EDI introduction to Outreach and Engagement

Dr Simon Foster

Index

- Widening Participation (WP)
- Outreach
- Public Engagement
- Societal Engagement
- OFS – Office for Students
- REF – Research Excellence framework
- Impacts
- Knowledge Transfer Partnerships (KTP)
- Citizen Science

Why do it?

- Altruism
- Grants
- REF
- Promotion, promotion, promotion!
- Transferable skills
- Marginal gains applying for jobs
- Re-enthuse you in your studies.
- Communicate with fellow scientists.
- OfS – Access agreement.
- Societal benefits

Comets

Risk of comet hitting Earth is greater than previously thought, say researchers

Monitoring of space objects should include giant 'centaurs' that could rain down debris for thousands of years, astronomers recommend

Agence France-Presse in Paris

Wednesday 23 December 2015
00.01 GMT

Artist's impression of a large asteroid hitting Earth. Photograph: Mopic / Alamy/Alamy

Earth could be at higher risk of being hit by a comet than widely thought,

Asteroids

Huge 'planet killer' asteroid discovered – and it's heading our way

With a diameter of 1 to 2km, space rock named 2022 AP7 crosses our orbit but has 'no chance' of hitting Earth

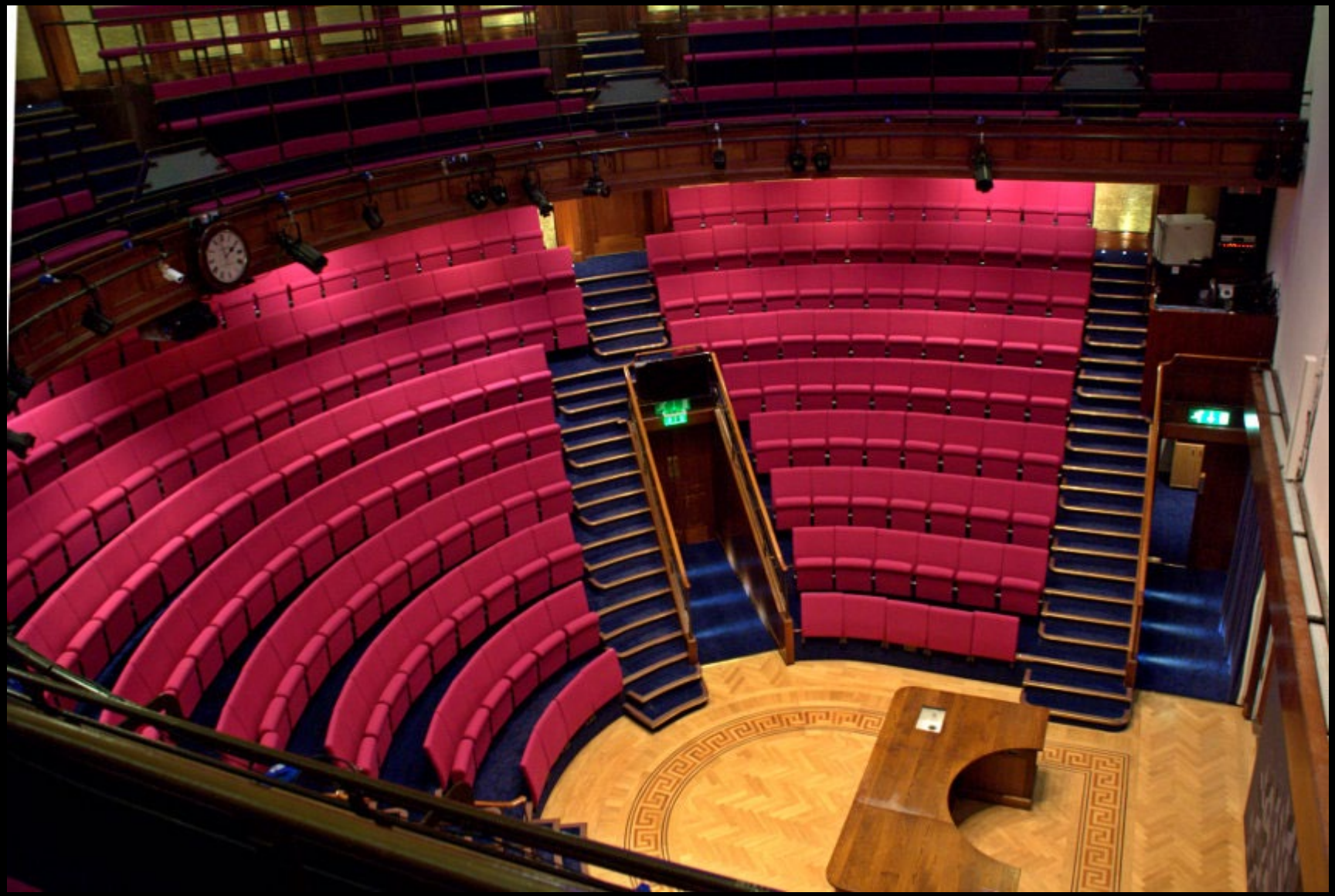
Nicola Davis
Science correspondent
@NicolaKSDavis

