,

the, Deep Learning Summit, and we had brought 20 students with us.

And, you know, that wasn't the original plan. It was a conference for adults.

Think about educators, think about AI and all of that.

It was in February of this year. I's amazing that it was only in February of this year.

AI time is so weird. It feels like eight months is like 20 years in AI time.

But they were sitting at this table and they're these talking heads up on stage pontificating about AI and education.

And they just said, "Why are they just talking about us?"

"We're right here. They could just ask us." And then we realized we were like, wait a second.

Like, you all need your own conference. Because in these spaces, there

are too many egos, too many adult egos that are trying to vie for the space.

They're not going to let you on the stage. And if they do, it's going to be like, it's going to be sort of this token gesture to inclusion.

Right? Rather than what we view as it's not about student inclusion, but rather about student centrality.

They're not going to embrace student centrality in this conversation.

And so we just did our own.

And in six weeks, we put together a conference that we thought was going to be 50 students in a gym somewhere at one of the high schools,

and it morphed into 600 students from across the county at the J.W. Marriott in Anaheim, a thousand students

when you include the live stream, 18 countries, students running breakout sessions, every workshop,

three students doing the half hour keynote that opened the entire thing,

with 600 of their peers in this fancy ballroom. and all the,

the thing I learned about it in that session or in that time wasn't about AI,

and it was simply about students just want to be able to share what they believe and dream about when they think about their future.

That's it. AI is the excuse. So I'm glad we have it

as an excuse. But when we say, "What are the most promising uses of AI and how are they using it today?"

I'd say they're just doing the same thing they've been doing, which is just trying to figure out this world that we live in.

They just have a tool that has finally arrested adults as well.

And so we get to finally have this conversation. And just to chime in.

I do think pretty much to a student on the use of AI for efficiency on the teachers side

all the students say now that you can generate a lesson plan, generate assessment and make it a rubric in seconds,

Now you should have more time for relationships with us.

And that's been universal is the most promising thing that they want is a deeper connection with the caring adult in the classroom.

Yeah, yeah. So if I could, if I can just kind of react to what Kunal said because I was just sort of getting goosebumps.

Kunal, in the 1990s, I think that was eons ago, it might have been another century,

I'm not even sure. But when I taught in East Harlem at Central Park East Secondary School as part of the Coalition of a Essential Schools movement,

we had conferences in which students presented. I brought students to Atlanta.

I brought them to San Francisco.

And everything you're describing to me at scale, so much larger scale you're describing was about putting student-centered work first,

allowing for voice to become the driver of what we call learning, and then putting an emphasis back on relationships.

as you both said. So in a way this question could have been asked 30 years ago.

We might have been talking about the World Wide Web, or we might have been talking about, you know, using Dreamweaver to design websites.

I mean, it's a funny thing. You're right. It's not the tech.

It sounds like it's about the relationships, the creativity, the power of voice.

So that's just something very powerful. And I just want to highlight that.

We've been here before, but now we're at this massive, unbelievable, ubiquitous scale.

I think it's finally like what's...what we hear from students is, and we've heard it multiple times is,

there's just like, "I hope that teachers feel like they can just learn with us."

They're like, "We know that teachers don't know this any better than we do."

We're all figuring this out. So rather than teachers feeling this pressure to like, "I got to figure it out.

I got to know how to use it. I got to know exactly, blah, blah, blah, blah..." Instead of all of that, let's just walk together and learn this together.

That's what we're hearing, especially from our high school students for sure.

Well, that may be a perfect segue for our next question, so let's give this one a shot.

What is most promising about the age of AI for the development of deeper learning in today's middle and high school settings?

So, you know, once we put those conferences aside, we ask ourselves once again,

what's going on in the classroom that's giving students these opportunities you're describing in particular subject areas,

or perhaps with particular project-based learning. I don't know what exactly is happening in your county and look forward to hearing more.

Yeah, I think I mean...go ahead, Wes. Go ahead. I was gonna jump into triangulated learning, you know?

Triangulated learning. Okay, so...

we always...I feel like one of the disconnects, or moving adults forward in the

system, is if you talk about the promise of what AI can do for student agency,

but you don't give teachers that experience, they won't be able to understand what you mean, right?

Because they they're... and I'll just use the word, they're trapped in a system, too, that requires them to manage 36 people in a classroom

bell to bell. There's all these things that...if you want the promise of AI for student learning, you have to give teachers that experience, too.

