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Mobilizing for Techno-Economic War, Part 4: Transforming Education and Workforce Policy

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The U.S. education and workforce development system is ill-suited to winning the economic power industry war with China. It's time for systemic reforms to produce students and workers with skills and capabilities that national power industries need.

KEY TAKEAWAYS

- China is on course to amass greater capabilities than America and its allies in advanced, traded-sector industries critical to economic power and national security. Bold education and workforce reform must be part of a robust U.S. policy response.
- The current system has little pedagogical innovation or diversity in K-12 education, a bias toward four-year colleges and universities that overemphasize humanities and social sciences, and workforce training that doesn't provide what industries need.
- To transform K-12 education, pedagogy should enable greater student engagement, policymakers should quadruple the number of STEM high schools, and technical education should be expanded in both middle school and high school.
- Higher ed needs more accountability—including a well-designed credentialing system that applies market pressure to produce skilled graduates. Government agencies and the private sector should then recognize alternative certifications.
- Congress should restructure land grant universities around technical skills industries need, support creation of industrial colleges, shift colleges and universities toward teaching tangible skills, and expand critical technology degree programs.
- Finally, states and school districts should be required to identify gifted students and provide them with appropriate learning environments, and Congress should turn O-1A visas into "intelligence visas" to attract the best and brightest immigrants.

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National Power Industry Series

This report is part of a series on China's predatory industrial strategies, their impact on U.S. technological leadership, and how to avoid losing U.S. and allied capabilities in advanced industries that undergird national power. For more, see: itif.org/power-industries.

INTRODUCTION

The United States has been the world's dominant techno-economic power for more than 125 years. That has induced complacency. As the Information Technology and Innovation Foundation (ITIF) has written, China is hungry and determined not only to displace American techno-economic leadership, but also to make America and the West depend on Chinese production.[1]

On its current trajectory, it is likely that in the next decade or two China will amass significantly greater capabilities than the United States and even its allies have in national economic power industries: advanced, traded-sector industries that are critical to national security and sovereignty. With those greater capabilities will come geostrategic hegemony over the West unless the United States forestalls that outcome by adopting a new, transformative national power industry strategy that goes beyond a simple competitiveness or national innovation strategy. This techno-economic war is not one the United States and its allies can win in the sense of significantly weakening or retarding the growth of China's own national power industries. The only way China's mercantilist attacks on U.S. techno-economic leadership will end is if China becomes a free, democratic country, which is highly unlikely. But the United States and its allies can avoid defeat—by keeping their national power industries relatively strong—if they work together and adopt national power industry strategies.

However, the inherent weaknesses of the U.S. innovation and production system (e.g., cuts in government research and development [R&D], limited STEM [science, technology, engineering, and math] skills, an overly strong dollar, institutional resistance to change, corporate short-termism, etc.) coupled with a Chinese Communist Party hyper-focused on victory, suggests that, absent major structural change in U.S. policy, relative decline and loss of techno-economic competitive position and power is inevitable.

Changing the U.S. system will not be easy. In fact, it might be nearly impossible given the deeply entrenched interests and the dominant view that education and training should maximize individual rather than societal welfare. Nonetheless, system change is not possible unless there is a vision of the kind of system we need.

This report is part of a series delving into the techno-economic war China is waging to take over national power industries. The first report in the series laid out the context for this, including what is at risk and the need for radically new approaches in a host of key policy areas.[2] Not small steps, but big ones. Not tinkering, but transformation. "Bold" is the operative term. The crisis is at such a point that incrementalism will fail. Other reports in the series address specific policy areas.

This report focuses on education and workforce policy, which many argue is the most important factor determining U.S. success or failure. But that claim is significantly overstated. To be sure, there are real challenges with the U.S. education and workforce system, and many employers complain about the quality of workers. But while these issues are not insignificant, there are other issues that are more important in determining U.S. survival, particularly the incentives for companies to invest in ways that successfully defend against Chinese techno-economic industry attacks.[3]

Nonetheless, far-reaching and bold education and workforce change needs to be a component of a robust U.S. policy response. The U.S. system suffers from a number of challenges, including a one-sized-fits-all K-12 public education system that underperforms; a lack of nurturing and appreciation for gifted and talented students; too many students going to four-year colleges and learning liberal arts while too few study technical fields and go to two-year schools; too few institutions focused on teaching needed technical skills; and an immigration system not optimized to attract the smartest workers in the world.

Changing the U.S. system will not be easy. In fact, it might be nearly impossible given the deeply entrenched interests and the dominant view that education and training should maximize individual rather than societal welfare. Nonetheless, systemic change is not possible unless there is a vision of the kind of system we need and specific proposals to achieve it. That is the goal of this report. It first discusses the shortcomings of the current U.S. education and workforce training system and then focuses on the following 12 key areas for policy transformation:

1. Changing K-12 pedagogy to enable greater student engagement
2. Quadrupling the number of specialty STEM high schools
3. Expanding technical education in high schools
4. Fostering more accountability for results in higher education
5. Encouraging government agencies to hire people with alternative certifications
6. Encouraging the private sector to recognize alternative certifications
7. Aligning post-high school education and training to the needs of national economic power industries
8. Passing a third "Morrill Act" to restructure land grant universities to technical skills in alignment with industry needs
9. Supporting the creation and expansion of industry-focused and -led industrial colleges
10. Supporting expansion of critical technology degree programs
11. Expanding support for gifted students
12. Creating an "intelligence visa" focused on attracting the best and the brightest

WHAT'S WRONG WITH THE CURRENT SYSTEM?

The U.S. education and workforce development systems, developed largely incrementally over the last 150 years, are not fit for winning the national economic power industry war. To be sure, there are strengths here and there, and many promising institutional innovations are being experimented with. But these are largely episodic, with the dominant system unchanged and poorly suited to the task at hand.

The K-12 system remains modeled on a factory, with little pedagogical innovation or diversity. Pretty much everyone is required to learn the same thing in the same ways (sitting in rows of desks listening to teachers lecture on required subjects) whether they have any passion or even

interest in what is taught. As a result, too many students tune out and only learn what they are forced to in order to pass tests, if even that.

Gifted students, who need to be nurtured as a key, scarce national resource, are for the most part ignored, tolerated, or even disparaged. To be sure, there is the occasional well-crafted gifted and talented program, but these are modest in scope. And often gifted programs are nothing more than a faster pace of the existing constraining curriculum. In contrast to some nations, including China, which seek out gifted students for special support because they recognize the "secret weapon" they are, the American system, especially as it focuses largely on bringing up the "bottom," looks down at gifted students, mocks them for being nerds or worse, and sees gifted programs as racist.

The field is innovation resistant. Massive lobbies descend on Washington to preserve the status quo, usually with only one ask: more funding and fewer restrictions. Virtually no one advocates for a system that can be a critical component of a national economic power industry policy.

Four-year colleges and universities now educate far too many students, especially in areas such as the humanities and social sciences. America would be better off if the four-year system were shrunk by at least 25 percent, with more students getting high-quality technical degrees, especially at two-year colleges, or obtaining certificates of competence. But there has been significant "degree inflation," with employers expecting applicants to have four-year degrees, even if a position doesn't require it. Students realize this and feel that they must complete a four-year degree in order to have a chance at a decent job. This is rational for each participant in the system, but it is irrational at the societal level, as it leads to societal overspending on education.

And more troublingly, a significant share of college graduates lack the capabilities and skills one would expect after spending four years in college. Many, though, have had plenty of time to enjoy campus social life and sports. Indeed, one wonders if the true purpose of colleges and universities is sports. As the quip goes, the faculty pretend to teach and the students pretend to learn. (See box 1.)

The workforce training system also fails the task at hand. It is focused almost exclusively on equity: helping socially disadvantaged individuals gain the capabilities to do better in the workplace. While this is needed, the system is not designed to produce key resource inputs needed by industry that's competing in tough global competition. And it is anything but industry led.

And while many in industry complain about the state of the workforce, few do anything. And why should they? They have companies to run. This is why education reform and workforce development are low on the totem pole of industry's DC policy priorities.

On top of that, partisan politics makes structural change extremely difficult. The progressive Left focuses almost exclusively on education and training for opportunity, especially for the socially disadvantaged. Industry competitiveness is an afterthought at best, or an unwarranted subsidy to industry at worst. Helping talented students in STEM or other fields is seen as helping the already advantaged. This is why progressives have sought to weaken traditional math and science

education, seeing it as reinforcing white supremacy, while seeking to prioritize social justice themes over computational skills and problem-solving.

In contrast, the conservative Right assumes, as they do for most matters, that the market will take care of it, and where it won't, that local and state government action will suffice. And many on the Right reject the idea that the government should prioritize certain educational areas over others. For them and many conventional neo-classical economists, French literature is equally as valuable as computer science. What right does the government have to put its thumb on the scales of what an individual wants in the marketplace, and education is simply another industry and market?

On top of this, the entire field is innovation resistant. Massive lobbies descend on Washington to preserve the status quo, usually with only one ask: more funding and fewer restrictions. Virtually no one advocates for a system that can be a critical component of a national economic power industry policy.

It's time for an education and workforce system that's designed as a key complement and input to a national economic power industry strategy.

It should not then be a surprise that the education and the workforce systems are so far divorced from the needs of national economic power industries, especially given that techno-industrial policy is generally ignored and even decried in the United States. Policy areas such as education and training, according to the prevailing view, should help individuals, not the state's need to not be a vassal state to China.

The result is a system that in some ways is very much like the U.S. financial capital system: one focused on maximizing investor rates of return, in this case, individuals investing in their human capital. In other ways, especially K-12 education, it's like government-directed central planning wherein bureaucracy and uniformity dominate. And so we have the worst of both worlds: market forces divorced from the national interest combined and innovation-stifling guild-like interests and bureaucracies.

Some nations have a different approach. They take national development and winning the international advanced industry competitiveness race seriously. These nations, such as Singapore, Germany, South Korea, Taiwan, and China, see education and training, at least in part, as a core component of their national development systems.

As such, it's time for an education and workforce system that's designed as a key complement and input to a national economic power industry strategy. While the reforms discussed herein would enable that, it's important to note that they would also improve education and training generally, even for workers not going into the national economic power industries.

