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No More Lost Einsteins

To continue to lead the world in science and technology, the United States needs to nurture its most gifted students.

Struggling to stay awake during math class is not an unusual experience in American elementary school. But fourth-grader Zoe Cadahing found herself in a different position: She was already excelling at algebra, putting her years ahead of her classmates. She might easily have spent the rest of her K–12 education bored, ignored, and unchallenged in ordinary math courses if the nonprofit National Math Stars hadn't given her a chance to go beyond the usual curriculum. Through National Math Stars' identification and support, Zoe was able to skip a grade in math and enjoy extracurricular enrichment opportunities that neither her parents nor her school were equipped to provide, including attending Campersand, a STEM—science, technology, engineering, and mathematics—camp in New Mexico.

Zoe's story may seem rare, but in fact there are perhaps 3.5 million other US students of outstanding ability who have not even been identified, much less given the resources and opportunity to take coursework proportionate to their ability. This is more than the 3.3 million US public school students who have been labeled "gifted." Indeed, what's notable about Zoe's story isn't just that her talent was recognized, but that it's been given a chance to flourish.

Today, many high-aptitude children like Zoe go unchallenged and unnoticed. Annual public spending on elementary and secondary education in the United States has surpassed $1 trillion, with roughly $120 billion coming from the federal government. But Washington spends only the tiniest fraction of that amount—less than $20 million annually—on a single program (the Jacob K. Javits Gifted and Talented Students Education Program) to support gifted and talented K–12 students. Despite federal laws requiring that public schools test students annually in grades three through eight and publish school report cards, there is no national mandate to screen for, identify, and support students with advanced academic potential.

For the sake of America's continued technological and economic prosperity, the advancement of the scientific enterprise, and the basic well-being of America's most promising children, the United States needs a national strategy to identify and nurture its own top STEM talent.

The rise and fall of advanced education

From a historical perspective, there is nothing new about a national strategy for advanced or accelerated education. During the Cold War, fears prompted by the 1957 Sputnik launch about America's flagging technological prowess spurred Congress to enact a law aiming to ensure "trained manpower of sufficient quality and quantity to meet the national defense needs of the United States," establishing a federal commitment to talent identification. The National Defense Education Act authorized a range of programs to strengthen American STEM education, including providing federal grants to states to establish a plan for regular testing to identify students with "outstanding aptitudes and ability." The legislation helped expand opportunities for talented students to pursue advanced STEM studies and increased the nation's focus on identifying and developing promising students.

Decades later, in 1988, a similar geopolitical mindset still informed by the Cold War's STEM race moved the National Science Foundation to establish the Young Scholars Program. The initiative provided summer and out-of-school enrichment opportunities for students to access advanced STEM

instruction and mentorship as a means of strengthening the talent pipeline into postsecondary education. After serving some 18,000 students, however, Young Scholars was shuttered in the mid-'90s. An NSF-funded short-term impact study published in 1994 found that the program was viewed as "stimulating, exciting, and challenging" by most participants; however, the program's impact on the science, engineering, and mathematics talent pipeline was unclear. Although there are minimal retrospective studies on the long-term results of the Young Scholars Program specifically, there is some evidence that students are well served by such early interventions.

The decision to end the Young Scholars Program coincided with a broader shift in federal education policy, decades in the making, toward a nearly exclusive focus on compensatory education and the need to ensure that all disadvantaged children have an equal opportunity to learn. That emphasis on bringing all American children up to a certain standard is commendable, but the mistake was treating it as a zero-sum game. In their focus on the lowest-performing students, education policymakers eventually ignored the highest-performing students.

To consider just one prominent example: The George W. Bush–era No Child Left Behind Act aimed to strengthen federal testing requirements and establish public-school accountability measures with the goal of ensuring that all children achieve proficiency in reading and math. But the act had the unintended consequence of reducing public schools' opportunities for high-potential students. The problem is not that policymakers and teachers have prioritized ensuring that all children reach certain learning baselines, but that such a focus has blinded them to promoting excellence and advanced academic achievement.

This trend, and its underlying view of education, has persisted at the state and local level. For example, in recent years, San Francisco, California, and Cambridge, Massachusetts, "detracked" their math courses, putting under- and overperforming students in the same classes. Culver City, California, eliminated honors courses to give all students the same curriculum, while Oak Park, Illinois, pursued the same goal in reverse, instituting "honors-for-all" to put nearly all students on the same track. A recent essay in *New York Magazine,* "The Mirage of the Gifted Child," captures this perspective well, arguing that "giftedness itself is a lie" and dismissing the idea that "the smartest children need extra enrichment or acceleration to reach their potential."

However, advanced education programs are one way the federal government could help lower-income students overcome inherent disadvantages to fully realize their talents. The economist Raj Chetty and colleagues found that coming from a wealthy family and living in an area with a high rate of innovation (as measured by number of patents) are important determinants of whether one becomes an inventor. They concluded, "High-scoring children from low-income or minority families are unlikely to become inventors," suggesting the presence of a cohort of "lost Einsteins" who could have achieved their own breakthrough discoveries had their talents been properly cultivated. Removing advanced education programs makes it that much harder for promising students without the benefits of geography or wealth to realize their potential.

The costs of negligence

STEM talent has long been seen as essential for a strong economy and national security. Since the end of the Second World War, the United States has at times leaned toward cultivating domestic talent, as it did after Sputnik, and at others has leaned toward recruiting globally.