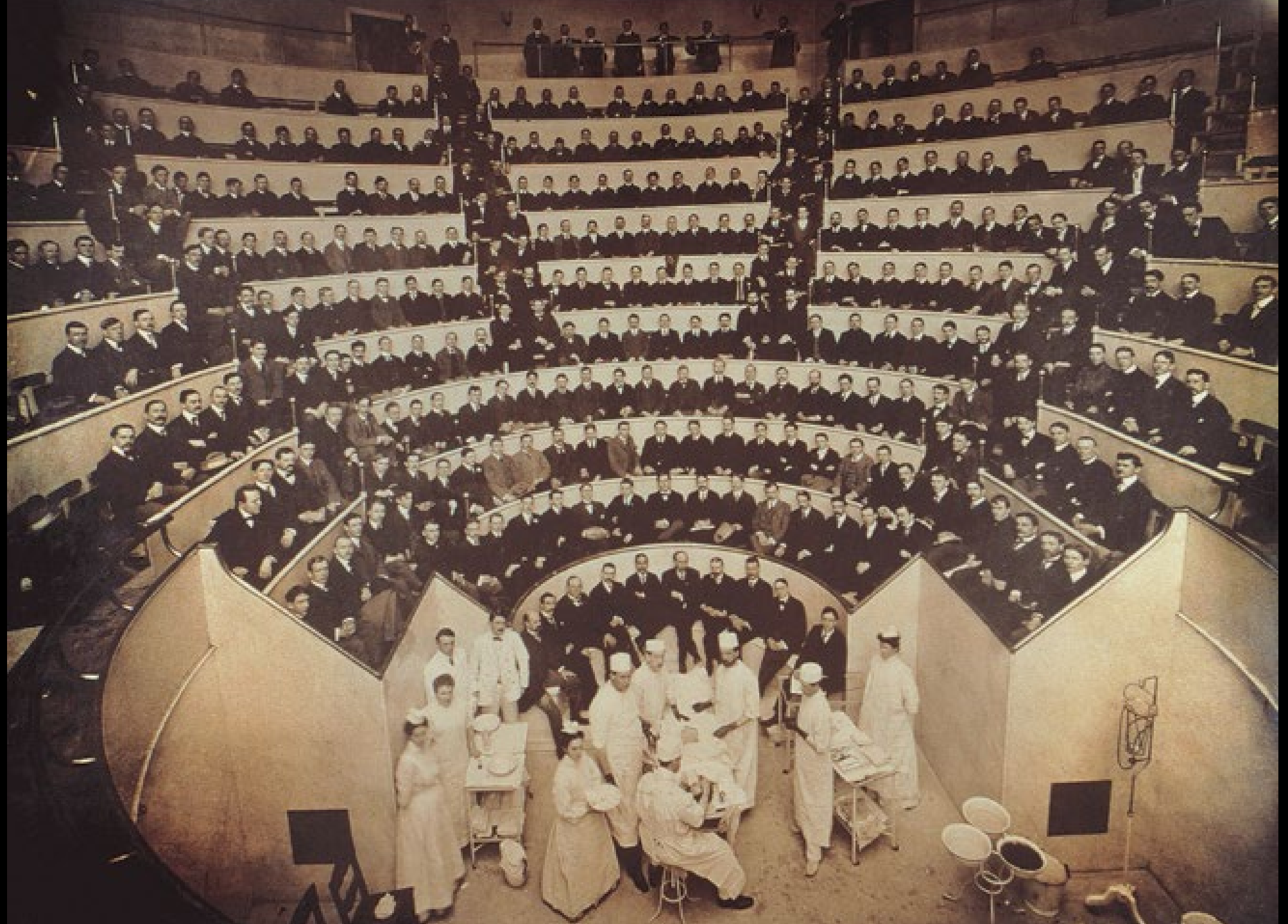
Tue 1 Nov 2022 19.05 GMT

The asteroid was discovered by the four-metre Blanco telescope at the Cerro Tololo observatory in Chile. Photograph: Reidar Hahn/Fermilab VMS/PA

Astronomers say they have discovered the largest planet killer-sized asteroid

A brief history of Societal engagement





The Mail on Sunday

MEASLES JAB: NEW LINK TO BRAIN DAMAGE

DAILY EXPRESS

The World's Greatest Newspaper — BRITAIN DEFIANT

The Queen told the nation that her children had been vaccinated against polio...So why won't Tony Blair come clean about Leo?