K-12

K-12 education is principally the focus of state and local governments. As such, they should be leading change that is aligned with the need for stronger national economic power industries. But without federal leadership, that is not likely to happen, as techno-economic power is a national issue. This section lays out three proposals for improving K-12 education.

Changing K-12 Pedagogy to Enable Greater Student Engagement

It is far beyond the scope of this report to lay out a comprehensive assessment and set of recommendations for K-12. But one key change is within scope: K-12 needs much more flexibility in pedagogy.[4]

The federal government and states have focused on improving K-12 education for more than three decades, but they have been doing so on the faulty assumption that the issue to be addressed is a "performance problem" that can be solved by pushing the existing educational model to do better. Over that period, two approaches to educational reform—standards-based reform and charter schools—have been relied on. Standards-based reform—particularly No Child Left Behind—has dominated, in part because of teacher union opposition to charter schools, but even charter schools have been limited in developing new ways of pedagogy learning.

Indeed, the principal means of improving educational performance has been standards-based reform, coupled with stricter curriculum requirements and more homework. Initially designed in 1990, standards-based reform was based on the idea that school districts would respond to the call to improve as "objective" standards highlighted progress or lack thereof. However, when schools and states did not improve as much as was expected, policymakers became impatient and moved to "require" improvement through measures such as the federal No Child Left Behind Act (NCLBA), which imposed sanctions on unimproved schools.

And of course, when the system did not show the results advocates promised, the excuse became money. Just spend more money, and all would be well. But that does not seem to be the decisive factor in outcomes. While there may be some benefit to more funding for schools in low-income communities, overall, the correlation between spending and educational improvement is weak.[5]

And when that didn't work, the solution turned to more. More hours in the school day. More days in the school year and no more summer vacations. More homework.[6] But more didn't work either.

It is time to consider that the failure to improve learning might lie precisely in the assumption that the problem is one of performance to be solved by pushing the existing model to do better—more tests and more consequences for not doing better on said tests.

Rather, the issue is a design problem—a need for radically different forms of schooling that can better educate the majority of students who, relative to their potential, are underachieving in the factory model of school.

Most efforts to improve American schools take the existing model of education as a given. The existing "mass production" model of education—named after the similar model of production that predominated in most U.S. factories in the 1980s—looks little different than it did 100 years ago. The mass production model in American education has several features: school is defined by time, space, and its organizational form. A traditional school is a building to which children come for certain years of their lives, months of the year, days of the week, and hours of the day. There, they are grouped by age into "grades" to be instructed by adults. The school itself is not a discrete organization but a unit of a larger organization that owns its facility, employs its teachers, generates its revenue, sets its methods of operation, and designs its curriculum. The teachers, unlike professionals in many white-collar occupations, are not in charge of the administrators but work for the administrators. Schooling, the process of learning,

is conceived of as instruction. Learning is thought of as the result of teaching; it is quite common to hear people talk about "delivering education." Indeed, school is designed around the adult, not the student. Young people sit at desks, in rows, while an adult imparts information.

There is limited, if any, opportunity for customization or personalization of the learning process, as student interests are treated as largely irrelevant to what *has* to be taught. Adolescents study disciplines disconnected from their lives—English, history, civics, physics, and mathematics. Their studies are divided into courses, most of which are required for all students. Courses are taught in classes, with teachers instructing 25, 30, or more students who move week by week through the subject and chapter by chapter through the same text. The idea is for teachers to instruct and students to master the particular subject matter of the course rather than the generic transferable skills (e.g., the ability to analyze and to solve problems, to comprehend complex situations, to think critically, to be creative, to be adaptable, to work with others, and to learn and relearn over a lifetime). The assumption is that all students will know all subjects.

Secondary students are tested mainly on their ability to recall factual knowledge. Success is defined as scoring well on tests of that knowledge, most of which involve discrete, right-or-wrong answers. Conventional school is like a school bus rolling along the highway, with the teacher standing at the front and pointing out interesting and important sights, but telling the passengers that, no, we cannot let you get off to explore what's down that side road. As a result, students who want to pursue their interests and passions must do so on their own time and energy if, after completing all the required homework, they have any left.

The issue is a design problem—a need for radically different forms of schooling that can better educate the majority of students who, relative to their potential, are underachieving in the factory model of school.

In industrial organization terms, the model of educational production just described is termed "batch-processing." Batch-processing refers to a production process in which batches of items (e.g., specialty chemicals or biologic pharmaceuticals) are processed in a standardized way, each going through the same processes collectively and sequentially. When applied to education, batch-processing has obvious limitations. It requires all students in a class to proceed through the full term at the same pace, affording little opportunity for those who need it to take more time, and little opportunity for those who could move faster to do so. In the typical mixed-ability classroom, this confronts the teacher with a difficult, almost impossible, task. Moreover, educational courses and content requirements too often tie the hands of students who want to pursue different or more sophisticated curricula. Four years of English is not inherently superior to two years of English and two years of philosophy or two years of journalism, but in almost no American high school today does the student have a choice.

Is it any wonder, then, that so many young people drop out, with many of the students who stay doing so only because they see the link between putting up with a relatively unengaging process now in exchange for the rewards stemming from a high school diploma later in life?

Indeed, in virtually any other industry in America, customer needs and satisfaction are critical. Companies with unsatisfied customers go out of business, unless they are public schools, in which case they just get more money.

In a 2024 survey that The Harris Poll conducted for Discovery Education, 83 percent of students said that there are not enough opportunities at school for them to be curious. The findings suggested that "keeping students interested in school has continued to be a major challenge post-pandemic for teachers, who are struggling to meet students' complex academic, behavioral, and social needs."[7] Could it be that much of what is taught and how it is being taught is just not very interesting or engaging? Three out of four students said that self-paced learning would help them feel empowered in school and more prepared for the future, while 93 percent of teachers said adaptive learning would help. And most of those surveyed, 87 percent, agreed that digital tools are essential for optimizing content for individual learning.[8] 2006 medicine laureate Craig Mello stated that "too much of our education is focused on memorizing facts and not enough on the exploratory process of science."[9] Indeed that's true, but facts are what can be easily tested, and testing is what schools are forced to care about most.

Yet, despite these dismal responses from students—the ones who ultimately must decide to learn—we continue almost unquestioningly with a batch-processing model of schooling and teaching that is not designed to motivate either students or teachers. Instead of innovating to find new approaches, we try to improve performance by pushing ever harder to standardize and perfect the old technology of textbooks and teacher instruction.

New technologies, including AI, virtual reality, educational gaming, and other information technologies, make it more feasible for education to become more customized and suited to the needs of students. For example, Google has developed an AI application, "Learn Your Way," that transforms standard school content into a "dynamic and engaging learning experience tailored for each learner."[10]

Change will be hard. Congress should see its job in education policy for the next decade as supporting bold institutional innovation. To do that, **Congress should establish and fund a New Schools America Fund to encourage state legislatures to create these specialized organizations that are independent of traditional school management.**

It should allow new innovative schools to be evaluated outside the framework of the federal NCLB. It should require exemptions and adaptations to state and federal course and content requirements. Alternative modes of assessment, as funded by foundations or state innovation authorities, must have room to gain legitimacy.

New technologies, including AI, virtual reality, educational gaming, and other information technologies, make it more feasible for education to become more customized and suited to the needs of students.

Finally, one more change will be required for this new model to work: **States will have to dramatically reduce the course mandates they have all imposed over the last several decades.** These mandates are so extensive that high school students have few opportunities to take electives that they might actually be interested in.

Take Maryland, for example. To graduate high school, students must take four years of English, four years of math, three years of science, three years of social sciences (U.S. history, world history, and local/state/national government), one year of fine arts, one year of

computers/technology, and two years of a foreign language.[11] And of course, note the complete absence of courses that deal with the physical world, such as engineering, machining, and robotics.

Why? Why a foreign language? Presumably, so that students can travel to other nations. But few Americans do, and most people they will encounter speak English. Four years of English—why? What is actually being offered: reading literature. But why is literature more important than, say, logic, philosophy, or creative writing? Why three years of social science? Why not the history of sports or the history of the civil rights movement? And four years of math—unless the student intends to go into engineering, science, or computer science, which are less than 10 percent of jobs—they don't need to know calculus. It's not as if these subjects are not useful. If kids had unlimited time, it might be good to learn these. If they had the same motivation to learn things they were not interested in as things they were, then requirements like this might be okay.

This gets perhaps to the key fault of high school education. It is designed to teach things, not skills. The government has decided that English is so important that it must be taught for four years and that every student must learn physics. But the reality, especially in an Internet-connected, AI-powered world, is it's less important what content students learn (obviously, beyond some basics in math and a few other subjects). What is most important is that they are engaged and want to learn. That is what matters. And then they learn to think, to do research, to write, to speak publicly, to work in groups, and to build on their curiosity. That can be learned just as easily through a Sports Statistics class as through an Algebra 2 class. Or through a debate class as through an English literature class.

In an Internet-connected, AI-powered world, it's less important what content students learn.

In addition to high schools radically paring down these choice-inhibiting requirements, colleges must do the same. Too many state universities make admission contingent on these requirements, such as four years of math. For example, the University of Maryland has the following admissions requirements:

- English: four years
- Mathematics: four years
- Science: three years
- History or Social Science: three years
- Foreign Language: two years

This of course just forces high schools to impose this distribution requirement. Does anyone really think that a student at the University of Maryland would be less successful if, God forbid, they only had three years of English and no years of a foreign language?

As such, **Congress should make federal higher education funding contingent on state colleges and universities eliminating specific course requirements beyond a minimum** (such as two years of math). Rather, Colleges should be looking to see if students take and pass intellectually challenging classes, regardless of what information the classes seek to impart to the student.

Quadrupling the Number of STEM High Schools

Some will argue that reducing math and science requirements in high school will hurt, not help, competitiveness, especially in advanced technology industries. But it's important to remember that only around 5 percent of workers are in occupations that require science, technology, engineering, and math degrees.[12] Most students will never use anything beyond Algebra 1. Moreover, students interested in these subjects and careers would still have the ability to take these courses in high school.