So one of the things that we've been doing recently is if we have a

session where we're doing professional learning, we give them the slide deck.

There's the content, we ask them to bring their resume, and we ask them to put that in the Notebook LM,

and before we start, we ask them to prompt the AI to say, "What does today's session have to do with me?"

"Here's my professional resume, and there's some interesting corollaries and suggestions."

And then we ask them, now look at your resume and open up, you know, your Voice Memo app on your phone and record an emotional resume.

So talk through the highs and the lows of how you felt about certain jobs.

What brought you joy? What depressed you? What did you struggle with?

Where did you thrive? And you put that audio file into Notebook LM and then you say, "Now redo that question."

"What does today's session have to do with me?" This authentic, human, emotional person?

We always talk about human-centered design and a human-centered approach to keep the human in the loop.

But if you're not really attending to what those feelings are in a given moment with adults, you're missing, what we call empathy.

We have a kind of three E's framework. We can use AI for efficiency, empathy, and empowerment.

So when we start with this question of we are not assuming we have the answer.

It's funny you use the word "expert" in the, in the intro, which is, you know, flattering and all that.

But we always say clearly we are not experts because there are no experts.

And in fact, walking forward in the age of AI means you have to say we can generate all this content digitally so fast we have to step back and go,

I don't really understand how that technology has a meaning for my future.

I have to say, I don't know. I have to have beginner's mind or some frame where I'm curious.

I am wonder. And so when we go into a workshop with teachers, we say we are not like telling you what to think or believe.

We're actually inviting you to find connections before we start.

And emotional connections. And I think this is... you mentioned the LinkedIn post that I put up this morning or yesterday,

and it was around this moment seeing how inviting pushback in a professional development session is

is a stepping stone to getting the people in the session to engage with each other at a more authentically, provocative way.

Like, we really need to push each other's thinking. We can't sit and listen to an expert say this is the right thing to do.

And if people then if we can get people to challenge us, then you give permission for the room to challenge each other.

And so we always we talk about our goal for professional learning is to come in as strangers and leave as a learning cohort.

We want to have this bond of we really challenge each other and we're open to these kinds of thinking.

So in answer to the question, one of the things that is most promising is this use of kind of I can dump an audio reflection into an AI,

and the qualitative data can be sorted, categorized, analyzed.

And there's such diverse ways you can process that and move forward.

And that's something Anaheim Union High School District, which is in our county, is doing where they,

the students share stories like, "What did you do this weekend?"

And they upload an audio file into the LMS, and the LMS looks at it and then identifies traits that they are associating with their profile of a graduate.

And so the graduate profile is not the old fashioned, like, do you know your content standards?

But they're like, how do we bring people of character forward from our

school system into the world to be, you know, effective citizens and neighbors?

And so they're looking at, you know, creativity, communication, the five C's.

And so the LMS, the AI will then help identify what the student is already doing.

Maybe they said, "I had to watch my baby sister, and then I made dinner so that when my parents came home, you know, we could have a meal together."

And it goes, oh yeah, persistency and loyalty. And it identifies these traits that they have mapped onto their profile of a graduate.

So they're they're changing the way they think about assessment.

And they're using it in part, in part, I mean, there's a broader, you know, system at work with their assessment.

But looking at students' stories and then identifying the traits that they want to basically, you know, what, what you measure matters.

And so they're trying to pay attention to those character traits for students,

because they know that that's the type of person we want leaving our system.

And it feels like it's sort of the how they've done it is backwards from our traditional way.

Right? So when we talk about formative assessments, when we're really deep, informative, the summative takes care of itself, right?

Whereas in like often in traditional classrooms, it's like the "gotcha" summative.

Right. It's like I'm going to grade you at the end and then I'm going to tell you.

Yes, or, you know, whatever.

But in Anaheim versus like in many other districts where in many of the districts, like here's the profile of a graduate, you have these traits.

Tell us, students, tell us how you fit these. And then the students are naturally going to go, clubs and school work and all that.

Whereas in Anaheim it's like they'll just say, two of my friends were about to get in a fight, and I talked to both of them, and I stopped them.

And and it's just adding all of that, and it's saying, "Oh, you demonstrated leadership."

"You demonstrated this." And so it's rather than prove to us that you fit this, the assumption is you already are this.

