

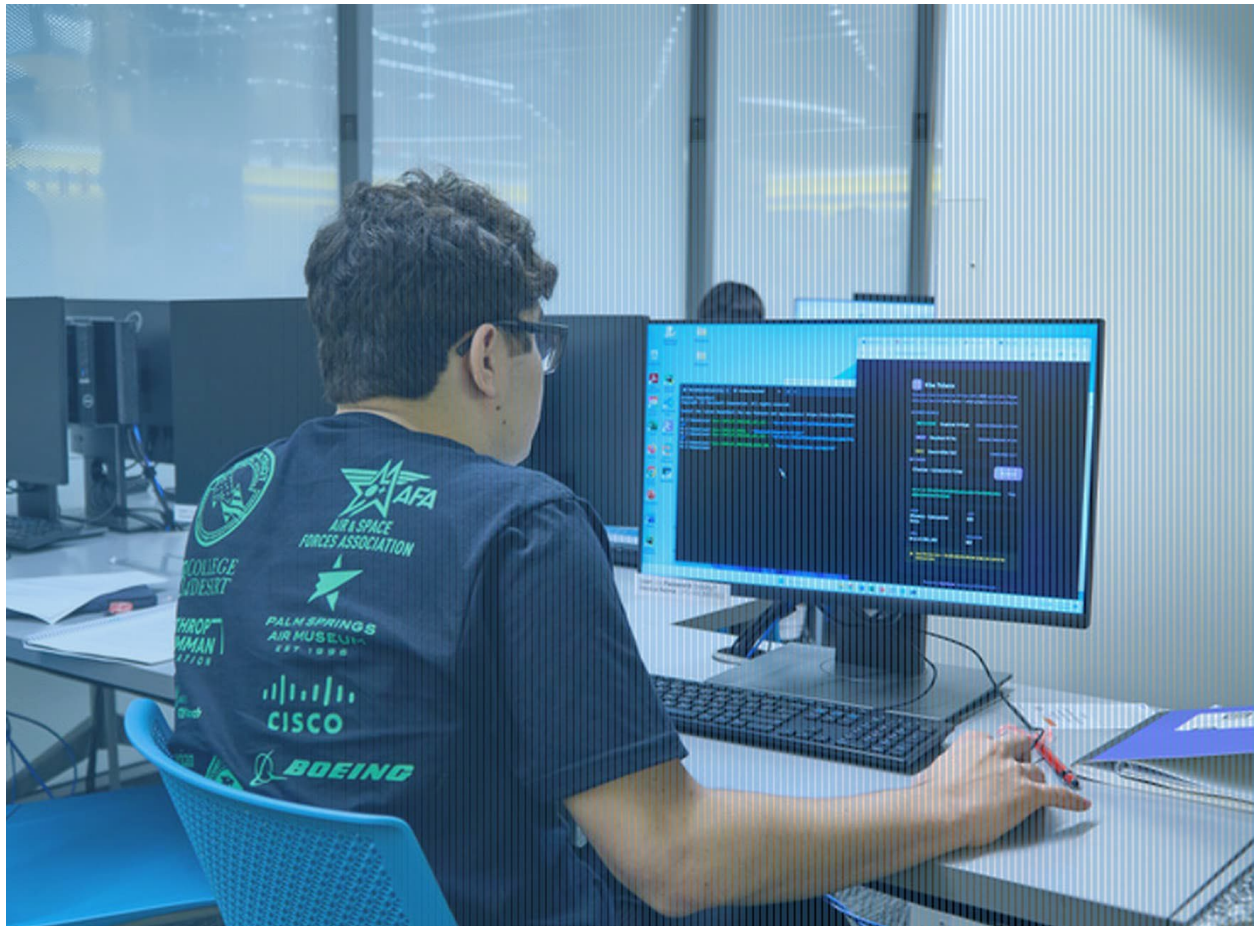


Artificial Intelligence: Students, Jobs, and the Future

Whatever its impact in the classroom, AI will demand the skills that spring from a better education.

- [Eric Hanushek](#)

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It is difficult to discuss education today without being quickly drawn into the topic of artificial intelligence (AI). But once the subject is introduced, the discussion splits off into a wide range of issues generally divided into two distinct topic areas: the use and implications of AI in schools and the impact of AI on jobs and the labor market. In both areas, the rapid introduction of AI and the limited current experience with outcomes of this have led to considerable uncertainty about the implications of further AI introductions.