Moreover, it's not as if all these requirements have been successful. In fact, for at least 30 years, there have been massive campaigns to boost student achievement in STEM, and by and large these have failed to move the needle.[13] Math SAT scores fell from 509 in 1972 to 508 in 2016 (the last year before the test was changed).[14] And there is very little difference in college STEM graduation rates. For whites, the share that received a STEM degree increased only slightly from 2012 to 2021, from 12 to 14 percent. For Hispanics, from 9 to 11 percent. For Blacks, from 8 to 10 percent. Native Americans had a small decline. Asians did go up more, from 20 to 26 percent. But overall, hardly signs of success.[15]

A better solution than forcing more math and science on high school students, most of whom are just not that interested, is to create options for students who really are interested in math and science to enroll in specialty math and science high schools.

Mathematics, science, and technology high schools differ from the general education found in comprehensive high schools in key ways. First, they focus much more extensively on STEM curricula. For example, in addition to the three years of lab science and four years of mathematics required by the state for high school graduation, Florida's Center for Advanced Technologies offers students an opportunity to declare a pathway in AI or robotics, allowing them to take four additional specialized courses in mathematics and science related to their path.[16]

Second, students don't just take more STEM courses; they take more advanced courses and do more advanced work. Indeed, the coursework and integrated curricula of math and science high schools (MSHSs) go over and above the normal graduation requirements for general education students. For example, students at the Arkansas School for Mathematics, Sciences, and the Arts can take courses in Biochemistry, Microbiology, Multivariable Calculus, Number Theory, Differential Equations, Computer Programming III, Game Programming, and AI-Assisted Programming.[17]

A better solution than forcing more math and science on high school students, most of whom are just not that interested, is to create options for students who really are interested in math and science to enroll in specialty math and science high schools.

The focus at these schools is not on the College Board's Advanced Placement offerings, but on courses beyond AP. Students are expected to work at a college level of instruction and learning. The majority of these specialized schools require students to complete a research project in an area of math, science, or technology as a graduation requirement, where they are taught to ask the right questions, use 21st-century, state-of-the-art tools to find the right answers, and then effectively communicate those answers. For example, some schools require students to be assigned research mentors with whom they work over the course of their time at the schools.

Students also compete in science fairs, research symposia, etc. as the capstone for these research projects. These projects are often entered into national competitions such as the Siemens-Westinghouse Science Talent Search, the International Science and Engineering Fair, Chemagination, DuPont Challenge, Exploravision, Neuroscience Creativity Prize, Thinkquest, Young Epidemiology Scholars, and Young Naturalist Awards.

A third distinguishing feature of these schools is their level of partnership with other organizations. Collegiate, corporate, and alumni organizations have formed significant partnerships with these schools. While some partnerships have been in support of specific events, others have been long-term partnerships supporting research and innovation among students and faculty. Collegiate partners, for example, often provide classroom, dormitory, research, and financial support to these schools. For example, at the Governor's School of South Carolina, every rising senior is placed for six weeks in the summer at an off-campus program. Many of the students work with a research professor at an in-state university.[18]

Finally, while it's difficult to assess and compare educational environments, MSHSs are distinguished by the high level of student and faculty engagement. Many students get turned on to mathematics and science because their instructors are engaging and their own love of learning is contagious. One finds a great deal more interaction between students and instructors at these schools. Students are eager to spend time with people who are interesting and interested in them. It's not uncommon to find instructors surrounded by students during off periods or after classes. When a student conducts research under the tutelage of an interested teacher, the mutual excitement grows.

Thus, it should not be surprising that graduates pursue STEM fields in college at a rate nearly 50 percent higher than that of other students.[19] And compared with the national average, nearly 20 percent more selective STEM school graduates earn a STEM-related postsecondary degree within four years of graduating from high school.[20] To be sure, these outcomes may come from selection bias, as these students are more inclined to pursue STEM. Nevertheless, the outcomes are impressive.

Yet, there are only around 90 specialized STEM high schools in the nation, about the same number as 20 years ago. They represent just 0.3 percent of all high schools. What is worse is that, because of pressure from those pursuing racial equality, a number of schools are no longer selective, some moving from strict entrance exams to lotteries, defeating the entire purpose of high standards to produce excellence.[21]

Congress and the administration should set a goal of approximately quadrupling enrollment at such high schools to around 250,000 students. Doing so will require both the creation of a significant number of new high schools and the expansion of others with room to grow. To do this, **Congress should allocate $600 million per year for the next five years to the National Science Foundation (NSF), with matching funds from states, local school districts, and industry, and invest in both the creation of new MSHSs and the expansion of existing ones.** Moreover, a share of these funds should go toward establishing MSHSs serving underrepresented populations. To qualify, entrance and student retention should be based on merit. States, local school districts, or both would be required to match every dollar of federal support with one dollar of state and local funding. Industry funding would count toward the state or local school district match, or both.

Expanding Technical Education in High Schools and Middle Schools

A half century ago, most U.S. high schools had robust technical education tracks. Today, few do. Many other nations, such as Austria, Germany, and Switzerland, have retained that focus.

More students need to be able to learn technical skills in high school, including basic engineering. Think of it as shop class meets maker space. In fact the goal should be for every U.S. high school to have at least some kind of maker space wherein students can experiment with the latest technologies, including computer aided design and 3D printing.[22]

Middle and high school need to revitalize what used to be called "shop" into an advanced manufacturing class. For example, a relatively new program, STEM+M works with middle schools (and eventually high schools) to help them offer a one semester manufacturing class that includes CNC (computer numerical control) manufacturing, measurement, and structural science.[23] There are other innovative programs throughout the nation, but they have not scaled.[24] **Federal funding, either through the Department of War or Department of Education is needed to establish manufacturing and engineering programs at at least a quarter of America's middle and high schools.**

In addition, we should build on interesting models that expose high school students to actual manufacturing experiences. China, for example, has established a program wherein high school students visit factories.[25] Eleva-Strum high school in Wisconsin has a program called "Cardinal Manufacturing," which is a year-long two credit class that offers more than standard classroom instruction. Students gain the real-life experiences of problem-solving, running a business, and working in professional career roles. The application process includes creating and submitting a resume, project portfolio, and letter of recommendation.[26]

The goal should be for every U.S. high school to have at least some kind of maker space wherein students can experiment with the latest technologies, including computer aided design and 3D printing.

Congress should increase funding for the Carl D. Perkins Career and Technical Education Act that provides formula grants to states. And states should be able to apply for matching grants to be used to expand technical education in high schools, including engineering courses (e.g., robotics) and maker spaces.

HIGHER EDUCATION

Despite actually trying to meet labor market needs, too many Americans go to four-year colleges. College enrollment rates for U.S. 18- to 24-year-olds rose from roughly 30 percent in the late 1980s to a peak around 2010–2011, stabilizing at roughly 39–40 percent in recent years (2022). While the overall share increased, the immediate post-high school enrollment rate dropped from a 70 percent peak in 2016 to around 63 percent by 2022–2024, driven by a decline in male participation.

Michael Lind has written that "according to the Federal Reserve in 2020, 41 percent of recent college graduates work in occupations that do not require a college diploma."[27] A 2021 study by Burning Glass finds that, of the 4 in 10 college graduates who are underemployed in their first

job, two-thirds will still be underemployed five years later.[28] Of those, three-quarters will be working in noncollege jobs after a decade.[29]

In addition, too many students study humanities and social sciences without learning key foundational capabilities such as writing and critical thinking. To be sure, humanities and social science degrees have fallen as a share of total degrees. But many students still take many of the classes, in part because of requirements designed to ensure that these faculty have students to teach. For example, there are an estimated 50 million seat counts (the number of courses taken times the average number of students in the courses) for humanities classes.[30] This compares with an estimated 24 million seat counts in engineering. [31]

Finally, the educational quality of graduates is not adequate, especially to employer needs. (See box 1.)

Box 1: College Workplace Performance Gap

A 2024 survey by the National Association of Colleges and Employers (NACE) of 2,281 graduating seniors and 237 employers finds significant differences between how students rated their own competencies and how employers rated them. Students generally believed they were 20 to 30 percent more proficient in most areas than employers reported, particularly in skills such as leadership, critical thinking, and communication.[32] It's then not surprising that half of employers surveyed by *The Chronicle* and American Public Media's Marketplace said that they had trouble finding recent graduates qualified to fill positions, with nearly a third giving colleges only "fair" to "poor" marks for producing successful employees. They particularly noted that graduates lacked adaptability, communication skills, and the ability to solve complex problems, with one employer characterizing them as "woefully unprepared."[33]

This appears to be because most students are not learning a lot from the college experience. As former president of Harvard, Derek Bok, stated, "There's no question that students are studying less. I think something happened in the 1960s in the relationship between students and faculty that shifted influence much more to the students."[34] Using a variety of datasets, Philip Babcock and Mindy Marks confirmed this, finding that, in 2003, full-time students only spent 27 hours a week in class and studying, down from 40 hours a week in 1961.[35] Almost one-third of all students did not take any course requiring more than 40 pages of reading a week, and the average student spent only about 12 hours per week studying.[36]

This is partly why the National Assessment of Adult Literacy has indicated that, between 1992 and 2003, average prose literacy (the ability to understand narrative texts such as newspaper articles) decreased for all levels of educational attainment, and document literacy (the ability to understand practical information such as instructions for taking medicine) decreased among those with a bachelor's degree or higher.[37] Sociologists Richard Arum and Josipa Roksa administered the Collegiate Learning Assessment to several thousand college students at over two dozen institutions when they began college and again at the end of both their sophomore and senior years. They found that, if the tests were scaled on a 0-to-100 range, 45 percent of the students would not have demonstrated gains of even one point over the first two years, and 36 percent would not have shown such gains over four years.[38]

The data on college graduates' basic skills is concerning. One in five employed American adults with a bachelor's degree lack important literacy skills, while one in three fall below proficient levels in numeracy, based on international assessments.[39] Even more striking, only 25 percent of

college graduates score high enough to be deemed "proficient" in literacy on national assessments.[40] Moreover, 20 percent of students completing four-year degrees have only basic quantitative literacy skills, meaning they cannot estimate whether their car has enough gas to reach the next station or calculate the total cost of ordering office supplies.[41] These are fundamental life skills that many would assume all college graduates possess.