Just talk it through and we'll show you where you fit.

You're already awesome. You already have all the traits that you need.

We just need to use AI to help us at scale.

Right? Thousands of students, a human can't go through and identify and map all of that, but AI can,

and I think the power of these LMS models or LLM model too many, that can get confusing.

I'm surprised I haven't made that mistake before,

but the real promise of these LLMs is being able to use the language we can produce and make connections,

make unique connections, make different kinds of connections.

And most importantly, make empowering connections that make us realize, not change, but realize who we already are.

And how that fits into into what Wes described, a student of character.

Well, let me just say what I'm hearing in response to you so we can sort of dialog a little bit around this.

So what I'm hearing is exemplars of practice around what I would call college and career readiness.

And really, when you talk about student profiles, of readiness to go into the world, we might think of that as readiness,

readiness to go in as a citizen or readiness to go in as a professional or as a student or as a worker or whatever that is from post secondary.

And I think one of the outstanding questions on deeper learning, even before the age of AI,

was what's going on in a science classroom that is evidence of deeper learning for anybody.

I know that Linda Darling-Hammond and associates at LPI and other places have written

for a long time about the goals of deeper learning in a reformed curriculum,

and I think it's going to be interesting. Do you agree that, you know, there's the PE classroom?

Think about the example you gave and now infuse that into what I did physically

this weekend that I might be able to articulate as more than just playing soccer,

that there's something going on in my overall body kinesthetic profile that is deeper than just what sports teams I'm affiliated with.

I'm thinking of the same with science.

You know, how many times do we position science as a curriculum to be absorbed versus an experience in a way of thinking about hypotheses?

We conjecture all the time, don't we? Do kids even know that they're conjecturing all the time?

So I'm just thinking about this deeper learning, and I would hope we invite you back in a year from now,

we're going to hear more and more about what those little play spot pockets in the curriculum of content,

where people are breaking out of the lesson plan or the testing mentality and really saying, "Wow,

we could do those emotional or those downloads of experience on the weekend and start to sort them in science, physics." You know, whatever that is.

So one thing that immediately jumps to mind is kind of the old cliché.

People don't know, uh, they don't care how much, you know, until they know how much you care.

So you can have a student have all this going on on the weekend and they can come to school and report it to the AI.

"This is what I did."

But if you don't have a caring adult on the other end saying, I'm paying attention and asking follow up questions and engaging, it's a very,

very slim minority of students who are going to say,

"I want to figure out the chemistry part of my weekend and dialog with the AI like, like Kunal and I, we interviewed this student.

We actually in our, "100 Conversations in 100 Days," we started to notice nobody's really talking about students.

And so we begged educators, if there's a student who's obsessively using, AI let us know--we want to interview them.

And a student at a local high school or a teacher at a local high school said.

"And the student was a couple years ago, I don't have them in a class now."

"All I know is every time I pass him in the hallway, he's sitting on the floor on ChatGPT on his device, and I don't know what he's doing.

So we said, that's the student, we want to, we want to interview.

And so Kieran met us and he said, "I have been dying to talk to somebody about this."

And he was like, "ChatGPT changed my life." And we're like, "Say more."

You know, usually no one's that excited to talk to us.

And, then what was this transformation?

He said, "I, just when ChatGPT came out, I'm into anime and I just said, 'Can you write some anime stories?'"

And he started a dialog with ChatGPT. It would generate a story. He would go, "No, that's not quite right."

And so he described this whole workflow where he would like,

use up all his ChatGPT access and start another account, and then he

would use that to start another account,

and then he started putting kind of story ideas into Google Docs and then had this whole workflow

everything ChatGPT, you know, is not supposed to do because of the guardrails, you know, violent, gory stories

he's like, "I found a way around that. I know more about ChatGPT than anyone."

But we're like, okay, well, what happened that you said this changed your life?

He's like, well, I'm just, I always thought I was not creative. I just didn't, you know, teachers would give me a writing assignment.

I just couldn't do it. And so it was a final exam in English six months after I had used ChatGPT and the teacher said, "Here's a writing prompt."

Write it in class by hand, 5 paragraphs. And in the past, I would have just put my head down Kieran said.

And he said, "I just started writing and the words just flowed out of me."

I wrote seven paragraphs. I was done in ten minutes.

I couldn't believe the person I had become, and I think Kunal always says, "Oh no, no, young man, you were always that person."