While these two areas are generally separated in the discussions, it is the intersection of the two that has the clearest implications for policy discussions: the value of quality education will very likely rise, and with this, income gaps will likely spread even further.

In schools

Much of today's discussion of AI in schools centers on inputs and process with only a distant nod to any impact on outcomes. A frequent starting point is how AI will affect what teachers do, and a particularly common topic in this area is how AI affects examinations. If students can just go to AI for answers to questions, how is the teacher going to assess performance? There is also an interaction with pedagogy here, because assignments to research a given topic or to write a well-structured essay immediately run into the power of current AI tools to structure and write essays. A closely related question is whether availability of AI means the end to homework.

Another set of common discussion topics is whether AI is a complement or a substitute for teachers. For example, maybe students will tend to get a large part of their education by being led through subject matter apps, thus limiting the need for many teachers. While AI promises to free up a teacher's time now spent on less-productive tasks, the fear that frequently comes through is that this simply permits school districts to hire fewer people.

The (often implicit) suggestion is that things that change current practice must necessarily be bad for education. This perspective partly reflects the overall inertia of education and partly reflects different perspectives on which modifications in education are most important.

Evidence of the impact on students of AI use by teachers or students is today quite thin. There is growing evidence on immediate student learning of specific applications or uses of AI, but so far it is difficult to generalize these findings. Some results are positive while others are negative. With the hesitant and confused introduction of AI into the school, it is impossible to predict that AI will be the instrument of vastly improved schools.

In the job market

There is, however, one clear prediction about AI and education that results from the economic rewards to education. The economic value of education largely comes through the labor market, and the US economy has historically (before AI) rewarded knowledge and skills more than the economies of almost all other developed countries.

This is a direct outgrowth of the dynamism of the US economy. A significant reason why people with greater skills and more education earn more is that they are better equipped to adapt to change. They can capitalize on subject knowledge, problem-solving ability, and acquired discipline and work habits, and ultimately they are prepared to learn new things.

The American economy that has thrived on invention and innovation rewards those who can create and react to changing jobs and industries.

Enter artificial intelligence. AI will have its biggest impact on the US economy by driving change: new ways of doing things, new combinations of ideas and processes that increase productivity, and new things that we have not yet thought about. The most-skilled people will be able both to drive this change and to adjust to the resulting changes, and this will increase the rewards for them. The opposite is true for the less-skilled people. They will find adjustments to a changed labor market to be very difficult.

A central implication of the fact that the US economy rewards skills very highly is that the labor market simultaneously punishes the lack of skills more than in almost any other developed country. Earnings of those with more skills (as produced by schools) will expand as AI becomes imbedded deeper in the economy, while earnings of those with less skill will trend down.

Some implications

US education has not been in a good place, and well before AI entered the scene the need for improving the schools was broadly recognized. The unfortunate reality is that for reasons other than AI the level of learning of US students has been falling for over a decade. While the COVID pandemic accelerated the declines, other problems have persisted before and after the pandemic and before AI became an economic force.

By estimates of the historic value of skills (as measured by standardized learning assessments), the average student today will earn 8 percent lower lifetime earnings than the average student educated a decade earlier, before the steady declines in student achievement. The falling achievement levels have also been accompanied by growing *disparities* in achievement, reinforcing existing trends toward more inequality in the labor market.

As noted, an implication of the very likely impact of AI on the evolution of the economy is that the value of a good education will go up. Improving the learning of US students becomes much more important in the changed world that is being rapidly introduced by AI. AI magnifies the existing need for improving the schools.

