U.S. Senate Committee on Health, Education, Pension, and Labor
Subcommittee on Employment and Workplace Safety

For a Hearing on:

“Reading the Room: Preparing Workers for AI”

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Good morning, Chairman Hickenlooper, Ranking Member Braun, and distinguished members of the committee. Thank you for the opportunity to testify today on the critical topic of artificial intelligence in education.

I want to first applaud the committee for its recent work advancing two bills — the Teachers LEAD Act of 2023 and the STEM Education in Accounting Act — which demonstrate a deep understanding, which I share, about the vital roles that teacher leadership and career exploration play in preparing students for the future. By supporting these initiatives, the committee is taking important steps to enhance education quality and expand career opportunities, reflecting a strong commitment to strengthening our education system and workforce readiness.

My name is Alex Kotran, and I am the CEO and founder of aiEDU, an organization dedicated to bringing AI expertise to classrooms nationwide. I have been deeply involved in the AI space since 2015. I co-founded aiEDU in 2019, well before the public introduction of large language models (LLMs). Our vision is to ensure that every student is ready for the age of artificial intelligence.

Today, I appear before you to underscore the urgent need to massively expand investment in teacher training and professional development to ensure that our schools and educators have the capacity to prepare students for the profound changes and disruption that AI will bring to our society and economy.

The Reach and Impact of aiEDU

I'd like to begin this testimony with a brief summary of aiEDU's work, as our experience is highly relevant to the topic being discussed. Founded in 2019, The AI Education Project is a national 501c3 nonprofit organization that has been leading a national movement to advance AI Readiness and AI Literacy for all students through concerted efforts to build capacity with teachers and education systems.

We define AI Literacy as the collection of skills and knowledge that a person needs to confidently understand, ethically use, and critically evaluate artificial intelligence in a world in which AI is becoming more and more ubiquitous.

We define AI Readiness as being when students, teachers, and school systems have the ability and underlying skills to apply AI Literacy to professional and personal endeavors. A person is AI ready when they understand the interdisciplinary impacts of AI and how to apply their human advantage alongside evolving technology, to leverage collaboration, creativity, and self-advocacy alongside AI to achieve their life and career potential.

At aiEDU we've built a sophisticated grassroots operation that reaches tens of thousands of educators, anchored in partnerships with some of the largest districts and education systems in the country. This includes: Prince George's County Public Schools, the state of Ohio (via a coalition that includes the Lt. Governor's office and Dept. of Education), the state of Colorado (via the Colorado Education Initiative), and the National Rural Education Association (which reaches 9M students). Collectively, our reach is now impacting hundreds of thousands of students and tens of thousands of teachers in every single state in the U.S.

aiEDU has built a coalition of early adopters for AI Literacy in K-12 that are now leading the country with demonstrated models of tiered support enabling delivery of AI curriculum and professional development. We make an impact mainly through curriculum implementations and teacher trainings that directly impact students. We have focused on the K-12 space because it is possible to create equitable reach for all students via established systems, and is a natural middle ground between government, nonprofits, and industry. And, of course, because student success is inherently non-partisan.

We've developed a template in which aiEDU provides critical support to empower districts and non-profit groups: We supply the content, subject matter expertise, and training that empowers our partners to scale delivery of AI expertise and instructional support across their networks. Our focus on districts and large systems is also fundamental to our mission to reach all students, as we intentionally select regions with large populations of students who are at risk of otherwise being left behind.

Our goal is to bring AI expertise to classrooms nationwide. Teachers and education leaders trust aiEDU because we don't build or sell AI products (of which there are now thousands). Instead, we help leaders close a critical gap that every major district or K-12 system in the country faces: Preparing teachers and students for the age of AI.

Over the past year alone, our organization has made significant strides in promoting AI education. We've conducted more than 120 events, including summits, workshops, and seminars, reaching more than 10,000 educators and administrators. Our aiEDU tools and curriculum have been downloaded by over 1,350 educators, impacting 231,000 students across all 50 states. We've launched major district programs in New York City and Prince George's County, expanded statewide initiatives in Ohio, Hawaii, and Colorado, and partnered with organizations serving rural and indigenous communities.

The Critical Importance of AI Readiness

We stand at the dawn of a transformative era. The AI revolution will define the trajectory of an entire generation of students and fundamentally change the skills they need to compete in the workforce. The urgency of this challenge is hard to overstate.

Early indications about the capabilities of large language models are startling and suggest that we are on the cusp of massive disruption to our workforce and social fabric in the coming decade. The pace of development is rapid, with a steady drumbeat of new models featuring increasingly massive training datasets along with powerful new AI graphical processing units (GPUs) that reflect the hundreds of billions of dollars of investment that has been pouring into the space.