MMR: NOW TELL US THE TRUTH

Top doctor tells mothers: 'LEO BLAIR HAD SINGLE MMR JABS'

ABORTION: A MUM'S RIGHT TO KNOW

RETRACTED: Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children

Dr AJ Wakefield, FRCS, SH Murch, MB, A Anthony, MB, J Linnell, PhD, DM Casson, MRCP, M Malik, MRCP, M Berelowitz, FRCPsych, AP Dhillon, MRCPath, MA Thomson, FRCP, P Harvey, FRCP, A Valentine, FRCR, SE Davies, MRCPath, JA Walker-Smith, FRCP

Altmetric 1,596

DOI: http://dx.doi.org/10.1016/S0140-6736(97)11096-0

Article Info

Summary | Full Text | Tables and Figures | References

Summary

Background

We investigated a consecutive series of children with chronic enterocolitis and regressive developmental disorder.

Methods

12 children (mean age 6 years [range 3–10], 11 boys) were referred to a paediatric gastroenterology unit with a history of normal development followed by loss of acquired skills, including language, together with diarrhoea and abdominal pain. Children underwent gastroenterological, neurological, and developmental assessment and review of developmental records. Ileocolonoscopy and biopsy sampling, magnetic-resonance imaging (MRI), electroencephalography (EEG), and lumbar puncture

PDF (942 KB)
Download Images(.ppt)
Email Article
Add to My Reading List
Export Citation
Create Citation Alert
Cited by in Scopus (0)
Request Permissions

Linked Articles

COMMENT
Retraction—Ileal-lymphoid-nod
hyperplasia, non-specific colitis
pervasive developmental disorc
children

Popular Articles

Most Read | Most Cited

Most read in *The Lancet* within th
days.

ARTICLES
Measuring the health-related
Sustainable Development Goal

Daily Mail CAMPAIGN

FRANKENSTEIN FOOD WATCH


Daily Mail

NATIONAL NEWSPAPER OF THE YEAR

Are girls the new boys?

Why modern mothers prefer daughters

FEMAIL MAGAZINE Pages 30-31

Salmon grew four times as fast in secret Government GM tests

NOW IT'S THE FRANKEN-FISH

By DAVID DERBYSHIRE

SECRET experiments on genetically-modified salmon have taken place in Britain, the Government admitted last night.

Trainer's wife and the sacked jockey


DAILY STAR

FLORIDA H

$17.99

I'LL SE

BRIT

BOY:

HOM

Daily

Strange but true — b

world of Tom and Kr

CHARLES: MY FEARS OVER THE SAFETY OF GM FOODS

DAILY MIRROR

R

S

Daily Mail

NEWSPAPER OF THE YEAR

UP TO 40% OFF VIRGIN FLIGHTS

THE CANCER OF COCAINE

Special Mail investigation shows how every part of our culture is now tainted by cocaine

Pages 24-25

Ruling by EU bureaucrats could open the floodgates to Frankenstein foods

BRITAIN IS TOLD: YOU CAN'T BAN GM CROPS

BRITAIN was left powerless to stop Frankenstein crops last night following an explosive Brussels ruling.

Helen the Calendar Girl, stunning at 58

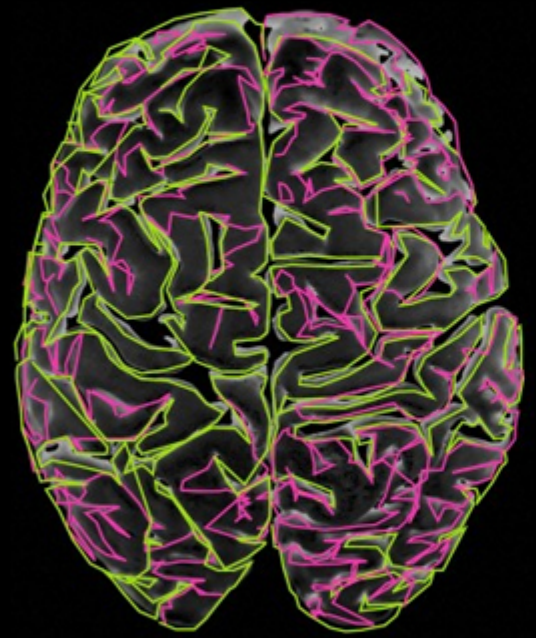
SEE PAGES 6 & 7

www.sciencemediacentre.org

smc Science Media Centre
where science meets the headlines

search here search

working with us | about us | publications | international smcs | contact us



welcome to the

Science Media Centre

an independent press office helping to ensure that the public have access to the best scientific evidence and expertise through the news media when science hits the headlines

find out more

for journalists | for scientists | for press officers

Policy

Public understanding of science and engineering

From: Department for Business, Innovation & Skills and Jo Johnson MP

What the government's doing about the public understanding of science and engineering.