It was just locked away inside, you know, you, he said.

He actually told us, "ChatGPT rewired my brain."

And I think Kunal's response was like "You rewired your confidence."

But regardless, this sort of intoxicating back and forth, you know, we've all used LLMs and it is surprising and there's this shock of like,

"Oh, I can generate so much based on my seemingly, you know, just ordinary prompt."

But it's a tiny fraction of students who will show the agency that Kieran did.

He did that because he had a passion. And he told us there was no adult I could talk to about this.

It was kind of forbidden to be using AI like this.

We did. We took his pilot, his model, and we developed a reading pilot, and we tried it with students.

And you really see, students, even though it's promising technology and they have like,

"Oh, write a story about what you're interested in and just tell the reading level."

There's a drop off there because students are doing something the adults are telling them to do, and the agency is lost.

And so you see, like, okay, you know, it works for one out of ten students

one out of ten students will spark--you give them that and they'll find the agency and the connection.

Everyone else is like, I don't get why I'm doing this. You're making me do this.

And so I think what's promising is we have way more leeway to play with agency.

because when we are in these spaces, we can easily generate connections, trends, and the students can as well.

And so hopefully there's a much bigger playground for us to, to try to find where these, tendrils of agency exist.

You know, for some people, it's around the passion, you know, like sports and music and drama.

But that's not it. And sometimes it's about, you know, students, like, I give you the rubric and show you exactly what I want you to do.

And they're like, oh, I'll jump that high because you said "Jump that high" or how high has nothing to do with passion for the content.

I think we're very under informed as to what makes students agents.

And we always use the word "agentic" like we're moving into this, Age of Agentic AI.

but we don't even know what makes us agentic.

You know, I think as we grow in our jobs and careers, we find

environments that fit us.

But in terms of what makes young people spark, we have programs that work for drama, sports.

You see it over and over and over. The things that people love about their school experience had nothing to do with the classroom.

They had to do to an environment where they belonged. Right?

So hopefully there's space for us to find more belonging in the learning and in the assessment can all.

Do you want to take another swipe at this, or do you want to move on to the next question?

Well, I mean, Wes really waxed there well.

Well, beautifully. I will just that little thing that I will add is that we are barely starting with this.

Like when it comes to deeper learning, we're talking about something that takes time, right?

Because we're not AI's. We're humans. So it's going to take us a moment to feel through this,

walk through this. We're asking teachers and students and parents, for that matter,

to rethink what they imagine a school is capable of, rethink what they imagine education is capable of.

And that's I, you know, I have a book that I wrote,

last year and then the second edition this summer, called "The AI parent."

It's just about me being a parent with my now five-year old and one-year old and how I use AI every day with them.

And it's really fun stuff. But I open with this question of "How do we parent?"

But really this goes for teachers as well. But how do we lead young folks in an age when everyone can be a prodigy?

When every student can be a savant? That makes us have to recalibrate what it even means to be an adult leading students.

And we got to take a moment to swallow that, right?

Like, I've been brainwashed for a long time to believe that

I got to get them good test scores and I got to make a good rubric and I got it.

And no, no, no, we are way past that now in this new world of AI

Well, there's so many things, Carrie, that I feel like we could push back on because we were invited by our friends back,

but I want to pull forward, too. I just don't also want to take up the time of what you have to tell us.

So let's go to the next question and maybe we'll circle back. We'll see how it goes.

Let's take the next question for a bit.

Why don't we play a little bit with the idea of how, if at all, our AI technologies supporting assessment for deeper learning.

And of course, the distinction that was drawn decades ago was assessment of learning,

assessment for learning, summative assessment, interim assessment, formative assessment,

some people call it educative assessment.

You know, there's so many terms. I think what we mean by this question is in what ways are our students and our

teachers and anybody else in the building when they interact with generative AI

getting some kind of assessment information that allows them to, in a sense,

self-evaluate, could be peer-evaluate, could be more, you know, distal than that.

But it's the idea that there's an assessment flow and that often means feedback, reconsideration,

revision, you know, retooling whatever it takes to we always say "re it up," right, Carrie?

Kind of the "re" part of life. Revise, rethink, re-do. I'm thinking of

Kieran.

I'm thinking of Wes's story about Kieran and doing his anime stories that that young man and what were the ways that like

he knew when he wasn't satisfied with a product and then his next steps and how he changed his flow over time.