- Earlier this month, OpenAI revealed its "o1" model family, which are designed to employ complex reasoning through a "chain-of-thought" process that, in short, has enabled their newest LLM to exceed PhD-level accuracy on benchmarks of physics, biology, and chemistry problems, as well as beat the vast majority of humans at competitive programming and math competitions.

Less than two years ago, Generative AI was virtually non-existent for consumers. Today, it is widely accessible, rapidly evolving, and starting to demonstrate meaningful applications that could result in significant impacts on the future of work:

Software Engineering: Last month Amazon CEO Andy Jassy shared that their AI assistant, Amazon Q, made eye-popping advances in replacing and augmenting the company's software engineers, with average time to upgrade an application to Java 17 dropping from 50 developer days to just a few hours. Jassy stated that this efficiency saved the company the equivalent of 4,500 years of developer work, and that nearly 80% of AI-generated code reviews were finalized without any additional changes.

Healthcare: There are myriad studies demonstrating LLM's ability to provide accurate diagnoses. A recent study by Google Research in collaboration with Google DeepMind revealed that an LLM developed with conversational and collaborative capabilities was able to improve diagnostic reasoning and accuracy by clinicians working on complex

medical situations, with the performance of clinicians augmented with the LLM achieving 59.1% accuracy, compared with 33.6% of clinicians working unassisted.

Entertainment: The rapid advances in generative AI and diffusion models, which enable text-to-image, text-to-speech, and text-to-video content synthesis, have rocked Hollywood and the entertainment industry, with a recent survey of 300 executives reporting that 75% indicated AI tools will support the elimination, reduction, or consolidation of jobs at their companies. That same report estimates that 204,000 entertainment jobs will be affected by AI within the next three years alone.

Anecdotes aside, research into the potential impact of LLMs on the workforce suggest wide-ranging applications and displacement, concentrated in some of the most common knowledge work careers in the U.S.

A study by OpenAI and the University of Pennsylvania investigating the labor market impacts of LLMs identified a number of occupations with significant exposure to AI-enabled automation of tasks, including: Financial Analysts, Writers and Authors, Web and Digital Interface Designers, Accountants and Auditors, Engineers, Clinical Data Managers, Legal Secretaries, Administrative Assistants, to name a few.

Pew estimates that 19% of American workers are currently employed in jobs that are "the most exposed to AI, in which most activities may be either replaced or assisted by AI." Researchers noted that "jobs with a high level of exposure to AI tend to be in higher-paying fields where a college education and analytical skills can be a plus."

In the years ahead, industries that employ the majority of Americans will improve their AI implementations to increase productivity and efficiency. This will change the skills workers need in order to keep up, compete, and thrive. Workers will increasingly have help from AI assistants, powerful new tools, and back-end process automation that displaces routine tasks. Historically, automation doesn't happen gradually; since 1980, the vast majority of job loss in occupations hit by automation took place immediately following recessions. Given it has been 16 years since our last serious recession, we should anticipate acute impacts from AI on employment whenever we experience our next one.

AI Readiness is important beyond preparing students to succeed in a changing world of work — AI is already having a profound, if under-appreciated, impact on our kids' social lives in ways we might not have anticipated.

Character.ai is now the third most popular AI tool, with millions of people spending multiple hours per day interacting with AI chatbots. This trend is deeply concerning at a time when we are dealing with an epidemic of loneliness, isolation, and depression among students. And we are yet to see the impacts that new voice-enabled products will have amid warnings from companies like OpenAI that anthropomorphism of AI could "reduce [users] need for for human interaction—potentially benefiting lonely individuals but possibly affecting healthy relationships."

Natasha Singer at the New York Times has reported on the even more disturbing phenomenon of schools encountering instances of sexual abuse conducted via nudification apps, which enable teens to "pervert real, identifiable photos of their clothed female classmates, shown attending events like school proms, into graphic, convincing-looking images of the girls with exposed A.I.-generated breasts and genitalia."

Michelle Culver, the founder of The Rithim Project, a nonprofit working to advance human connection for young people, recently outlined the table stakes: "In 2021, 22% of high schoolers reported that they had considered suicide; 4 in 10 said they experienced persistent feelings of sadness or hopelessness…only 27% of American men

have at least six close friends; 30 years ago, that figure was more than twice as high. Some 15% report having none at all. Across the board, the trend lines are going in the wrong direction."

Preventing students from eschewing human relationships in favor of AI chatbots that will never reject them or make them feel awkward is likely as difficult as banning social media or gaming, which is to say, impossible. Likewise, deepfake tools are often run by shell companies with servers in opaque jurisdictions overseas that are difficult or impossible to block. Educators are therefore a critical component of any strategy to build emotional resilience, social skills, and knowledge that students will need when navigating the increasingly complex digital world.