It's not as if these problems have not been known for decades. Secretary of Education's Commission on the Future of Higher Education, better known as the Spellings Commission, noted:

There are ... disturbing signs that many students who do earn degrees have not actually mastered the reading, writing, and thinking skills we expect of college graduates. Over the past decade, literacy among college graduates has actually declined. Unacceptable numbers of college graduates enter the workforce without the skills employers say they need in an economy in which ... knowledge matters more than ever.[42]

This is one reason why there is a significant disjunction between the skills employers want and what colleges teach: Employers ranked job-specific technical abilities as their top priority, while educators placed those skills last, instead prioritizing soft skills.[43] Yet, paradoxically, graduates still struggle with the soft skills educators emphasize.

While the causes of this dismal performance are many, a few seem relevant. Grade inflation has occurred as professors have become less demanding in their grading. Many colleges and universities have begun to collect student feedback on courses, and schools often use this feedback to evaluate their professors. Students can also rate their professors publicly on websites such as ratemyprofessors.com. Lowering standards is one way to lower the risk of getting a bad student rating. The result is that students have less incentive to work hard and learn, knowing that they will likely receive a good grade, or at least a passing grade, and that overall they will receive the valued diploma.

At the same time, universities increasingly compete for students, and one way to do so is to ensure that the curriculum is not overly demanding. Second, as competition for students has heated up among college-aged Americans, colleges, especially below the top elite schools, realize that they want to retain students, and one way to do that is to not push too hard. On top of that, almost all research universities reward faculty first and foremost on their research and publication output, not on their teaching skills.

The sad reality is that employers can no longer trust degrees, even from "highly ranked" colleges and universities, to be a guarantee of knowledge and capabilities. It's largely a crapshoot.

Fostering More Higher-Ed Accountability

Employers, not just in national economic power industries but in all industries, depend on high-quality workers. Currently, U.S. higher education is failing in that task and showing little signs of either recognizing that failure or attempting to fix it.

This problem stems from the inherent conflict of interest in having the entity responsible for educating students be the same one that evaluates how well they have succeeded in doing so. Not surprisingly, at most colleges and universities, there is rarely anyone held accountable for giving degrees to students who have not learned much. Failing students means fewer tuition-

paying students. Indeed, this conflict is one reason for some of the most egregious scandals at universities, such as having student-athletes enrolled in fake classes.[44] And the sad reality is that employers can no longer trust degrees, even from "highly ranked" colleges and universities, to be a guarantee of knowledge and capabilities. It's largely a crapshoot.

But widespread and systemic reform has proven difficult. This is because these barriers are not easily overcome with generalized calls for reform, more data, or more money. What is needed is a more radical step: breaking the ironclad link between education and certification. Without this change, real reform will be difficult for the simple reason that neither students nor schools will be motivated to change. In other words, we need a system wherein a diverse set of education providers compete with each other to do the best job of teaching students (providing the best value experience where quality and cost are taken into account). Some will specialize in teaching certain types of students or certain types of programs.

But for such a system to emerge, we need to overcome a chicken-or-egg dynamic. There is no national certification system for the kinds of learning and skill acquisition colleges intend to provide, in part because there is little demand for it. But there is little demand for it because such a system does not exist. Anyone seeking to make the large investments needed to create such a system (including designing and administering the tests) would need to have some level of assurance that there would be demand for this service. And as long as employers still rely almost solely on degrees, rather than skills' assessments, the demand for and use of such a system will remain limited. Although designing the right tests would be difficult, the process would force a healthy discussion about exactly what knowledge and skills colleges should teach and what experience employers value in the job market. This would help institutions do a better job of educating and help students ensure that higher education strengthened their financial security instead of jeopardizing it. Part of this would be driven by market competition—if a particular assessment does not provide useful information to employers, then they will not use it to evaluate candidates, and students will have no reason to take it. It would also help weed out weak schools and reward good ones.

We need a system wherein a diverse set of education providers compete with each other to do the best job of teaching students.

A well-designed system of credentials would accomplish several things. First, it would give students a better idea of what they need to learn in order to get a good job. Students who took the tests would have an objective credential that they could show to employers. Other students could judge the quality of different colleges by comparing the scores of graduates from different schools. And it would lead more students to realize that what matters is what they actually learn in college, motivating them to work harder.

While this movement has grown, it's still nascent. In 2025, 85 percent of employers claimed to use skills-based hiring in TestGorilla, up from 56 percent in 2022.[45] Major companies such as Delta Air Lines, Bank of America, Walmart, and Dell have publicly removed degree requirements for many roles. Harvard Business School and the Burning Glass Institute's 2024 analysis reveals that while 85 percent of companies talk about skills-based hiring, only 0.14 percent of hires are actually impacted by degree requirement removal.[46] That's roughly 1 in 700 hires. Many

technology companies have moved in this direction, for example, Amazon hired 2,468 coding bootcamp graduates in 2024, up 129 percent from 2021–2022.[47]

Encouraging Government Agencies to Hire People With Alternative Certifications

Governments should demonstrate to the private sector the feasibility of using alternative credentials by accepting a suitable set as a substitute for a college degree when filling federal government jobs. The U.S. Office of Personnel Management (OPM) took steps in this direction in the Biden administration. And the Trump administration's OPM recently issued agency guidance on hiring that, among other steps, calls for "implementing skills-based hiring, eliminating unnecessary degree requirements."[48] The administration should ensure that it follows through with this provision and that agencies are actually complying with it.

Encouraging the Private Sector to Recognize Alternative Certifications

The Department of Education should work with corporate partners to encourage the use of alternative certifications. The goal here is to develop credentials similar to the Skills Certification System the National Association of Manufacturers' Manufacturing Institute developed with its members. The difference is that these would measure the general skills that a broader section of companies expects recent college graduates to possess when they enter the workforce.

In addition, students, their parents, and employers need better measures of university and college performance. One measure is the National Survey of Student Engagement (NSSE), which documents dimensions of quality in undergraduate education and provides information and assistance to colleges, universities, and other organizations to improve student learning. Its primary activity is annually surveying college students to assess the extent to which they engage in educational practices associated with high levels of learning and development.[49] The Center for Postsecondary Research at Indiana University's School of Education administers NSSE. The problem is that the results are only provided to universities. **Congress should require that any college receiving federal funding disclose its NSSE scores.**

Passing a Third "Morrill Act" to Restructure Land Grant Universities to Technical Skills in Alignment With Industry Needs

Too many Americans go to four-year colleges believing that they will be the ones who benefit from the fact that the average lifetime earnings for a college degree holder is higher than those of non-college-degree individuals. The share of high school students enrolling in four-year colleges increased from around 55 percent in 1984 to 62 percent in 2024.[50] But that earnings bump is not so much from the fact that they went to college, but rather that there is a fixed share of middle- and higher-wage jobs and those are given to college grads, whether or not a college degree is needed.

Moreover, there are too many students in degree programs that provide general education rather than more specific degrees, such as engineering, business administration, and pre-med. In 2024 and 2025, only 41 and 30 percent of graduates, respectively, found jobs in their chosen field.[51] Perhaps the core reason is that colleges are run by academics whose passion is for academic disciplines. And that is what they want to teach: existential philosophy, the women's movement, Latin American literature, etc.

To be sure, there is nothing wrong with a liberal arts degree, but only if the students learn rigorous thinking, writing, analytical, and communication skills. Simply learning some English literature or sociology is just not very useful if it does not come with real skill development. That requires an enormous amount of hard work—something most students have no desire to engage in and few faculty want to insist on. It's much easier to take the semester class, turn in a term paper, and do okay on a test that assess memorization. Moreover, few professors appear to want or even be able to teach the kinds of skills employers need.

One solution would be to copy what some Commonwealth nations have done and establish a national system of four-year polytechnics. These are institutions of higher education providing technical, applied, hands-on learning, and offering applied degrees, diplomas, certificates, and apprenticeship training, fueling business innovation with applied research expertise.[52]

For example, Canada has a system of 13 polytechnics.[53] Their focus is on "industry-responsive education; a focus on developing a work-ready talent pipeline; Industry-academic collaborative spaces; mid-career retraining options, bridge training and advanced placement, and applied research supports."[54] They offer programs for students who want to become industrial mechanics, agricultural equipment technicians, food researchers and innovators, or supply chain specialists.

Too many Americans go to four-year colleges believing that they will be the ones who benefit from the fact that the average lifetime earnings for a college degree holder is higher than those of non-college-degree individuals.

The United States supposedly has a system like that: the state land grant colleges. Today, there are 112 land grant universities. But they have drifted radically away from their original mission. Congress needs to pass legislation to fundamentally restructure state land grant universities.

The original idea of the Morrill Act in 1862 was to grant federal land to states to establish institutions teaching agriculture, engineering, and military tactics to the working class. The goal was to provide practical, affordable, and industrial-focused education to the "industrial classes" as an alternative to the traditional, elite universities such as Yale, Harvard, and Princeton.

At least until World War II, they generally followed that path. But after, most land grants transitioned from vocational "mechanic arts" schools to "glorified flagships." A number of factors led to that change. When the GI Bill sent millions of veterans to college, land grant schools were the only ones with the physical space (and the mandate) to accommodate them. To serve this new, diverse student body, these schools rapidly built out departments in the Liberal Arts, Business, and Humanities, moving away from a strictly agricultural or technical focus.

University presidents, such as Michigan State University's John Hannah, intentionally leveraged this growth to compete with traditional flagships for prestige and funding.[55] Because of the professors' pursuit of status through peer-reviewed publications, they and land grant university leadership sought to emulate the Harvards and Yales of the world. And that meant turning away from their more technical mission and broadening the curricula, most of it unrelated to the original mission. Practical education and industry-applied research became seen as second rate.