That's one one way that I'm thinking about this question.

I just wanted to share that. Yeah. And I'll add into that story is like I think what was really sort of staggering about his story was how he

he put a, he completely manufactured it on his own, right?

When we tell the story in front of educators, we often say, this is an inspirational story,

but it should also give us pause because literacy is supposed to be our job, and he did our job better than we were doing our job for him.

And so, I think the first step was like, he just imagined, you know, let me just read.

Oh, it's making anime stories or whatever. But then as he read, he started to realize that, oh, this isn't exactly how I want it.

And all of a sudden he's like, wait a second, I have agency here.

Like I can actually interact with this.

And that led him eventually to write more than he was reading.

And that was a process, right? He didn't he didn't start there.

He worked his way there. And then in a year, I mean, he's writing the stories himself.

He's now he said last time we met him that he's applying for game design school to

to go to a local community college for game design.

He wasn't remotely thinking about college. He wasn't remotely doing that.

And so that iterative feedback that he was getting and giving

I think that's also a piece is like, it's not just feedback about me.

It's also what feedback can I give to the environment that's around me. And then can that change?

And can I have agency in that space? And I think about like this

What this made me also think about was this idea of like so there was a English teacher last year,

and maybe this is happening more, I don't know, but this English teacher said "I am no longer grading essays."

I'm doing it. I'm doing an experiment. I'm no longer grading essays. I'm only grading prompts.

Maybe you heard of this but and the idea being, first draft

Have AI make it. And then I care about your critical thinking.

I care about how you are taking information.

And then what is that doing with your mind? And so I want to see how you edit this essay.

I want to see which parts of this essay speak to you. I want to see how you change it.

What words come out to you, what... how did you talk to this essay?

And in that way, it's almost like you're starting to move into almost this like debate sort of mentality.

Socratic almost, There we go, Socratic.

Yeah. And it really is like you have you can now interact back and forth with this thing that it's

in traditionally it's just a package thing that you give, and then you get judged on it.

And then that's, that's that's it. Right? And then you make revisions on the package.

Things get judged on it again. And you that's your cycle right here.

Socratically you're building this and your adult, and this is the key,

What Wes said earlier--there's a trusted adult who's working with you in this.

This is what we call triangulated learning. We have AI, we have the adult,

we have the trusted adult, or we have the student, trusted adult, and AI.

And you triangulate that learning. You use that triangle. It's not a binary where it's like adult-student and just make this binary back and forth.

Now you've triangulated it and that because AI is so good with words, it's literally

made by words. Like you...kind of that

the end point of it is your own imagination.

Like you can just keep going and keep going. Yeah.

Wes? Yeah. I just had the phrase come to me

"creative director" is what we have been or I have been thinking about, like, our

our end goal for students with AI is no matter the subject area, that they are getting to a place where they are becoming the creative director.

Right? And so regardless of content, I can generate anything, absolutely anything.

So their skill is really around vision and values and then decisioning.

Right? So it is very, very we call it human-centered.

Absolutely knowing your values and what you want to bring into the world

I think that was what, in the very first question, like I was trying to get at this...

Like students are looking at what they want out of life and the adults are like, "What am I supposed to do for my job?"

And the the idea about values around culture, around a safe place to be in the world,

a place that's, you know, not going to burn up through climate change.

All these things, what we've seen, like, for example, a student of ours, Ibrahim..

He was...so the way I met him is some of the adults said, "You have to interview him."

He programmed his own rideshare app. Right? So right out of the gate, you're like, okay, what if you program the rideshare app, like Uber or Lyft?

Like, tell me a story. So he explained how he used AI to do it.

And what was more compelling is the reason why he did it influenced how he did it.

So he was at a holiday and a family members was telling him he was, I think 14 at the time.

He was in eighth grade and relatives said, "I drive Uber, I drive Lyft."

"Here's what happens. They take 50% of the money and they take it for the company, and I get X."

And he was kind of, he didn't say this, but he was kind of outraged.

He's like, "You're doing this to make money, but 50% of the ride fee goes to to the company."

And so he was thinking with a view of empathy for his, his relative.

He was like, well, if I can code a rideshare app that figures out what Uber would charge,

and then I offer the ride at a lower cost so that I can give the driver a bigger cut than they would get from Uber

But I'm underpricing Uber, for example,

Then I could potentially have a market, and in his mind he was like, I think he first called himself the Craigslist of rideshare apps.