Given these rapid changes, AI Literacy will be critical to building resilience and awareness among students. We've seen the impact of social media on society, and we must learn from those experiences as we navigate the AI revolution.

Building Capacity for AI Readiness Centers on Teacher Training and Professional Development

What our organization has learned in over five years of working with students across the country is that there is no one-size-fits-all approach to scaling AI readiness. However, building increased system capacity is key for all schools.

We need to work state by state and, in some cases, district by district, to create models that scale, ensuring all students, teachers, and school systems have access to quality AI curriculum and are prepared for what's ahead.

In Ohio, for example, aiEDU has built a partnership with the Department of Education and Workforce, the Governor's office, and hundreds of schools across the state in collaboration with educational service centers. This approach has allowed us to raise system capacity across the state in a way that makes sense for Ohio's specific needs.

Given the stakes, it is also all the more critical that we work to build capacity in even the most hard-to-reach communities.

aiEDU has leveraged partnerships with community-based organizations that work across state lines, including Indigitize, which is partnering with our organization to build capacity with indigenous students, and the National Rural Education Association to reach students in rural settings.

At the center of our approach to build capacity, and reach all students is teacher training and professional development. It is clear from our efforts and from our quantitative and qualitative research that teachers and administrators want — and need — support and access to professional development on AI.

While large language models are still maturing and may not yet be suitable for scaled implementation at the district level, systems can start by focusing on building AI literacy. This lays critical foundational groundwork that is essential to any successful implementation of AI tools or the policies that enable their safe and responsible use.

Our own research underscores the urgency of this need. The current and future workforce implications are significant given that about 13% of the American workforce works in public elementary and secondary school. In a survey of thousands of teachers, we found that an overwhelming majority – more than 72% – said they were only moderately comfortable with AI tools. For our country to build the base of new skills we need and to prepare our students, teachers and administrators adequately for what is ahead, this number must change dramatically.

Focusing on Durable Skills

The goal of our education system must include an expanded focus on durable skills that will be critical to enabling people to augment AI tools that are certain to become increasingly commonplace in the workplace. These skills — critical thinking, communication, collaboration, computational thinking, resilience, adaptability, and digital citizenship — are best developed through live, engaging classroom activities facilitated by educators.

In order to cultivate AI Literacy and build AI Readiness that will serve a generation of workers defined by AI technology, we believe that a range of AI competencies must be widely understood and achieved in our education system.

First, students must know the basics of AI — knowing what AI is, how to use it, understanding how AI works along with its foundations in computing, and perhaps most important to be continuously curious about AI.

Second, when they know the basics, students must be able to think critically with AI — spotting and questioning bias, examining AI's use, and being continuously curious about AI's influence their lives, careers, and society. In practice, that will mean things like identifying why outputs from AI tools have discrepancies (e.g., values and bias in creating data sets), critiquing AI systems for embedded biases and propose ways to make them more inclusive and ethical, and critically assessing AI outputs, considering potential biases and limitations.

Thirdly, a critical component for students and the workforce in an era defined by new technology to know and truly understand your human advantage. We must ensure that students are innovative and persistent in their pursuit of solutions, are able to synthesize interdisciplinary and AI knowledge to solve problems in a holistic way, and to leverage their own ability to collaborate and self advocate when they navigate their careers.

There are opportunities to connect durable skills and AI Readiness together — and it's important to make these connections accessible and to motivate educators to work with them. A growing number of teachers in our research — 54% — recognize AI literacy as an important or essential skill for their students future. But fewer do so than other important life skills for students such as social emotional skills (92%) critical thinking and problem solving (95%) career exploration (88%) and digital citizenship and media literacy (75%).

Recommendations

We urgently need coordinated and concerted efforts at the national, state, regional, and local levels to elevate conversation and action around skills and training for both teachers and students. While there isn't a clear policy or approach at the federal level alone which could address this challenge, Congress can nonetheless create the conditions by elevating the conversation and routing more funds and support for states and districts to make the necessary investments.

We support several key policy changes:

1. Establishment of federal AI standards to provide common benchmarks for AI literacy and implementation in education.
2. Development of aligned data standards to enable centralized tracking of progress in AI education.
3. Increased investment and support for upskilling educators in AI technologies and pedagogies.

It's crucial to note that while educators are understandably concerned about the implications of AI on their jobs, we firmly believe that teachers are critical to helping students build the skills required to succeed in an AI-driven world. Teachers must never be displaced by automated tools. This stands in contrast to the rhetoric coming from some in the tech community who envision a world where our education system is centered on ubiquitous AI tutors.