

Inspiring more teenagers to study science

The roll out of the Foundation's suite of Twenty First Century Science GCSE courses has led to an increase in the number of teenagers choosing to study science at AS Level.

Schools using Twenty First Century Science reported an average increase of 30 per cent in the number of students taking AS-level biology, 24 per cent for chemistry, and 38 per cent for physics in 2008.

Twenty First Century Science was designed in partnership with the University of York Science Education Group and was launched in 2006 as part of wider changes to GCSE science. The first students completed the course in 2008 and were more likely to opt for Science AS Levels than students in previous years. The findings are from research undertaken by Professor Robin Millar from the University of York, results of which will be published in full in the *School*

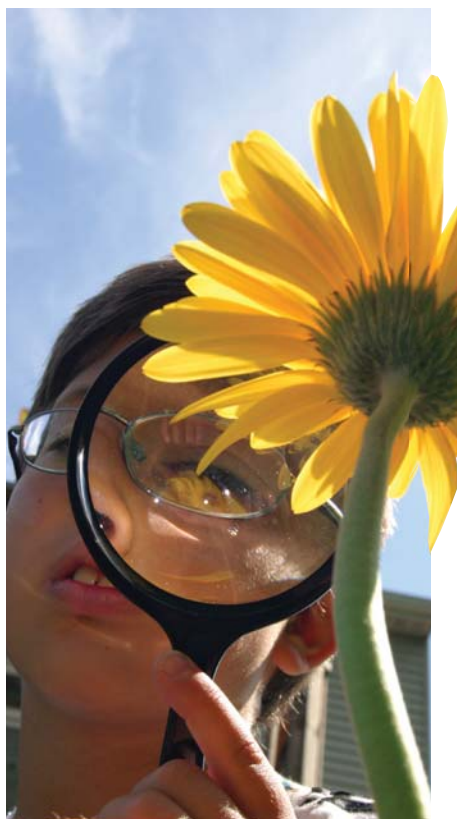
Science Review this month.

Twenty First Century Science aims to give all students an understanding of the science they experience in everyday life, with additional courses for those contemplating further academic study.

Students study a core course which uses topical issues, such as climate change and genetic modification, to improve scientific literacy. They also choose between 'additional science', aimed at students considering AS-level in science subjects, and 'additional applied science' focused on problem solving in workplace settings. Topics can be added to 'additional science' to give the student three GCSEs in chemistry, physics and biology.

We are currently revising the Twenty First Century Science courses to comply with the new specifications for GCSE Science due to start in September 2011. [www](http://www.nuffieldfoundation.org)

TWENTY FIRST CENTURY
science



Inside

2

Childcare matters

Do we expect too much of social workers?

Open or shut cases?

3

Values and variables in maths education

Nuffield Foundation lecture – the lost age of reason

New maths resources

4

Neglected tropical diseases

Music and mentoring

Bioinformation and ethics

in brief

Marriage and child development

Bodily material donations

Welcome to the Nuffield Foundation Newsletter

Further details on all the stories marked with this icon [www](http://www.nuffieldfoundation.org) can be found on our website, www.nuffieldfoundation.org

The newsletter is published three times a year. For additional copies, or to be removed from the mailing list, please contact fbright@nuffieldfoundation.org

Childcare matters



What constitutes quality early childhood education and care? How should it be funded? What is the role of informal childcare? Two studies funded by our Children and Families Programme seek to address these questions.

Daycare Trust, in collaboration with the Social Market Foundation and the Institute of Fiscal Studies, found that investing in

the workforce was the key to quality formal childcare. This means qualified staff, a lower staff turnover and higher pay. But the resulting model developed by the research team would almost double the current costs for parents. The Trust recommends reforms to government subsidy in order to bring parents' costs down to an affordable level.

Despite the large state investment in formal childcare, there has not been a reduction in the number of families using informal childcare, which is outside the regulated and fee-paying sector, and provided mainly by family, friends or neighbours. Bryson Purdon Social Research, the Institute for Fiscal Studies and NatCen are exploring the role that informal childcare plays for different families and how this may evolve over time in response to government policy changes. [www](#)



Do we expect too much of social workers?

Social workers in England have more responsibility and a wider remit than many of their European counterparts, according to research by the Institute of Education's Thomas Coram Research Unit and funded by the Nuffield Foundation.

In England, social workers are responsible for all aspects of case management and direct contact with families,

but most direct work with children and families is undertaken by support staff, many of whom have no specialist qualifications. Yet in much of continental Europe, responsibilities are split between several different professions, with most of the direct work undertaken by professionals highly qualified in therapeutic work.

In light of the evidence

from other countries, the researchers ask whether it is reasonable to expect social workers in England to 'do it all'.

The findings were submitted to the Government's Social Work Taskforce, which recently published its recommendations for a comprehensive reform programme for the profession. [www](#)



Open or shut cases?

Experts from the Department of Social Policy and Social Work at the University of Oxford have warned that the Children, Schools and Families Bill could put the privacy of vulnerable children at risk.