Like, I'm just matching up: somebody is a driver and somebody is a rider.

And they just and he's like, there is no money changing hands.

So he used AI to figure out all, you know, what is Uber charging and figure out all that.

But his empathy was what drove him to create this because he just could have just created another rideshare app.

But he was figuring out like, how do I get person from point A to point B for cost?

It's cheaper than these giant companies.

And how do I get the driver more money for the same service?

Yeah. And so, I mean, like that that story is about him seeing the world identifying a value and then going

"Whoa, I now have access to AI to do all this, you know, data scraping and categorizing and all that."

Yeah. You know, there's a question,

in the chat that may actually be somewhat relevant to this story because in a way it drives the question of where's the mathematics,

where's the economics, where's the, you know, modeling of statistics, like,

what's the stuff that we call the common curriculum that intersects with this young man's experience,

which actually, based on his empathy and drive to solve a problem,

could then lead him into having other frames for understanding things like competitive

pricing or the idea of driving down cost to the point at which no one makes a profit.

There's all sorts of ways you can play with those ideas in classrooms and beyond. The question that is in the Q&A is from Lori.

How do you imagine that AI will impact math teaching and skill building?

Because in some sense, there's a lot of opportunities and low hanging fruit here with these stories around mathematics.

Do we see anything happening in that space?

Definitely I think I mean I...there's... I'll preface this by saying please do your best to ignore all of the open AI

random videos about, "Hey, look at I can do the hypotenuse!"

So not like that. That to me that's all, just that's all kind of like that's all Christmas decorations.

I don't think that's, really there's anything, there isn't to me, there isn't a there, there. Because it's you're talking about like problems.

You're not talking about mathematical thinking, right. Like you're not talking about analytical thinking.

And I think the thing that I can do for mathematics, and I'm an old science and math teacher,

the thing that it can do, I think most promisingly, it's changed the way in which we think about mathematics,

how we think about science, how we think about the scientific process,

how we think about data collection, how we think about analyzing data, and looking through data.

I went to, I don't know, I might be going into Hot Take space here, but whatever

That's okay. I went to middle school, in India, back in the 90s, in Calcutta.

And then I was born here in the US in Boston, all that and then, middle school and a little bit of high school

I went in India, and then came back to finish up high school, starting a sophomore year here in the US.

And I learned math in a completely different way, because it was in India, and math was taught as a first conceptual idea.

It's like theory, right? We were really talking about, like, Descartes and the Cartesian coordinate system we're talking about.

We did calculus in, I think seventh grade, sixth or seventh grade, not because we were smarter than everybody,

but because it was easier to solve certain theoretical problems using calculus than it was to try to sit there and like,

do factoring and use geometry and all that. And then, you know, all of this stuff was it was a totally different way of thinking about mathematics,

not thinking about it in terms of like algebra one, algebra two, geometry, pre-calc, all of that, that literally those categories didn't exist.

It was just math. Everything is just math and mathematical thinking.

And I think it gives us an ability to reconnect with that sort of thinking and this sort of kind of problem solving.

And math exists everywhere.

Literally everything we do involves math, right? I'm looking at numbers to see how far, how long it's going to take me to get to somewhere on my app.

I'm using math to determine which one of those I'm going to use.

The AI behind Google Maps is using math to figure out which what I'm going to be doing.

All LLMs are math-based, right? It's just they're just statistical algorithms determining the next word generation.

And so there's a there's an incredible, leader in AI in education named Tim Dasey.

Maybe you're familiar with his work and maybe not, but if you're not, you should be.

But Tim Dasey, he

put this thing out a couple of weeks ago where he said he thinks that up to 50% of high school curriculum should be a curriculum around how AI works,

because the the frameworks around AI, LLMs specifically, which are deep algorithmic and statistical models,

are going to be likely models for how a whole host of the future world develops.

And so I think it's less about AI teaching math concepts,

but rather like reverting us back to the mathematical kind of beings that we are.

There's no more, "I'm scared of math. I don't do math." No, you do do math.

In fact, everything you do probably has some sort of math around it.

So it's ironic or fitting.

I don't know how we want to call it,

but that large language models could likely reinvigorate a mathematical more of a philosophy rather than a "I just need to pass calc,"

"I just need to pass pre-calculus." I'm sorry, I don't know if that's high tech territory or not answering question territory.