As geopolitics shift, it's becoming more difficult for the United States to recruit globally. China, for example, has created a strategy to both cultivate its best homegrown science talent and support programs to attract global talent. In fact, many other countries have developed strategies to recruit and retain global STEM talent. In this environment, it becomes even more important for the United States to cultivate its own domestic brain power.

Continued scientific achievement is a key part of securing America's safety and prosperity in an era of mounting tensions and new pursuits of talent and resources. In this light, the failure of the US education system to adequately spot and support STEM talent at an early age not only hampers individuals, but also affects national well-being and geopolitical standing.

For the sake of its future security, the United States doesn't need to mimic China and create its own version of the *gaokao*, the winner-takes-all exam that determines Chinese students' university admissions and can make or break their entire careers. Nor does America need to sacrifice a democratic education worthy of every citizen. Instead, the nation should revisit a forgotten part of its own history, relearn some of the lessons from the last Cold War's education initiatives, and renew that past commitment to empowering its best young minds.

School, state, and government reforms

At the state or local level, perhaps the most promising reform would be to implement automatic enrollment, by which students are automatically placed in advanced courses for a given field (assuming such courses are on offer) if they succeeded at a high level in their coursework the preceding school year. Surprisingly, this commonsense reform is not standard policy in most schools nationally. North Carolina has led the way in implementing automatic enrollment for math; Washington, Texas, and a handful of other states have implemented similar policies for math and other subjects in recent years. These could serve as models as this practice extends to other states.

Automatic enrollment has so far received little serious academic evaluation among education researchers. Nevertheless, as scholar Jonathan Plucker and colleagues at the Institute for Education Policy at Johns Hopkins University have argued, based on preliminary results and smaller experiments across the country, there are strong reasons to expect the practice to benefit bright students without harming struggling ones. This builds on evidence that universal screening is an effective way to make sure that students from all backgrounds are included in gifted and talented programs. This intervention deserves widespread support and should be implemented by states and public-school districts across the country.

Beyond what states and districts can do, federal policymakers should take steps to promote advanced talent development nationally.

One promising approach is to develop a national model based on National Math Stars, the organization that enriched Zoe's education. The nonprofit works with states, school districts, private schools, and homeschooling groups to identify elementary school students who have high math aptitudes or score in the highest percentiles on standardized tests. Once identified and vetted, these students become eligible for mentoring and academic enrichment opportunities, including access to online tutoring in advanced STEM coursework.

Levers already exist at the federal level to establish a program like this. The White House is required by law to develop a five-year national STEM education strategy (the most recent strategy was released in 2024). In crafting the next strategy, the Trump administration could prioritize advanced talent development and call on agencies to review their programs and activities to support it. In the interim, the Department of Education can promote advanced K–12 education through its existing Elementary and Secondary Education Act authorities around overseeing state-level student testing and outcome reporting and providing guidance to states and school districts. Even if the department closes, as the Trump administration intends, this responsibility could be shifted to the Department of Labor, which has already assumed other education roles.

The National Science Foundation spends hundreds of millions annually to support STEM education for graduate and undergraduate students—awarding a proposed $250 million in graduate research fellowships this year, for example, and more than $100 million in NSF Scholarships in Science, Technology, Engineering, and Mathematics. Yet these investments only address part of the nation's larger talent issue. These funds should be expanded into a broader strategy that also includes identifying and training students at the elementary and secondary levels whose talent would otherwise go ignored.

Perhaps most ambitiously, NSF could return to its Cold War history and reestablish the Young Scholars Program. This time, it could reinvigorate the program with the benefits of new technologies, such as online learning programs and, potentially, AI-assisted tutoring, to provide accelerated learning opportunities at scale. NSF could partner with states, school districts, and the private education sector to identify today's young scholars and provide access to education funding, mentoring, tutoring, and advanced coursework. Importantly, this could expand access to advanced learning opportunities to children attending schools that lack the resources to help them reach their academic potential. This would particularly benefit children attending rural schools.

Meanwhile, the Department of Defense could transform its school system, the Department of War Education Activity (DoWEA), which serves roughly 67,000 military-connected pre-K–12 students across 160 schools, into a national model. Given its students' impressive scores, nationwide reach, and built-in connection to federal priorities, DoWEA is already a kind of prototype for a national advanced education strategy—and therefore stands as a promising opportunity for further improvements and experimentation, particularly around advanced education.

Recent actions by the administration could make these reforms easier to achieve. In a recent memo on R&D budget priorities, complementing a broader report on a "new golden age" for science, director of the White House Office of Science and Technology Policy Michael Kratsios listed "identify and develop top technical talent" as a top priority for federal science agencies. Kratsios argues that, because "targeted programs can accelerate the development of advanced K–12 STEM talent," "agencies should leverage merit-based identification mechanisms that cover as many people as possible (e.g., SAT scores or other standardized quantitative assessments) to find overlooked talent." As part of its response to the "golden age" report, NSF has already stated that its education and workforce programs will use "merit-based criteria anchored in demonstrated technical ability and other measures predictive of scientific success" to "engage in early talent identification," including for K–12 students.

For too long, the US education system has neglected to adequately identify and support the needs and abilities of students with great promise. But to maintain scientific and technological dominance, reprioritizing advanced talent development is a national need. School districts, states, and the federal government have roles to play in ensuring that students like Zoe and all the other "lost Einsteins" can be discovered and nurtured, allowing them—and our nation—to reach their fullest potential.

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