On top of that, after the creation of NSF, the federal government shifted its funding model. Instead of just funding "practical" agricultural research, agencies such as NSF and the National Institutes of Health began pouring billions into "pure" or "basic" science. To get this funding, land grant schools had to hire theoretical researchers who prioritized publishing papers over conducting applied research and teaching. Land grants also shifted their curricula to emphasize graduate education, effectively mimicking the structure of elite private and flagship universities.

And as part of that striving for respect, most land grant universities sought an invitation to join the Association of American Universities (AAU) as the ultimate signal that they are no longer just a "vocational school" but a global peer to Harvard or the University of Michigan. This in turn led to a ranking obsession and a focus on metrics that define "flagship" status: high selectivity, low acceptance rates, and high faculty citation counts.

This led to a change in curricula. Originally, land grant curricula were structurally different from traditional universities. Over time, they adopted similar curricula as flagship state universities to ensure accreditation, transferability, and that their students could get into law or medical schools. But while most land grants still place a slightly greater focus on engineering and other technical disciplines, they are largely very similar to state flagship universities. For example, Michigan State University, a land grant, offers over 200 undergraduate majors, while the University of Michigan offers 130.[56] Michigan State and Michigan both offer a degree in African American and African studies, both offer film studies, and both offer women and gender studies.

Since land grants now compete for the same high-achieving high schoolers as flagships do, they must offer the same "amenities": prestigious honors colleges, study abroad programs, and high-ranking business schools. A land grant that is busy trying to climb the *U.S. News & World Report* rankings might prioritize building a new student union over updating a high-tech, specialized lab for CNC machining or circuit design.

Originally, land grant curricula were structurally different from traditional universities. Over time, they adopted similar curricula as flagship state universities.

Also, to satisfy the faculty, they require broad requirements, with one result being that students spend two extra years taking "General Education" requirements (e.g., Michigan State's Integrative Studies) instead of mastering the high-level technical skills needed in modern industry. Or instead of finishing in two or three years, they now need four or five. And of course, that has contributed to the explosion of student debt.

In addition, the original mission of land grant universities included the Cooperative Extension Service, designed to bring university research directly into the hands of local workers and farmers.[57] As these schools became "glorified flagships," funding and prestige shifted toward theoretical research rather than applied and more practical research. And of course, these institutions needed to get big so they could field NCAA sports teams to satisfy alumni and gain revenues.

Opponents of shrinking and repurposing these institutions will counter that, in a rapidly changing economy, specialized skills become obsolete quickly. They contend that by giving a student a "flagship-style" education (teaching them how to learn through social sciences and humanities),

the student is better prepared. But as previously noted, it would be one thing if universities were actually teaching students, including how to learn. But they are not even doing that, as evidenced by the low levels of numeracy and literacy and the general disgruntlement of employers with college grads.

If land grants are to go back to their original mission, which included not only helping agriculture and industry but also providing the skills needed for working-class students, they will need to be fundamentally reformed.

Instead of a curriculum designed by academic committees, a specialized land grant would co-create its programs with industry leaders. Students might spend two or three years on campus for intensive technical theory and one full year in a paid, credit-bearing industrial residency. These schools would relax the requirement that all professors have Ph.D.s and instead hiring professors of practice who have actually worked in industry. They would dramatically reduce non-STEM faculty and course offerings available to students at other state universities. They would provide a hyper-focused, streamlined degree (perhaps three-year instead of four-year) that strips away the general "integrative studies" in favor of deep-dive technical mastery and project-based learning. And they would dramatically expand the breadth of technical degrees, similar to what Canada's Polytechnics do.

Also, the original land grants had "Extension" offices in every county. Today, these are often underfunded or focused on gardening for suburbanites. In the new land grant mission, these offices should be transformed into Regional Tech Hubs—satellite labs where workers could return for "micro-credentials" in new technologies (e.g., AI-driven logistics or robotic maintenance) without needing a full new degree, and where faculty work with regional industry to help solve technical problems.

If land grants are to go back to their original mission, which included not only helping agriculture and industry but also providing the skills needed for working-class students, they will need to be fundamentally reformed.

Why don't some states do this on their own? Why does Congress need to act? The answer is simple: the academic professorial guild holds the power at all universities, including land grants. Despite what a university president might think, he or she does not really run the institution; the faculty does. And if any institutions were to try to move in this direction, the resistance from the faculty would be a firestorm. Moreover, even if a state could achieve this, its land grant school would see its national reputation decline and faculty would be reluctant to teach there. What is needed is system-wide change incented by Congress.

To break this stranglehold, Congress needs to act by passing a third Morrill Act to incentivize state land grant universities to return to their original mission.[58] Congress can do that by providing grants to states that take the steps previously described. These massive "Capacity Grants" should be used to build world-class, industry-grade labs to enable applied research and technical training for students. And they should buy necessary related equipment, such as virtual reality technology, to enable real-time distance learning.

And as part of this, new federal funding should be used to cut tuition to at least half the levels of the flagship universities. In addition, companies or groups of companies should be able to "underwrite" specific departments in exchange for a direct pipeline of graduates, similar to the apprenticeship models found in Germany. The legislation should also authorize a "Technical Pell Grant" that covers 100 percent of tuition specifically for applied majors related to national economic power industries, such as advanced manufacturing, semiconductors, and biopharma processing. In addition, the legislation should explicitly include technologies such as AI systems, Cybersecurity, Biotechnology, and Advanced Robotics to the core land grant mandate. And as part of this new designation, land grants wanting aid would agree to cap their non-STEM enrollment at 30 percent initially, followed by 20 percent in five years, even if that means reducing faculty in nontechnical areas and closing entire academic programs. And as a condition of receiving federal funding, the land grants should have tuition rates at least one-third lower than the state flagship universities.

The repurposed land grants should also prioritize worker upskilling, such as providing nondegree "micro-credentials" at land grants, making it easier for mid-career workers to return for six-month intensive technical "retooling" programs.

As discussed in the ITIF report in this series on reforming U.S. research funding, **agencies such as NSF and the Department of Energy that currently prioritize basic research should be required to dedicate at least 25 percent of all federal research funding given to land grants to "translational or applied" research.** And for every federal dollar given to a land grant lab, the university must secure a 20 percent match from a domestic private sector industry partner. Doing so would force faculty to work on problems that the U.S. economy actually needs solved.

As part of their mission, the repurposed land grants should also prioritize worker upskilling, such as providing nondegree "micro-credentials" at land grants, making it easier for mid-career workers to return for six-month intensive technical "retooling" programs. (See box 2.)

The "professor lobby" will oppose this with all its might, calling it an attack on academic freedom, a sellout to industry, a degradation of the liberal arts, a decline in democracy, and a transformation of universities into short-term skill mills. But let's be clear: this proposal is not to eliminate the over 4,000 private colleges in America or the 1,600 non-land-grant public universities in the nation, although the lobby will suggest that it is an existential attack.

Rather, it would be a targeted intervention to enable more students not focused on liberal arts to get a strong technical education that can lead to much higher lifetime earnings at a lower cost. It would be an intervention to support more education and research in key areas that are critical to avoiding a loss to China in national economic power industries.

Box 2: MIT's "Technologist" program

One key federal role should be to foster institutional innovation and then help to scale these innovations. There is too little innovation in the university system. And to the extent there is innovation, little of it is related to creating a national education and workforce system for economic power. And even less of that, to the extent it exists, ever goes beyond one-off pilots.

One program that should be considered for scaling is the Massachusetts Institute of Technology's (MIT's) "Technologist" project, which takes talented incumbent manufacturing workers picked by their companies and trains them into a new career path between engineer and technician, enabling them to undertake the systems approach to the factory floor required to implement advanced manufacturing technologies and processes. While community colleges and Labor Department programs reach new entrant workers, there are few programs to upskill incumbent workers—a critical need for manufacturing companies, especially small and mid-sized ones, looking to adopt advanced manufacturing processes.

MIT recently completed a two-year project funded by the War Department's Industrial Base Analysis and Sustainment (IBAS) program to develop the technologist curriculum. The curriculum is online course material from MIT faculty and other experts; online simulations from MIT, Clemson, and Ohio State; and in-person labs at the six participating community colleges/tech centers.

The challenge is to scale this initiative nationally, with virtually every technical college in the nation participating. In addition, because not every college, or even most, can afford the kinds of advanced manufacturing equipment workers will need to train on, the curriculum will have to use virtual reality applications. So far, DOW has provided two-year funding. Going forward, more funds will be needed to enable MIT, or an organization it designates, to scale this nationally. Also, ongoing funding may be needed in order to provide discounted rates for small and medium-sized enterprises that enroll their employees in this program.

Supporting the Creation of Industry-Focused and -Led Industrial Colleges

While America definitely needs more universities focused on particular industries, we do have some already. The SUNY Maritime College, which trains merchant marine officers, naval architects, and marine engineers. Students get hands-on experience on actual training ships, and the curriculum is shaped by industry needs and Coast Guard licensing requirements. Graduates move directly into shipping, naval architecture, and related maritime industries.[59]

America needs more universities focused on particular industries.

Kettering University (formerly the General Motors Institute) is built around co-op education wherein students alternate between classroom study and paid work at automotive and manufacturing companies.[60] The curriculum is explicitly designed to feed talent into the auto industry and advanced manufacturing. The Colorado School of Mines specializes in engineering and applied science for the fields of mining, energy, and earth resources. Students conduct research aligned with industry partners' needs, preparing them with the practical and technical skills needed for these fields.[61] The California Institute of the Arts outside Los Angeles, originally set up by Walt Disney, trains students in skills for the entertainment and arts industries.

One could imagine a range of such specialized teaching colleges, such as a financial services college in New York, a biomedical college in Philly, a digital skills college in Silicon Valley, and even a think tank and public policy college in DC.

To do so, **Congress should appropriate funds to the Department of Education to establish a competition to establish up to 10 industry- or technology-focused universities.**

Shifting Colleges and Universities Away From Teaching Social Sciences and Humanities to Real Capabilities Students Need for Lifelong Career Success

U.S. colleges and universities are based at their core on academics: a subdivision of knowledge that is taught and researched at the college or university level. Graduate students who are passionate about a particular topic (e.g., French history, social movements, philosophy, etc.) obtain a Ph.D. so they can have a job that lets them do research and write about their passion (and to fulfill the teaching requirements that come with that). indeed, academic research is creative and systematic work undertaken to increase the stock of knowledge. And a professor is one who teaches a branch of knowledge, especially in a university (from Old French term *professeur*).