That that was absolutely perfect. And all because, again,

we wanted you here to vision, to get us thinking outside the box, to get us not thinking about computational procedural algorithms,

but maybe actually start thinking about conceptual foundations.

If math can be reinvigorated by using this as a kind of problem of practice. What's the thing we're looking at? AI.

How does AI surround us? I mean, I think you're all on to it. It's a new way of thinking about what we thought we knew.

That's good. Let's go to this next question and sort of

Carrie, why don't you? We've got a good, solid ten minutes left.

So take us, take us to the next level. This is the "Still Not Know" question, Kunal.

And I think you kind of led us there. So we'd like to hear from you both.

What do we still not know? In instructional and assessment contexts about AI-assistive technologies to support deeper learning?

And you could go as far afield as you want in the still not know, if you're not happy with this question.

Well, I'll start with here, I think. You know, what we don't know is can I say almost everything? Because

because I think we're just starting this conversation, and that's what it's going to be with AI.

Ethan Mollick, the writer of "Co-intelligence" and a prolific poster on AI, a professor at Wharton talks about we've never

we've never existed in a world where we have another species that sort of can talk like us and mimic us in this kind of way.

And if we think of AI as this, he calls it an alien species type thing,

but really, it's, you know, it's a homegrown alien, maybe, I don't know.

But if we think about it that way

we don't know where we can go with this.

And I mean that in both the most positive, uplifting ways and the most terrifying negative ways.

Right? Because, you know, we're seeing Wes and I talk about this like we see how weapons companies are advertising.

Look at my AI robot dog and all of that. I mean, I actually talked to Claude about it because I was like, it was really bothering me.

And Claude was like, yeah, it's as if social media had existed and YouTube existed,

that they would have had the Manhattan Project up on YouTube and talking about how amazing this stuff is

you know, and that's not a bad, I don't think that's a bad analogy.

So the negative is there. And just to clarify, by the way, Claude is not some friend that lives down the street.

That's Claude, the actual technology called...Yeah, yeah, yeah, yeah, we played a little bit with Claude, but yeah.

So you and Claude were chatting and, and, you know, imagining worlds with that alien species talking to you while you were querying it.

That's. Yes. Yes. Talking to an alien about itself.

Exactly. Yeah. There's there's some real magic. To make it more self-aware.

So I don't mean to interrupt your flow. I just wanted to double check on Claude.

Yes, yes. Of course. Sorry. Not at all. Not at all.

But I think when we talk about the other side of it, the the uplifting side of it

we all know anyone who's spent any time understands that we are at our best in collaborative environments, right?

When we think off of one another, when we build off of one another, we have this thing now that we can, all of us can build off of at all times.

And so we are able to problem solve things.

We're able to to just spit out a random thought and try to get some thinking around it.

There's some lightweight AI models that use a lot less energy than the if you just use ChatGPT or Claude.

So for just sort of throw away ideas, some of those more lightweight, LLMs might be better,

but we're able to converse and we're able to to elevate our thinking in ways that we have never done before.

And that leads us to places that

like, what do we not know?

Almost everything. And if we keep our minds and hearts open to what we do know, which is that we're all human here.

We all care. We all have feelings. We all are

We all, in almost all cases, care about the uplifting of those in our community and those around us.

We all, almost all of us, care that we don't have an unlivable planet for our children.

We all probably care that we live in spaces where our voices are heard and our voices are cared about.

These are things that AI can't take away from us. Right? And these are things that don't change with AI.

So as long as we maintain the things we do know and we center ourselves, like Wes said,

and those values and those that what we care about, then AI just becomes this blank space of potential growth and potential goodness.

But we have to do that first. We can't talk about technology as a thing, especially AI.

Other technologies fine.

Wes often says, "AI is the first technology where it's as important for it to know about you than it is for you to know about it."

And of course, we've got to draw lines and do all of that with that. But someone we speak with who who works in the indigenous AI space,

it's really trying to see how indigenous wisdom can inform us in this AI space.

She uses the term "moral imagination." And I think there's something deep about what we can do with our moral imagination.

When we step into this, this new, crazy, insane AI world that we're stepping into.

Wes, you've got about five minutes to keep us thinking and maybe leave us with a minute or two to wrap.

Yeah. This is a big question here, and it's so big because so much is unknown.

