

Curriculum change halved girls studying computing

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The number of girls in England taking a GCSE in computing has more than halved since 2015, which could lead to continued male dominance of the digital space and harm the UK's aim to be a technology

"superpower," researchers warn today.

In 2015, 43% of those who took the GCSE in ICT were girls. But last year just 21% taking the newer GCSE Computer Science in 2023 were girls.

The research was led by King's College London, in partnership with Professor Billy Wong at the University of Reading.

Professor Wong said, "The changes made to the secondary [school](#) computer [science](#) curriculum have only served to reduce the potential for equity between genders. In addition, girls are particularly affected by gender disparities, teacher dissatisfaction, negative stereotypes, and outdated policies.

"There is also a serious lack of visible role models for girls in computer science. When we asked pupils to name famous computing people, male tech entrepreneurs such as Bill Gates and Mark Zuckerberg were mentioned frequently. Only two women—Grace Hopper and Ada Lovelace—both of whom are long deceased, featured in the pupils' top 10.

"Our previous research also showed that the GCSE computer science curriculum does not cater to the interests of girls and their potential careers. It clearly isn't working and must be overhauled, with equity in mind."

Of the girls who did not take the GCSE, 74% said that they didn't expect to enjoy the curriculum. Girls tend to be significantly more interested in topics such as [digital media](#) and project work, which was included in the old ICT curriculum but is extremely limited in the new Computer Science curriculum.

To ensure computing is a subject that appeals to more young people the authors make a set of recommendations including the urgent need for curriculum reform, improving support for computing teachers and changing the current narrative around computing to focus beyond male tech entrepreneurs.

They point out that a wider range of digital skills are vital for individuals to participate in modern society and will be needed if the UK is to realize its aim to become a "science and technology superpower."

Principal investigator Dr. Peter Kemp, Senior Lecturer in Computing Education at King's College London, said, "It is imperative that we see action to encourage more girls to take computing at school so they can develop the digital skills they will need to be able to participate in and shape our world.

"The current GCSE is focused on computer science and developing programming skills, and this seems to deter some young people, in particular girls, from taking up the subject. We need to ensure computing is a subject that is appealing to all pupils and meets the needs of young people and society."

The Subject Choice, Attainment and Representation in Computing project (SCARI) surveyed of almost 5,000 students. There were also interviews with 45 stakeholders, including teachers and school leaders. Nine-hundred sixty school documents were analyzed, as well. This revealed that many teachers and senior school leaders were dissatisfied with the new GCSE Computer Science specification and felt unprepared to teach it.

The teachers called for better access to continuous professional development, especially around ensuring equality, diversity and inclusion, as well as subject-specific training.

Pete Dring, Head of Computing, Fulford School, York, said, "Every student should be leaving school with the digital skills required to thrive in the workplace and society. We need to reform the curriculum to include a comprehensive computing GCSE that provides essential skills and knowledge beyond just [computer](#) science."

To encourage more girls to take computing and to give all [young people](#) access to better digital skills, the report recommends:

- reforming the computing curriculum with a focus on broader digital skills
- promoting and enhancing teaching training and professional development
- supporting inclusive computing education in schools
- reframing the computing narrative
- showcasing diverse digital opportunities
- increasing access to out of school digital making.

The authors call for a concerted commitment from policymakers, educators, business and other relevant parties. Otherwise, they warn: "The lack of women in computing may lead to heightened vulnerabilities and the dominance of men in shaping the modern world."

Dr. Emily Tanner, Programme Head at the Nuffield Foundation, said, "This report demonstrates that changes are needed to ensure that girls have equal access to the digital and technological jobs of the future. Stronger links between employers and educators would help the [curriculum](#) keep pace with rapid changes in the labor market."

Provided by University of Reading

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