It is time for colleges and universities to evolve toward more practical education.

But few ask whether this is the best way for students to learn what they need to succeed in the workplace. Especially in the age of AI, it is much less important what academic subjects students learn. Clearly, some students, usually more motivated students at better schools, use academic subjects to learn related skills, such as critical thinking, writing, logic, and public speaking. But most students do not—and most don't even learn that much about the academic subject they are taking classes in.

It is time for colleges and universities to evolve toward more practical education. Practical does not mean vocational, although we need more of that. Rather, we mean the opposite of theoretical, scholarly subject-based study. A pedagogy that focuses on enhancing key capabilities that can be used in a wide range of careers. These could involve skills such as basic legal theory, entrepreneurship, introductory statistics, logic and argumentation, graphic design, business writing, using AI, product and market research, public speaking and presentations, organizational behavior, and budgeting. To enable the creation of these new kinds of curricula, we will need new accreditation bodies. Current ones are designed to reinforce the scholarly approach to higher education, not practical universities. They only allow schools to be accredited that have subject matter academic degree programs with students required to major in specific disciplines (e.g., history). And to be accredited, institutions must, as one accrediting agency requires, offer "degree programs [that] include a recognizable core of general education that represents an integration of basic knowledge and methodology of the humanities and fine arts, mathematical and natural sciences, and social sciences."[62] This is why the Trump administration's efforts to reform accreditation bodies should include establishing a new kind of accreditation for practical universities.[63]

At the same time, Congress should provide the Department of Education with funds to operate a challenge grant competition wherein schools could apply to create such programs within their

institutions or create new practical colleges. And Congress should ensure that all federal student aid, including Pell Grants, can be used to support practical college education.

Supporting Expansion of Critical Technology Degree Programs

U.S. higher education does respond to new science and technology developments in terms of their undergraduate and undergraduate programs, but the response is often slow and, in part because of lack of funding, haphazard.

As part of a national economic power industry, it's not enough to just fund R&D in critical and emerging technology areas. We need to also fund curriculum development. This is what China is doing. In 2025, top universities, such as Tsinghua University, Peking University, and Shanghai Jiao Tong University, added 150 undergraduate places in emerging engineering fields such as AI, integrated circuits, and new energy. These specializations serve national strategy and align with emerging industries in many cities.[64] Congress should ensure that NSF has adequate funding to establish an annual funding program for research universities (including land grant colleges) to establish new science and technology curricula in areas of national importance.

GIFTED INDIVIDUALS

The United States needs to place much greater focus on supporting and attracting highly gifted individuals, as they play a key role in supporting innovation and competitiveness.

While it is not politically acceptable to say this, the reality is that IQ matters and, in general, having a population with a higher average IQ better supports innovation and national economic success. Research suggests that the average IQ of a scientist falls between 125 and 135, essentially 2 to 5 percent of the population. The IQ of the average physicist and mathematician is even higher.[65]

This may be why a nation's intelligence is a determinant of its economic well-being. Countries with more cognitively skilled populations tend to be more productive and better able to adopt and improve new technologies. A large body of academic research shows that higher average IQ is strongly correlated with higher gross domestic product (GDP), and several studies go further by demonstrating that higher IQ, in fact, causally leads to higher economic output.[66]

Several studies indicate that higher average IQ is not just correlated with higher GDP but also a direct cause of it.

A series of academic studies supports this relationship between intelligence and economic performance. Numerous cross-country analyses find that nations with higher average IQ scores also enjoy higher GDP per capita and better overall economic outcomes. For example, Jones and Schneider found that a one-point increase in a country's average IQ is associated with a 0.11 percent increase in GDP per capita.[67] While this effect may appear modest at first glance, even small percentage gains compound substantially over time. Corroborating this finding, Hafer showed that a one-point increase in IQ is associated with a 4 percent increase in an average nation's welfare growth.[68]

A study published by the Association for Psychological Science finds that a one-point increase in a country's average IQ is associated with a $229 increase in GDP per capita.[69] The same study

also finds that if the top 5 percent of the population were to increase their IQ by one point, GDP per capita would rise by an even larger amount, at $468, highlighting the outsized economic importance of highly skilled individuals. Other evidence further reinforces these results. A study by Kreiter and Wongupparaj finds that, over five decades, the correlation between average IQ and economic growth is 0.74, an exceptionally strong relationship by social science standards.[70]

More importantly, several studies indicate that higher average IQ is not just correlated with higher GDP but also a direct cause of it. In one influential study, Jones found that a one-point increase in IQ causes roughly a 1 percent increase in wages and a 6 percent increase in national GDP.[71] Similarly, a study by Dickerson finds that a 10-point increase in a nation's mean IQ results in the doubling of per capita GDP.[72] In other words, intelligence does not simply accompany higher living standards. It actively produces them. Nations do not become rich first and intelligent later. Higher intelligence helps nations become rich in the first place.

This has two implications for policy. The first concerns how the education system treats high-IQ students. The second is how the immigration system supports increasing the national average IQ.

Expanding Support for Gifted and Talented Students

Not only are gifted and talented students largely ignored in America—despite lip service—but, for the most part, they are discriminated against. Indeed, the biggest cardinal sin in America, especially in the last decade, is being tarred with the elitist brush. Why are you focused on helping those who are already advantaged, especially if they are white or Asian? Indeed, education for high achievers has come under attack in recent years. Gifted and talented programs have been dismantled in New York, Boston, and Virginia based on this reasoning.

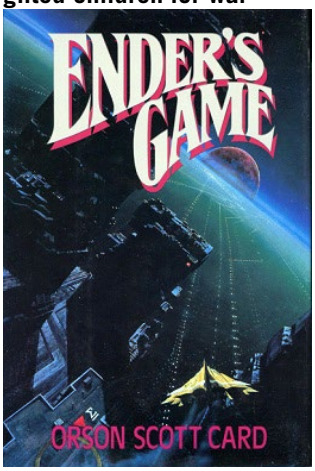
The reality is that gifted students are largely ignored, to their and the nation's detriment. Most teachers are overworked and stretched thin. When reviewing test scores, the students who get high marks aren't the ones who catch their eyes, as all programs now focus on getting low achievers up to average, which is what state testing measures. Moreover, schools get credit for moving students from "below proficient" to "proficient," but zero credit for moving already-proficient students to advanced levels. Gifted kids became invisible in the data that matters for school ratings. There's a widespread assumption that bright kids will be fine on their own, so resources should go to struggling students instead.

Not only are gifted and talented students largely ignored in America—despite lip service—but, for the most part, they are discriminated against.

Without proper challenge and pedagogy, many gifted students learn to underachieve in school, expending minimal effort and never learning to work.[73] For example, a study in Florida finds that disadvantaged boys accepted into a gifted student program in the fifth grade (with an IQ of 116 or higher) were significantly more likely to enroll in college on time compared with their peers with IQs just below 116 who were not admitted into the program. Specifically, boys in the gifted program had a 74 percent on-time college enrollment rate, compared with just 47 percent for those who missed out on the program. Entry into the program also closes the gender gap for boys and girls of similar IQs, with on-time college entry rates for students in the program reaching about 75 percent for both genders.[74]

The students who have the potential to contribute the most to the nation's techno-economic war with China are being underdeveloped. In his novel *Ender's Game,* science fiction writer Orson Scott Card depicted a world in which humanity is facing its third war with an alien race, and the only way to survive it is for the space military force to identify the gifted children best suited to becoming commanders at their orbiting battle school.

***Ender's Game*: recruiting gifted children for war**



We need to start thinking in a similar way with regard to gifted students. No gifted student of any race or family income should be stuck in a regular school program if they and their family do not want them to be. They should be able to receive the kind of advanced education that suits their interests and capabilities.

Other nations that see themselves in intense global competition treat their gifted young people as a valuable national resource. For example, Singapore's Gifted Education Programme (GEP) systematically identifies the top 1 percent of students in each academic year for entry into it. There are dedicated schools with enriched curricula that cover the same content areas as mainstream schools, but that content is extended in breadth and depth. Students learn skills for independent inquiry and are encouraged to do explorations of self-selected areas of interest. Students attend nine dedicated GEP primary schools nationwide; however, the program is expanding in 2027 to serve a broader, but still small, group of students.[75]

Israel, South Korea, and Taiwan have similar initiatives.[76] South Korea operates eight schools for scientifically gifted students.[77] Seoul Science High School accepts only the top 0.01 percent of middle school graduates.[78] China now runs a special program to find 100,000 top high school students from across the country every year. They train these students to compete in math Olympiads and other major international math and science competitions.[79]

Unfortunately, in the United States, there's no federal requirement to fund gifted programs, and only 32 states provide any additional funding for gifted students, with only 4 states fully funding these needs.[80] The federal government's Jacob K. Javits Gifted and Talented Education program provides just $12 million annually, which translates to only $2.50 to $4 per gifted student nationally.[81]

Federal policy should treat giftedness as it does disabilities, requiring states and school districts to test for it and provide appropriate learning environments, ideally by creating new schools for gifted students. As a start, Congress should expand funding for the Javits program to at least $100 million annually. This would help identify a broader range of gifted students. For example, when one Florida district switched to universal screening for giftedness, identification rates for Black and Latino students jumped 74 percent and 118 percent, respectively.[82] Those states that do not do that should be subject to reduced federal education funding.

Creating "Intelligence Visas" to Attract the Best and Brightest Immigrants

High intelligence is a scarce factor of production. The distribution of IQs in the population is on a bell curve, so 16 percent of people are at or above one standard deviation from the mean (that is, above 115, with 100 being average), and just 2 percent are gifted at 130 or above. That

means there are around 34 million working-age Americans above 115, and 4 million above 130. Contrast that to the rest of the world, which has 846 million above 115 and 106 million above 130.

