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U.S. EDUCATION

# China's Universities Rise in World Rankings as American Schools Continue to Falter

Fewer U.S. universities rank in the top 100, while China's schools produce more high-quality research than ever

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The U.S.'s pre-eminence among the world's top research universities continues to diminish, according to a new global ranking, while Chinese universities are on the rise, producing a greater quantity and higher quality of research than ever before.

This year's World University Rankings, released Tuesday by Times Higher Education, a British publication that tracks education, also named University of Oxford in England the world's leading research university for the seventh straight year.

The U.S. and U.K. continue to dominate the upper echelon of the rankings, with the U.S. taking seven of the top 10 slots and Britain three. Oxford is followed by Harvard University, University of Cambridge, Stanford University, Massachusetts Institute of Technology, California Institute of Technology, Princeton University, University of California, Berkeley, Yale University and Imperial College London.

But among the top 100 universities, the number of those in the U.S. fell to 34 from 43 between 2018 and this year. The number of Chinese universities in the top 100 increased from two to seven.

"The data is very clear: America can no longer take for granted its decadeslong dominance of world higher education and research, and it is China that is leading the challenge," said Phil Baty, the rankings editor. "If current trends remained the same, we would see China overtaking the U.S. in the coming years."

The number of Chinese scholarly publications has been growing steadily since the mid-1990s, but as recently as this year it was widely believed in the Western academic

community that the quality of Chinese scholarship still lagged behind Western nations.

Then a paper published this spring in the journal *Scientometrics*, which studies the quantitative features and characteristics of science and scientific research, found that China has overtaken the U.S. as the world leader in scientific research output of “high impact” studies.



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“It was a real surprise,” said Caroline Wagner, co-author of the paper and a professor at The Ohio State University, who conducts research about science and technology and its relationship to policy.

Not only was China producing more research than the U.S. and Europe overall but a higher percentage of that research was among the top 1% of papers most cited globally. Dr. Wagner and her colleagues found that China surpassed Europe in high-quality research in 2015 and the U.S. in 2019.

“The work coming out of China is getting better,” said Dr. Wagner. “We are now seeing China able to produce that kind of quality work and they are doing it at scale.”

China's research was concentrated in materials science, chemistry, engineering and mathematics, while U.S. researchers were more prolific in research into clinical medicine, basic life sciences and physics, Dr. Wagner said.



Among the highest-ranked universities in the world, outside the U.K. and the U.S., is Tsinghua University in Beijing.  
PHOTO: JU HUANZONG/ZUMA PRESS

In 2021, American research and development fell to a 70-year low as a percentage of the federal budget, according to federal data. The decline caused a sustained outcry from groups such as the Association of American Universities, a consortium of 65 leading research universities, which advocates for more research funding.

“The U.S. cannot take our competitive edge for granted,” said Barbara Snyder, president of the AAU. “The rest of the world is not standing still.”

In August President Biden authorized tens of billions of dollars to support federal research and development and regional technology startups when he signed the Chips and Science Act, which aims to spur construction of factories that produce microchips. The administration is pushing for more advances in fields such as commercial computing and artificial intelligence.

China spent \$526 billion on research and development in 2019, according to data from the National Science Foundation. It was still lagging behind the U.S., where R&D expenditure totaled \$656 billion, but China has been closing the gap, increasing its spending by an average of 10.6% annually from 2010 to 2019.

China also increased its share of international patents to 49% in 2020, up from 16% a decade earlier, while the U.S. share declined from 15% to 10% in the same period, according to data from the National Science Foundation.

Though China has nearly 3,000 universities, only the very top tier is world class, said Denis

Simon, a professor of China Business and Technology at Duke's Fuqua School of Business.

“China is a rising star, there is very little difference between an engineer trained at Tsinghua University and an engineer trained at MIT,” Dr. Simon said. “The problem for China is there is a tremendous falloff. In the U.S. the top 300 universities are pretty good. In China, after the top 50 the falloff is very significant. China doesn't have a lot of bench strength if you're not at the top universities.”

The highest-ranked universities in the world not located in the U.K. or the U.S. are ETH Zurich, at No. 11, Tsinghua University, China (16), Peking University, China (17), University of Toronto (18), National University of Singapore (19), Technical University Munich (30) and University of Hong Kong (31).

To put together the World University Rankings, Times Higher Education analyzes 15.5 million research publications and 121 million citations to those publications, plus over 40,000 responses to an annual academic reputation survey and hundreds of thousands of additional data points covering a university's teaching environment, international outlook and industry links.

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