

Research synthesis summary:

Improving the take-up of science and technology subjects in schools and colleges



What does current academic literature indicate are good classroom practices to encourage secondary students studying science, technology, engineering and maths (STEM)? What are the gaps in knowledge in this area?

A new review commissioned by the Economic and Social Research Council (ESRC) and the Department for Children, Schools and Families addresses these questions by reviewing what is currently known about teaching practices, types of initiatives which are available and what impact they are having.

Key findings:

- Much literature exists surrounding young people's views and attitudes towards science, and it has been shown that the final years of primary school form the critical points of decline
- Gender differences can impact take up of STEM subjects; there are distinct attitudinal differences between men and women, and there are stereotypes of the type of people who follow a science career which has an impact on the number of women who study it – eg physics
- The home and school environment can influence girls' visions of their role in society as well as their levels of assertiveness, experimentation, self-motivated exploration and risk taking; all of which can affect their choice of subjects at school
- The number of women reaching high level positions in science is much lower than expected
- Research has highlighted that there are specific policy gaps such as initiatives targeted at encouraging women and ethnic minorities into STEM.

Moving forward:

Knowledge gaps:

- The impact of improving take up, performance and achievement in STEM subjects has not been fully investigated
- While there have been many schemes created to help increase student numbers in STEM subjects, there has not been a major study or survey of the school and students who have participated in them, looking at the longer term impact the schemes have

For further information on the report:

Improving the take-up of science and technology subjects in schools and colleges

contact:

Professor Pooran Wyncarczyk
Newcastle University, Small
Enterprise Research Unit
email:
pooran.wyncarczyk@newcastle.ac.uk
tel: 0191 243 0805
<http://www.ncl.ac.uk/seru/index.htm>

Melanie Knetsch
Senior Science in Society
Manager, ESRC
email:
melanie.knetsch@esrc.ac.uk
tel: 01793 413049

- It is not clear how STEM initiatives are linked to the widening participation agenda. Regional differences, such as socio-economic factors, the environment and their effect on the take up and performance in STEM have not been fully examined
- There appears to be a lack of reliable data sources and statistics which accurately depict the number of primary and secondary teachers with science and maths degrees in the UK.

Future priorities include:

- Understanding the impact of the nature and use of laboratories in the classroom and the take up of science
- Gathering evidence to show whether STEM initiatives that are giving STEM teachers confidence in teaching translate into increased numbers of students, or students achieving better results
- Investigating if there is a positive link between improving take up or higher achievement in STEM and participation in extra curricular activities.

This synthesis is part of a series of research syntheses produced by the ESRC as part of its Science and Society Strategy. Further information on this and for other syntheses please visit:
<http://www.esrcsocietytoday.ac.uk/scienceinsociety/>

Social Science makes a difference to us all. It is the study of society, how we interact and affect the world around us. ESRC funds world class social scientists to deliver the highest quality research on the most pressing economic and social issues we face – from health, education and crime to terrorism, poverty and the environment.

<http://www.esrcsocietytoday.ac.uk>