To assume that IQ doesn't matter and that education and training can make up for societal IQ deficits is simply not borne out by logic or facts. As noted, on average, scientists are extremely intelligent. Graduating a lot more scientists with average IQs would not likely do much to advance U.S. techno-innovation cutting-edge capabilities. Attracting more truly intelligent people to America would. It is clearly in the interest of the United States to have more of this factor in production. And the easiest way to do this is to change the immigration system.

High intelligence is a scarce factor of production.

We already have immigration provisions that work in this direction. The O-1A visa is for the individual who possesses extraordinary ability in the sciences, arts, education, business, or athletics. The EB-1 visa is, in theory, reserved for people who are highly acclaimed in their field—the government cites Pulitzer, Oscar, and Olympic winners as examples—as well as respected academic researchers and multinational executives.

While there is no limit to O-1A visas, their numbers are quite small: around 9,500 in 2023. And the reason is that the qualifications for approval are quite strict, focusing more on achievement than on capabilities.[83] **Congress should reform the O-1A visa to allow applicants to qualify if they meet one of the eight possible requirements (instead of three).** These visas should automatically transition to a green card after two years (assuming the individual has obeyed the law). In addition, **applicants should qualify if they are in the top 1 percent of international SAT test takers in the math section and in the top 5 percent in the reading and writing portions.**

BARRIERS TO CHANGE

There will be significant resistance to many of these proposals, some based on inertia and preference based on the status quo; others based on self-interest. Change will be hardest at the university level because it has become an interlocking system that makes any real change extremely difficult. Accreditation bodies are run by academics. Universities are run by academics. Individuals get Ph.D.s so they can spend their life studying something that interests them (or to indoctrinate students in their policies), so they need a place that pays them to do this. In other words, higher education is in many ways a professional guild that maintains itself.

Change will be hardest at the university level because it has become an interlocking system that makes any real change extremely difficult.

Nonetheless, the criticisms of higher ed have been mounting, including massive student debt and poor performance, so it's worth trying real reform.

One criticism of these proposals is that, if Implemented, they will result in fewer humanities and social science professors and a concomitant reduction in scholarly research in these areas. That is most assuredly the case. But it's important to note that the reforms here would not eliminate these fields but only shrink them. And when you look at the bibliometric data, it's pretty clear

that this would have a minimal impact—if that—on knowledge production. For example, roughly 82 percent of humanities articles are never cited in the first five years after publication. In the social sciences, the uncited share is lower but still substantial: estimates range from 30–60 percent depending on field and time window. There is no reason why the scholarly labor market should not perform well with the decline in faculty slots for humanities and social scientists coming from the least productive and original scholars.

CONCLUSION

There is perhaps no area of policy where the narrative around the need for change so vastly outweighs actual change than education and training. To be sure, there are excellent initiatives at all levels in many parts of the country. But a national economic power industry system they do not make.

It is time for the federal government to take more seriously the creation of an education and skills system that is vastly better than the current one and that becomes an integral part of a national economic power industry strategy.

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ENDNOTES

1. Robert D. Atkinson, "Marshaling National Power Industries to Preserve America's Strength and Thwart China's Bid for Global Dominance" (ITIF, November 2025), https://itif.org/publications/2025/11/17/marshaling-national-power-industries-to-preserve-us-strength-and-thwart-china/.
2. Ibid.
3. Robert D. Atkinson, "Mobilizing for Techno-Economic War, Part 3: Transforming Financial Capitalism Into National Power Capitalism" (ITIF, April 2026), https://itif.org/publications/2026/04/13/mobilizing-for-techno-economic-war-part-3-national-power-capitalism/.
4. This section builds off prior work for ITIF by Tim McDonald and Ted Kolderie. Tim McDonald and Ted Kolderie, "The Role of Information Technology in Creating New Kinds of American High Schools" (ITIF, July 2009), https://itif.org/publications/2009/07/16/role-information-technology-creating-new-kinds-american-high-schools/.
5. C. Kirabo Jackson et al., "The Effects of School Spending on Education and Economic Outcomes: Evidence from School Finance Reforms" (working paper 20847, National Bureau of Economic Research, Cambridge, Massachusetts), https://www.nber.org/system/files/working_papers/w20847/w20847.pdf; Catrin Wigfall, "Study Finds Weak Relationship Between Spending and Academic Outcomes," *American Experiment*, November 2025, https://www.americanexperiment.org/study-finds-weak-relationship-between-spending-and-academic-outcomes/
6. Florence Khitsane, "Homework Statistics 2026: Trends, Time Spent, and Learning Impact," *Brighterly*, January 2026), https://brighterly.com/blog/homework-statistics/.
7. Emma Kate Fittes, "Student Engagement in Learning Is Low. A Survey Offers Clues on How to Bring Them Back," EdWeek Market Brief, October 2024, https://marketbrief.edweek.org/meeting-district-needs/student-engagement-in-learning-is-low-a-survey-offers-clues-on-how-to-bring-them-back/2024/10.
8. Ibid.
9. The Nobel Prize (@NobelPrize), "Right now I think too much of our education is focused on memorising facts and not enough on the exploratory process of science," said 2006 medicine laureate Craig Mello…" X, February 3, 2026, https://x.com/NobelPrize/status/2018699526614196293.
10. "Learn You Way," https://learnyourway.withgoogle.com/.
11. "Credit Requirements for High School Graduation in Maryland for Students Who Entered 9th Grade in SY2021-2022 or Thereafter," Maryland State Department of Education, https://marylandpublicschools.org/about/Documents/DSFSS/SSSP/SchoolCounseling/HSGradCreditRequirements_2021Thereafter.pdf.
12. Rena F. Subotnik et al., "Study of the Impact of Selective SMT High Schools: Reflections on Learners Gifted and Motivated in Science and Mathematics" (paper presented at the National Research Council's Workshop on Successful STEM Education in K–12 Schools, Washington DC, May 10–12, 2011), https://sites.nationalacademies.org/cs/groups/dbassesite/documents/webpage/dbasse_072643.pdf.
13. "Welcome to Successful STEM Education," Successful STEM Education, accessed February 2026, https://successfulstemeducation.org/index.php/. Just one example of what must be hundreds of initiatives.

14. Anna Aldric, "Average SAT Scores Over Time: 1972-2024," PrepScholar, https://blog.prepscholar.com/average-sat-scores-over-time.
15. National Center for Education Statistics (Table 318.45, Number and percentage distribution of science, technology, engineering, and mathematics (STEM) degrees/certificates conferred by postsecondary institutions, by race/ethnicity, level of degree/certificate, and sex of student: Academic years 2012–2013 through 2021–2022), accessed February 9, 2026, https://nces.ed.gov/programs/digest/d23/tables/dt23_318.45.asp.
16. "CAT Program Progression," Lakewood High School, accessed February 9, 2026, https://resources.finalsite.net/images/v1760123420/pcsborg/w6i496lpctrisxmzjvsd/catprogramprogression.pdf.
17. "Home," ASMSA Course Catalog, accessed February 6, 2026, https://catalog.asmsa.org/home.
18. "Research," South Carolina Governor's School for Science and Mathematics, accessed February 2026, https://www.scgssm.org/research.
19. National Research Council, *Successful STEM Education: A Workshop Summary* (Washington DC: The National Academies Press).
20. Subotnik et al., "Study of the Impact of Selective SMT High Schools: Reflections on Learners Gifted and Motivated in Science and Mathematics."
21. Jessica Winter, "New York City's Gifted Problem," *The New Yorker,* February 2026, https://www.newyorker.com/news/the-lede/new-york-citys-gifted-problem.
22. "Maker Space and Machinery (Fabrication Lab)" (DC Public Library: Using the Library), https://www.dclibrary.org/using-the-library/maker-space-and-machinery-fabrication-lab.
23. "Educating Tomorrow's Workforce" (Stem+M), https://stem-m.com/.
24. See "Engineering by Design (ITEEA), https://www.iteea.org/engineering-bydesign and also "Workforce Development for K-12" (Milestone C) https://www.milestonec.com/.
25. Annabelle Smith, "Futuristic factory floors, robotic arms and very different type of lessons: The rise of school trips to factories and 'classrooms on the factory floor' in China," *The Daily Mail,* February 2026, https://www.dailymail.co.uk/news/article-15506523/Futuristic-factory-floors-robotic-arms-different-type-lessons-rise-school-trips-factories-classrooms-factory-floor-China.html.
26. "The Cardinal Story" (Cardinal Manufacturing) https://www.cardinalmanufacturing.org/.
27. Michael Lind, "Why bad jobs are the root of America's problems," *The Spectator*, May 1, 2023, https://spectator.com/article/why-bad-jobs-are-the-root-of-americas-problems/.
28. Elizabeth Redden, "41% of Recent Grads Work in Jobs Not Requiring a Degree," *Inside Higher Ed*, February 2020, https://www.insidehighered.com/quicktakes/2020/02/18/41-recent-grads-work-jobs-not-requiring-degree.
29. Michael Lind, "Who Should Pay for College?" *Tablet*, June 2021, https://www.tabletmag.com/sections/news/articles/hamburger-college-michael-lind.
30. Based on the American Academy of Arts and Sciences' *Humanities Indicators* project, which estimated that there were 5.6 million undergraduate enrollments in humanities courses across U.S. institutions in the Fall 2023 semester.
31. This is a very rough estimate based 700,000 undergraduate engineering students enrolled at any given time and engineering undergrads typically carrying four courses per semester. That yields roughly 6 million undergraduate engineering course-seat registrations per year.
32. Kevin Gray, "The Gap in Perceptions of New Grads' Competency Proficiency and Resources to Shrink It" (National Academy of Colleges and Employers, January 2025), https://www.naceweb.org/career-

readiness/competencies/the-gap-in-perceptions-of-new-grads-competency-proficiency-and-resources-to-shrink-it.