Policy debates

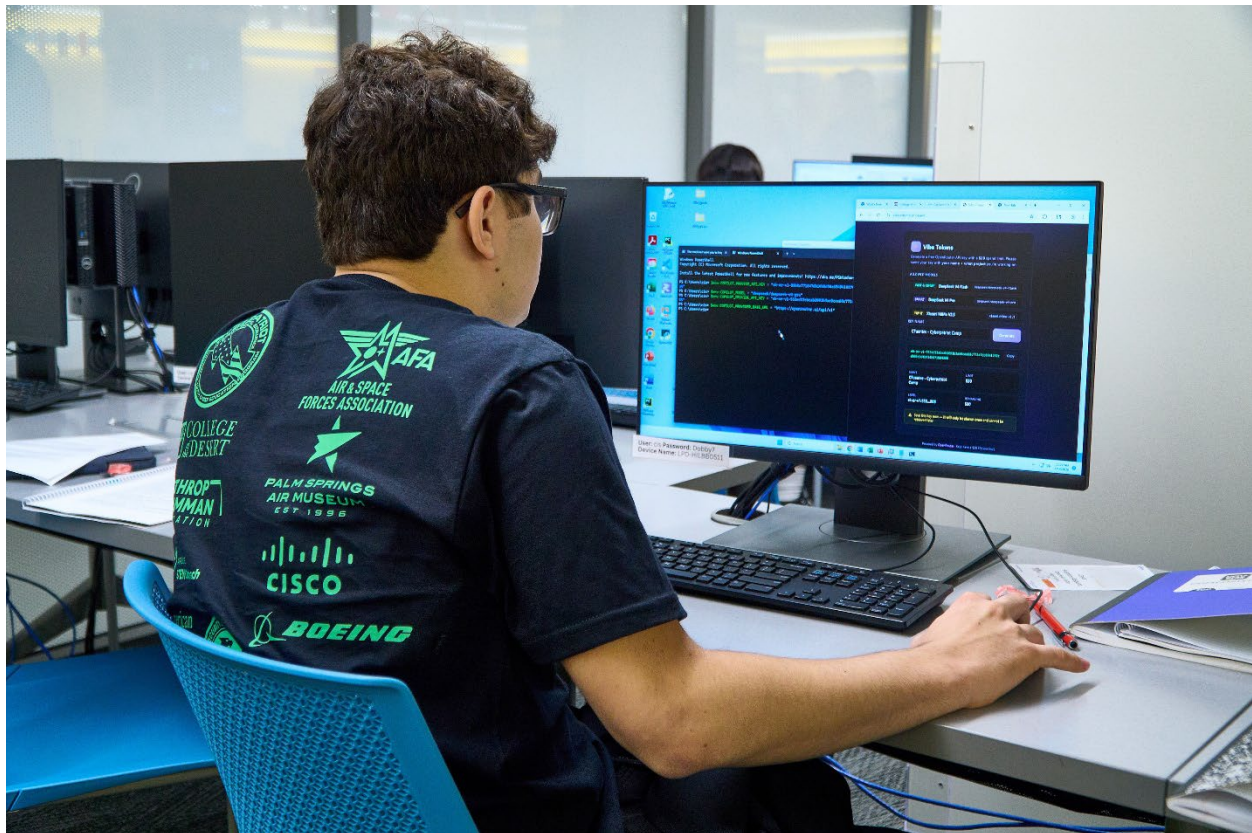
As we enter the AI era, the education policy debate has become increasingly confused, making it difficult to develop an appropriate policy consensus. A specific worry is that AI-confusion will make it more difficult to deal effectively with the very real educational challenges facing us. It is easy to find examples of the confused policy debate.

There is a popular but quite wrong dialogue asserting that the value of education will fall because AI will be able to replace skills previously gained through education. Here, examples of changing demand for specific white-collar occupations loom large. Some people seeing this conclude that education is a bad bet. But as argued, a much more compelling vision of the future is that AI will complement high skills and substitute for low skills—and this directly implies that the value of better schools will increase.

The current idea of moving more workers into jobs that AI cannot do, such as skilled crafts, must also be questioned. One policy argument that has gained traction in various policy discussions is that career and technical education should be emphasized over colleges and other post-secondary education because these jobs are more protected from AI. First, many of these jobs—think welding or long-distance trucking—can be automated, leaving many prior trained people with fewer marketable skills. Second, the typical economic return for college-trained people has remained substantially higher over decades than that for people without college degrees, and is likely to remain so.

We do have ways of improving the schools, but they generally require making changes in the way we operate them, ways that do not rely on finding the key to using AI in the classroom. We have been rather complacent about the falling performance of schools even as the pandemic highlighted the learning crisis. The complacency follows from considerable inertia in the schools where fundamental change is strongly resisted.

AI will increase the cost of this complacency through its labor market effects, but this cost largely falls on the students. It is not something that is easily dealt with if we wait for low-skilled workers to be squeezed in the labor market by rapidly evolving AI.



A student participates in the Air & Space Forces Association's Summer Cyber Camp in Palm Desert. Artificial intelligence was part of the weeklong program. [ZUMA Press]

Artificial intelligence should be viewed today as an added motivation for addressing the performance of our schools. AI may itself be a useful general tool, or it may be an impediment to improving our schools. But AI's wonder and glamor should not distract our attention from aggressively pursuing policies that reverse existing downward trends in student outcomes.

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