

# AI Literacy Starts Early

Every child deserves to understand the technology shaping their world. The time to build that foundation is elementary school, when students are forming the habits, confidence, and critical thinking skills that will define how they engage with technology for the rest of their lives. Waiting until high school means waiting too long.

Less than half of U.S. preK-12 public schools provide computer science instruction, and AI education remains nearly nonexistent at the elementary level. This is a systemic gap in American education that disproportionately impacts students furthest from opportunity. We treat it as an inequality to be directly addressed, through teacher preparation that is deep and sustained, and curricula that reflects the lives and identities of children in the room.

BootUp is advancing a national movement to ensure students in every community have access to high-quality CS and AI education from the earliest grades, anchored by the conviction that access to AI literacy is a modern educational right for every K-8 student.

## AI Literacy in K-8 Education

Elementary school is where students begin developing confidence, identity, and critical thinking skills that shape how they engage with technology throughout their lives. The mission of BootUp's AI Literacy Initiative is to help students understand AI, question AI, and make responsible decisions when using AI.

Computer science is the foundation of AI literacy. We want young students to interrogate an AI system with computational thinking to recognize patterns, break down complex problems, and evaluate the logic behind any system placed in front of them. That foundation begins in Kindergarten, and every year it goes unbuilt is a year a child spends inside systems they were never given the tools to question.

Our approach to AI literacy helps students learn to:

- Recognize where AI appears in everyday life
- Understand how data shapes AI systems
- Question bias and accuracy in AI inputs and outputs
- Use AI responsibly, ethically, and safely
- Apply computational thinking to problem-solving
- Create, analyze, and communicate with technology

BootUp's work is about building this durable intellectual foundation, starting in elementary school. The AI technologies available to today's preschoolers are not the same technologies that students will be using when they reach high school or college. The question is not whether young people will encounter AI. They already are. The question is whether they will engage with it as informed, empowered thinkers or as passive users without the tools to question how these systems work, who builds them, and who they serve.

## AI Tools in K-8 Classrooms

As more school districts decide to make AI tools available for students, BootUp leverages the same critical framework to hold high standards for what those tools must prove before they reach a child's hands, to include data transparency, protection of student privacy, and alignment with teacher-led instruction. AI tools should support learning, not replace the cognitive process of inquiry, struggle, creativity, and critical thinking that deep learning requires.

Agency and decision-making about AI tools must remain with the teacher and the school community to ensure they are implemented appropriately in the classroom. We coach teachers to analyze the

effectiveness of AI tools, and prioritize decisions focused on how an AI tool has produced strategies that are fundamentally inclusive, equitable, or developmentally fitting (or not) for their students. We do not promote the positioning of AI tools as teacher replacements.

School leaders must also make informed decisions about AI tools that protect privacy and are transparent about data that is collected and how it is used. BootUp prioritizes AI tools that demonstrate transparency, protect student privacy, and align with community-informed consent practices. Our AI literacy initiative centers the empowerment of educators and students to ask questions such as "*Where did these models come from?*" "*Is the data accurate?*" Understanding these technical aspects of AI can be leveraged to help recognize why ethical questions arise in the first place.

## **Teacher Preparation: A National Imperative**

Since 2017, BootUp has partnered with school districts in 29 states and impacted over 1.2 million students through teacher professional development, instructional coaching, and classroom implementation support. Our model builds lasting educator capacity that remains within schools and communities long after the initial training ends.

Research on AI literacy in education emphasizes the need for teacher professional development for AI-integrated classrooms. This is the philosophy that BootUp was built on. We have always known that curriculum without teacher capacity is not equitable, nor is it sustainable.

90% of parents want their children to learn computer science and consider AI knowledge to be crucial for their children's future.

Only 11% of elementary schools in the U.S. offer computer science instruction with fewer teaching AI literacy.

BootUp's approach tackles this inequity at its root through our curriculum, teacher professional development, and classroom implementation. Starting early, teaching ethically, and reaching widely, we ensure children, especially those furthest from opportunity, can participate meaningfully in a tech-advanced world.

The future of AI literacy will not be determined only by technology companies or policymakers. It will be shaped in classrooms by educators who help students think critically, ask questions, solve problems, and understand the systems influencing their lives. BootUp believes that work must begin early, be grounded in equity, and reach every community.

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