33. "Specialized STEM Secondary Schools," National Science Foundation, 2011, https://successfulstemeducation.org/resources/specialized-stem-secondary-schools.
34. Thomas K. Lindsay, "Combating the 'Other' Inflation: Arresting the Cancer of College Grade Inflation" (Texas Public Policy Foundation, August 2014), https://www.texaspolicy.com/wp-content/uploads/2018/08/2014-08-RR04-GradeInflation-CHE-TomLindsay-post.pdf.
35. Philip S. Babcock and Mindy Marks, "The Falling Time Cost of College Evidence From Half a Century of Time Use Data" (working paper 15954, National Bureau of Economic Research, Cambridge, Massachusetts), https://www.nber.org/system/files/working_papers/w15954/w15954.pdf.
36. Richard Arum and Josipa Roksa, "Your So-Called Education," *The New York Times*, May 2011, http://www.nytimes.com/2011/05/15/opinion/15arum.html.
37. National Center for Education Statistics, National Assessment of Adult Literacy (Prose literacy by education attainment: 2003), accessed February 2026, https://nces.ed.gov/naal/kf_dem_edu.asp.
38. Richard Arum and Josipa Roksa, *Academically Adrift: Limited Learning on College Campuses* (Chicago: University of Chicago Press, 2011).
39. Paul Fain, "A Troubling Lack of Skills in Literacy and Numeracy" (Open Campus, June 2021), https://www.opencampus.org/2021/06/10/a-troubling-lack-of-skills-in-literacy-and-numeracy/.
40. Doug Lederman, "Graduated by Not Literate," *Inside Higher Ed*, December 2005, https://www.insidehighered.com/news/2005/12/16/graduated-not-literate.
41. American Institutes for Research, "New Study of the Literacy of College Students Finds Some Are Graduating With Only Basic Skills" (news release, January 2006), https://www.air.org/news/press-release/new-study-literacy-college-students-finds-some-are-graduating-only-basic-skills.
42. Laura L. Behling, "Liberal Arts Colleges and the Spellings Commission: Carpe Diem," Wabash, November 2006, https://www.wabash.edu/news/story/4079.
43. Cengage Group, "Cengage Group's 2025 Employability Report Reveals Growing Gap Between Education and Employment" (news release, September 2025), https://www.cengagegroup.com/news/press-releases/2025/cengage-group-2025-employability-report/.
44. "Academic Fraud at UNC" (The Drake Group Education Fund), accessed February 2026, https://www.thedrakegroupeducationfund.org/2022/06/17/academic-fraud-at-unc/.
45. "The State of Skills-Based Hiring 2025" (Test Gorilla), https://www.testgorilla.com/skills-based-hiring/state-of-skills-based-hiring-2025/#sbhr-section-container-0.
46. The Interview Guys, "The State of Skills-Based Hiring in 2025: 85% of Companies Claim It, But Only 1 in 700 Hires Are Actually Affected – A Comprehensive Research Report," *The Interview Guys blog*, December 2025, https://blog.theinterviewguys.com/the-state-of-skills-based-hiring/.
47. Ibid.
48. Vince Haley, Assistant to the President for Domestic Policy Charles Ezell, Acting Director, U.S. Office of Personnel Management, "Merit Hiring Plan" (US Office of Personnel management Memorandum, May 2025), https://www.opm.gov/chcoc/latest-memos/merit-hiring-plan.pdf.
49. "National Survey of Student Engagement" (Center for Postsecondary Research, Indiana University School of Education), accessed February 2026, https://nsse.indiana.edu/nsse/index.html.
50. Melanie Hanson, "College Enrollment & Student Demographic Statistics" (Education Data Initiative, March 2025), https://educationdata.org/college-enrollment-statistics.
51. Cengage Group, "Cengage Group's 2025 Employability Report Reveals Growing Gap Between Education and Employment."

52. “Value and Impact,” Polytechnics Canada, accessed February 2026, https://polytechnicscanada.ca/.
53. “Out Members,” Polytechnics Canada, accessed February 2026, https://polytechnicscanada.ca/polytechnic-education/our-members/.
54 “Polytechnics and the Future of Work,” Polytechnics Canada, accessed February 2026, https://polytechnicscanada.ca/resources/best-practices/polytechnics-the-future-of-work/.
55. Siska Lyssens and Deon Foster, “5 Ways President John Hannah Transformed MSU,” *MSU Today*, October 2025, https://msutoday.msu.edu/news/2025/10/5-ways-john-hannah-transformed-msu.
56. “Academic Programs Catalog,” Michigan State University, accessed February 2026, https://reg.msu.edu/academicprograms/Print.aspx?Section=110; “Majors at U-M Plus Academic Programs & Fields of Study,” College Factual, accessed February 2026, https://www.collegefactual.com/colleges/university-of-michigan-ann-arbor/academic-life/academic-majors/.
57. U.S. Department of Agriculture, National Institute of Food and Agriculture, “History,” accessed February 2026, https://www.nifa.usda.gov/about-nifa/who-we-are/history.
58. A second Morrill Act was passed in 1890, aimed at the former Confederate states; “Confederate States of America,” *Wikipedia*, last modified February 9, 2026, https://en.wikipedia.org/wiki/Confederate_States_of_America.
59. “SUNY Maritime College,” accessed February 2026, https://www.sunymaritime.edu/.
60. “Kettering University,” accessed February 2026, https://www.kettering.edu/.
61. Jasmine Leonas, “Colorado School of Mines Named Career Connected Campus,” *Mines Newsroom*, November 2024, https://www.minesnewsroom.com/news/colorado-school-mines-named-career-connected-campus.
62. “2010 Eligibility Requirements and Standards,” Northwest Commission on Colleges and Universities, https://nwccu.app.box.com/s/yswh4gnmwqsw8j8xdlqf40rc5vomfe60.
63. Department of Education “Intent To Establish Negotiated Rulemaking Committee” (proposed rule by Department of Education, 34 CFR Chapter VI, January 2026), https://www.federalregister.gov/documents/2026/01/27/2026-01620/intent-to-establish-negotiated-rulemaking-committee.
64. “China Policy leads: Analysis,” Substack, chinapolicy+briefs@substack.com, https://chinapolicy.substack.com/s/briefs?utm_source=substack&utm_medium=menu.
65. Edward Dutton and Richard Lynn, “Intelligence and Religious and Political Differences Among Members of the U.S. Academic Elite,” *Interdisciplinary Journal of Research on Religion* (Vol 10, 2014, Article 1), https://ijrr.web.baylor.edu/sites/g/files/ecbvkj2171/files/2026-03/ijrr10001.pdf.
66. Brian Wang, “Public health and nutrition determines a lot of per capita IQ which determines a lot of per capita GDP” (Next Big Future, March 2011), https://www.nextbigfuture.com/2011/03/iq-correlation-with-per-capita-gdp-and.html.
67. Garett Jones and W. Joel Schneider, “Intelligence, Human Capital, and Economic Growth: A Bayesian Averaging of Classical Estimates (BACE) Approach,” *Journal of Economic Growth,* March 2006, https://mason.gmu.edu/~gjonesb/JonesSchneIQ.
68. R. W. Hafer, “New Estimates on the Relationship Between IQ, Economic Growth and Welfare,” *Intelligence* (vol. 61, 2017), 92–101, https://www.sciencedirect.com/science/article/abs/pii/S016028961630318X.
69. Ashirafu Shekoloa, “Are the Wealthiest Countries the Smartest Countries?” (Association for Psychological Science, March 2011), https://www.sciencedirect.com/science/article/abs/pii/S016028961630318X.

70. Clarence D. Kreiter et al., "Investigating the Relationship Between National Wealth and National IQ" (working paper, January 2026), https://www.preprints.org/frontend/manuscript/18cec2d9827e40a74e89202c603d6e3b/download_pub.
71. "Hive Mind: How Your Nation's IQ Matters So Much More Than Your Own. Interview with Garett Jones," *Institut Ostrom,* September 2018, https://www.institutostrom.org/en/2018/09/09/hive-mind-how-your-nations-iq-matters-so-much-more-than-your-own-interview-with-garett-jones/.
72. Richard E. Dickerson, "Exponential Correlation of IQ and the Wealth of Nations," *Intelligence* (vol. 34, no. 3, 2006) 291–295, https://www.sciencedirect.com/science/article/abs/pii/S0160289605001078.
73. "About NAGC," National Association for Gifted Children, accessed February 2026, https://www.nagc.org/.
74. David Card et al., "Can Gifted Education Help Higher-Ability Boys From Disadvantaged Backgrounds?" (working paper 33282, National Bureau of Economic Research, Cambridge, Massachusetts), https://www.nber.org/papers/w33282.
75. Ministry of Education Singapore, "Gifted Education Programme," last modified January 2026, https://www.moe.gov.sg/education-in-sg/our-programmes/gifted-education.
76. "Grants for Gifted Students" (Davidson Institute, June 2024), https://www.davidsongifted.org/gifted-blog/grants-for-gifted-students/.
77. Lee Euna, "There Are Eight Gifted Schools (Gifted High School) Nationwide That Were Established…" *Maeil Business Newspaper,* October 2025, https://www.mk.co.kr/en/columnists/11443008.
78. Naureen Ghani, "The South Korean Elite: Teaching and Learning at Seoul Science High School" (PLOS Blogs, January 2018), https://ecrcommunity.plos.org/2018/01/30/the-south-korean-elite-teaching-and-learning-at-seoul-science-high-school/.
79. Kyle Chan (@kyleichan), "I can already tell this will be one of the best articles I read for all of 2026…" X, January 31, 2026, https://x.com/kyleichan/status/2017808015945064542?s=51.
80. Michael Griffith, "Do We Really Need to Fund Gifted Programs?" (Education Commission of the States, May 2016), https://www.ecs.org/do-we-really-need-to-fund-gifted-programs/.
81. Ibid.
82. Scott J. Peters et al., "Gifted Education Advances School Integration and Equity" (Kappan, October 2023), https://kappanonline.org/gifted-education-integration-equity-peters-makel-carter/.
83. Applicants must meet at least three of these qualifications: nationally or internationally recognized prizes/awards for excellence; membership in associations that require outstanding achievements; published material about you in professional or major trade publications; participation as a judge of the work of others in your field; original scientific, scholarly, or business-related contributions of major significance; authorship of scholarly articles in professional journals or major media; employment in a critical or essential capacity for organizations with a distinguished reputation; or a high salary or other remuneration for services.