The Bill, currently before Parliament, includes proposals to increase the openness and transparency of family courts by relaxing restrictions on media reporting of cases.

In a briefing paper funded by the Foundation, the research team explain how the proposed legislation will ultimately allow journalists to report 'sensitive personal information' about parties involved, and to name expert witnesses. Journalists would not be allowed to publish the names of children or families involved, but other personal information published could lead to them being identified. [www](#)

Values and variables



Good textbooks are more important for high attainment in mathematics than factors such as setting or expensive IT equipment, according to a new study into international comparisons of mathematics attainment in schools.

Countries that perform consistently well in mathematics education use carefully constructed text books as the primary means of teaching. By comparison, English textbooks are more routine in their presentation and use less varied examples. English students are also less likely to have access to textbooks at home, another factor linked to high attainment.

The researchers, led by Professor Mike Askew from Kings College London, also highlighted the importance of education outside school, or 'shadow education', in ensuring high attainment in maths. This is particularly widespread amongst East Asian countries, where parents of all socio-economic backgrounds pay for extra-curricular maths instruction.

The researchers highlight the importance of cultural factors, and warn against simply trying to import systems that appear to be successful in other countries.

They recommend closer examination of countries that are culturally similar to England, such as Scotland and the Netherlands, to gain more insight on mathematical attainment.

Values and variables: Mathematics education in high-performing countries, is available to download from our website. [www](http://www.nuffieldfoundation.org)



Arabic science and a lost age of reason

Ibn al-Haytham, Abu-Rayhan Biruni and Avicenna may not be familiar names to a western audience, but 1,000 years ago they were among the foremost thinkers in the world.

The Islamic Empire led scientific enquiry for over 500 years, declining at around the time of the European Renaissance. What were the reasons for the rise and fall of science in the Muslim world and what has it meant to global culture and the history of world science?

Leading physicist, author and broadcaster, Professor Jim al-Khalili OBE, explored these issues in the Nuffield Foundation Lecture at the Association for Science Education conference in January.



New maths resources for teachers

We are currently piloting resources to aid the teaching and assessment of mathematical processes. The resources feature a number of activities, such as working out how many texts are sent if everyone in a group sends one to all the others, or practical problems, such as scheduling the work to be done in a fashion workshop.

Teachers are provided with guidance on how to incorporate the activity into

lessons and how to help students make progress.

The resources are designed to match the National Curriculum specifications for England, and will be invaluable to teachers looking for practical examples of how best to teach and assess mathematical processes.

The resources will be available to download from our website from summer 2010 onwards. [www](http://www.nuffieldfoundation.org)

Disease research by and for Africans



Neglected tropical diseases (NTDs) are a group of chronic disabling infections affecting more than 1 billion people worldwide, mainly living in remote rural areas, urban slums or conflict zones in Africa.

Five European Foundations, including Nuffield, are funding a fellowship programme aimed at strengthening African research capacity in NTDs. Fellowships were awarded to ten African scientists in 2008, and a second group has been selected during the programme's international conference in February. [www](http://www.nuffieldfoundation.org)

Music and mentoring

Two new education grants are exploring ways of addressing disadvantage or difficulty.

Professor Goswami from the University of Cambridge is exploring whether speech and language impediments (SLI) are underpinned by difficulties in the processing of auditory rhythmic information. A link between the two would open up the possibility of educational music-based assessments and interventions benefiting children with SLI.

Brightside UNIAID is developing and evaluating a mentoring programme to support student parents making the transition from further to higher education. If

successful, the model could be rolled out nationally and also adapted to support other vulnerable groups. [www](http://www.nuffieldfoundation.org)



Teaching the use and ethics of bioinformation

The Nuffield Council on Bioethics has launched a set of teaching resources based on its report *The Forensic use of Bioinformation: ethical issues*.

Classroom activities aim to teach students about how fingerprints and DNA profiles are used to investigate crime, and the ethical issues arising from the storage of bioinformation on national databases.

The resources were developed by the Council's Reaching out to Young People Advisory Group. Lesson plans, teaching notes, background information and activity sheets are available at www.nuffieldbioethics.org/education www

Marriage and child development

The Foundation is funding a quantitative analysis of the ways in which children's cognitive and social development differs between married and cohabiting parents. Research is being carried out by the Institute of Fiscal Studies. In 2008 around 30% of births were registered to unmarried couples, compared to 10% in 1986. www



Bodily material donations

The Nuffield Council on Bioethics has set up a Working Party to explore the issues raised by the provision of bodily material for medical treatment and research. The Council will open its public consultation on this subject in April 2010. www



William Morris, Lord Nuffield
1877-1963

The Nuffield Foundation is an endowed charitable trust established in 1943 by William Morris (Lord Nuffield) the founder of Morris Motors with the aim of advancing social well being. We fund research and innovation projects in education and social policy. We also work to build capacity in the education, research and training sectors.

Full information on all our current activities and details of how to apply for grants can be found at www.nuffieldfoundation.org

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