But I'll kind of double down on the human capacity, human grappling part.

I think what we don't know is how will humans in our educational system map

a value of justice onto what's happening?

I think we can largely say like educational institutions, when social media appeared,

like quoting Kunal from a workshop last week, he said, "We just kind of turned our head and said, "Oh, that's outside school.'"

And it definitely is not outside school. So, thinking about, like, how will justice map onto AI?

And that's including, like the creation of it and influencing developers.

Dr. Wakanyi Hoffman, that Kunal just referenced.

She's got a bot that she's programmed that when you type a query into it, a prompt into it

it responds with a story, because that's how indigenous wisdom was passed on.

It wasn't like, I'm going to tell you what to do. I'm going to give you a story and you figure it out.

That right there is an exceptionally a gentle kind of empowering model for education.

And it's 30,000 years old. Yeah. Right.

So and now in this moment of AI, it's resurfacing.

It resurfacing as, "I can generate stories for everyone in the room related to their culture, related to what they're interested in."

And the same is true for direct instruction.

You can do that too. Well, here. Here's a question. What do we value?

Do we value people asking these questions of themselves and holding themselves accountable to figure it out?

Or do we want everybody just getting different versions of direct instruction?

So I think one of those questions

that's in front of us right now is we call it triangulated learning or kind of like in the past:

You have everybody does the same thing. It's like rote direct instruction.

And then through technology you're like, well, I can kind of differentiate and everybody gets something different.

But that what's different is very little related to who that person is as an unique individual.

And so kind of the third promise of what we call, I call, that we call "depersonalized personalized learning."

And so like the third,

the third one is like everything that's generated that's unique is not

just unique in some slant towards the content, but is unique to me.

And then goes back to the opening story I told where we have people open the resume,

those slides for the day, and then they narrate their emotions, how they felt about that resume.

There's this untapped well of our emotional lives that schools have not wanted to play with.

And the most powerful learning in the world is when I learn something that means something to me as a human in my life,

in my family, in my culture, and largely the schools have been ignoring that.

We've been trying to with, you know, approaches that think about culture.

But I think right now we don't know how far we're willing to go with that, kind of open arm

posture towards learning about who people are, you know, their culture, their identity, and how can that be mapped onto learning?

Yeah. It's. It's just again my mind is...[sound effects of mind sparking]

And I can't do it all. But I can't say this.

I think I now know, Carrie, why I failed to blur the back of my screen, thinking that somehow that was an accident.

But of course, it was fortuitous as we talk about the moral imagination

and we also think a little bit about buttressing ourselves with our own sense,

as you said, of sort of what did we bring to the questions that we are questioning about?

I think of what's behind me, which is a bookshelf. This is my 17th century, 18th century technology: the printing press,

the idea that there's actually a book and that the book could contain knowledge.

And I have a whole collection of philosophy, including one of my

favorites, Hegel.

G. W. F. Hegel was quite good at presenting himself as the philosopher who had finally understood everything.

He literally came to the conclusion, somewhat heuristically, that he understood everything that was known at that point.

And this, of course, threw derision upon him by many other philosophers to follow.

But I think about in some sense the AI challenge, what we don't yet know, is when do we come to

the conclusion that we actually have either known enough or that we still need to know more,

and that there's more to know that we don't know? It sort of sounds like a little bit of a crazy philosophical conundrum, but it is evolving.

It is changing. It is actually learning from us, and we are learning from it.

And that dialectic is creating a whole new frontiers of potential knowledge.

So maybe nobody will be able to do or claim what Hegel thought he could claim with physical books or, you know, lectures in front of him.

But I wonder if we don't want to leave this on.

You are all doing something that is quite inspiring to the rest of California.

That is, you are grappling.

As you said, I love that idea, with something very powerful for young people that they already need to find, which is voice.

They need to continually express what it is and who they are to us, so we can listen more carefully.

In this conversation around AI, we might actually find out that it's not that far from what we thought was important 50 years ago,

30 years ago, or 20 years ago. It's just a new way of exploring that challenge, which is engaging students in their own senses.

as lifelong learners. We thank you both extremely

for your support for us and our Center in terms of coming to the webinar and being a part of this community of practice,

and we want to see you in the future if you'll come back to us. Okay. Absolutely.

It's been our pleasure. Thank you so much. Yeah. Thank you, Wes. Thank you, Kunal.