



STEM researchers from countries of concern

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Key points

- Quad countries must be open to all foreign science, technology, engineering and mathematics (STEM) researchers who share our fundamental values.
- Excluding, or tightly screening, every STEM researcher from countries of concern has questionable efficacy and is likely to be counterproductive.
- It is unfeasible to exclude all Chinese STEM scholars from all Quad nation research institutions.
- Policies aimed at preventing the outflow of technology should be complemented by visa policies that encourage inflows.

Policy recommendations

- Quad countries should issue special STEM visas to students from countries of concern who demonstrate high research ability via an endorsement system tied to specific laboratories.
- STEM visa holders should receive government scholarships provided they regularly report their activities on threat of deportation.
- STEM visa holders who have successfully conducted research and demonstrated their trustworthiness should receive special commendations.

Policy outcomes for STEM researchers from countries of concern

Preventing espionage involving STEM scholars from countries of concern, while still welcoming students from such countries, is proving a vexatious policy challenge.

The United States

The United States Department of Justice adopted the 'China Initiative' from 2018 to 2022 to curtail the outflow of cutting-edge technology. However, neither economic espionage nor the theft of trade secrets was discovered as a result of this policy. Even in the highest-profile case, Professor Charles Lieber was found guilty only of making false statements to federal authorities and violating income tax law. Having previously given Dr Lieber federal funding of around US\$15 million, it would appear US authorities squandered the fruits of their efforts. Moreover, it cannot be said that the China Initiative has raised the level of advanced technology in the US.

Australia

In Australia, many STEM students from countries including China, Iran, India, and Pakistan have faced arduous visa background checks, leading to unreasonable delays. The biggest impact has been on the largest demographic. Chinese student arrivals in Australia have fallen by over a quarter since 2019, with some students opting to apply to countries with less stringent oversight. Another outcome was Chinese scholars continuing their Australian courses online. That was until January 2023, when Beijing abruptly announced it would no longer recognise remote

learning certification from foreign institutions. While Canberra has worked on streamlining its visa processing system, the lag for post-graduate STEM students is still being felt.

Japan

It is even more difficult for Japan to be effective in implementing policies that exclude Chinese researchers.

Demand for Chinese STEM researchers

In the research field, there are strong voices saying that it is difficult to maintain the level of research without Chinese students. My institution has many cutting-edge researchers in various fields, and when I ask my colleagues, the general response is that it is out of the question to exclude Chinese students based on their nationality. This is because the majority of foreign students in Japan are from China and other Asian countries.

Risks of information leakage

Even if there were no Chinese nationals and students in Japan, the leakage of information from Japanese nationals and researchers could not be avoided. The Communist Party of Japan remains a political group whose influence on university researchers cannot be ignored. Some Chinese influence operations can be seen, including propaganda activities undertaken on behalf of Beijing.

Inadequacy of Japanese law

The Japanese legal system for preventing technology leaks is weak. There is no anti-espionage act in Japan, nor any system for registering agents working for foreign governments. While a secret patent system was established in last year's *Economic Security Promotion Act*, it is still in the preparatory stage.

The only legal instrument that can be used is the *Foreign Exchange and Foreign Trade Act*. It stipulates that the export of technology that “*would hinder the maintenance of international peace and security*” requires Ministerial approval. That being the Minister of Economy, Trade and Industry (METI).

A major loophole in this regulation was closed in May 2022. This allowed for the leaking of technology to a person residing in Japan. The new ruling states that “*a person under the control of a foreign government*” is considered a “*non-resident*” even if they reside in Japan. However, it is very difficult to determine which Chinese students are “*under the control of a foreign government*”.

Alternative approach

Realities of Chinese scholars

We believe that it is critical for Quad countries to be as open as possible to such students who share our values, as their contributions to STEM research are invaluable. There is a segment of the Chinese population that does not like the Xi Jinping administration. Many Chinese who study abroad are independent-minded, freedom-loving, believe in the value of democracy, and understand the importance of the rule of law. As products of the ‘one-child policy’, many are deeply cherished by both parents *and* grandparents who are nevertheless willing to send them to a country they may never have seen before.

In my own institution, there is a significant proportion of Chinese students that are already fully integrated into our society. They studied at Japanese high schools, learned Japanese, and passed university entrance exams.

Policy proposals

This small sample highlights the fundamental challenges faced by all research institutions in Quad countries. Based on this, we recommend a policy that is geared toward promoting technology inflows, as well as preventing outflows.

- Special STEM visas should be issued to students who have demonstrated high research ability through papers and other means. Experts in the relevant field would judge the students' abilities and, having endorsed them, would accept the student at his or her laboratory.
- STEM visa holders would receive a generous scholarship from the host government for living expenses and research. In return for this they would regularly report on their activities to the host government (for example, every three months).
- STEM visa holders who did not meet these requirements should be deported immediately.
- STEM visa holders who have demonstrated trustworthiness and successfully conducted research should be receive an official commendation from the host government.

Conclusion

Policies that aim to exclude or tightly screen STEM researchers from countries of concern such as China are proving ineffective and impractical. A significant proportion of researchers are not ideologues and make invaluable research contributions. A complementary, inclusionary approach is therefore required. I propose a special STEM visa system that would enable outstanding researchers to research and then work in all countries that share the values of freedom, democracy, and the rule of law.



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About this paper

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About the Quad Tech Network

The Quad Tech Network (QTN) is an initiative of the NSC, delivered with support from the Australian Government. It aims to establish and deepen academic and official networks linking the Quad nations – Australia, India, Japan, and the United States – in relation to the most pressing technology issues affecting the future security and prosperity of the Indo-Pacific.

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