Subscribe to email alerts

Search

Document type

Get updates to this list feed

After one marathon, hundreds of experiments, and millions inspired, Tim Peake has returned to Earth

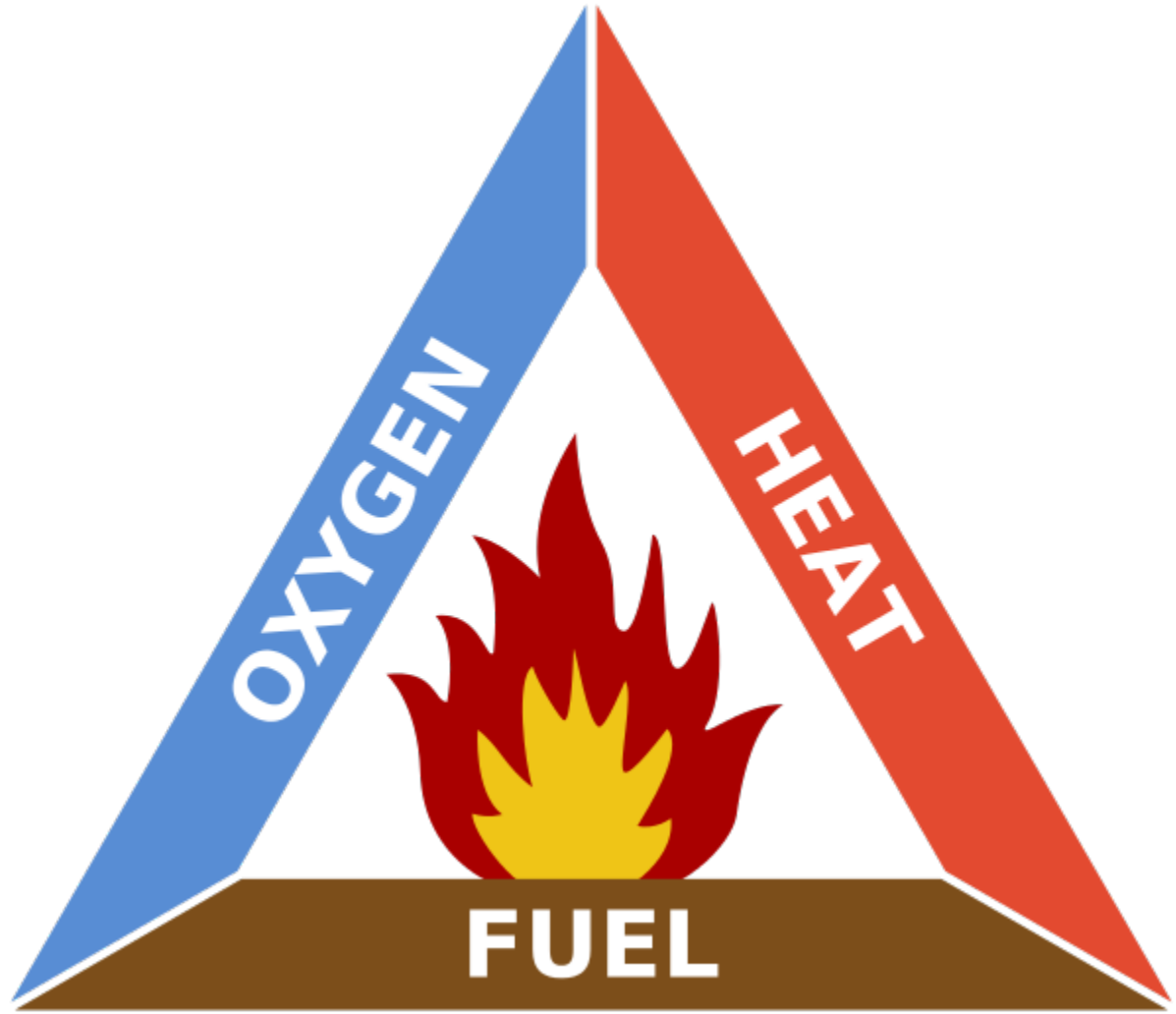
News story UK Space Agency and 1 others Updated: 20 June 2016

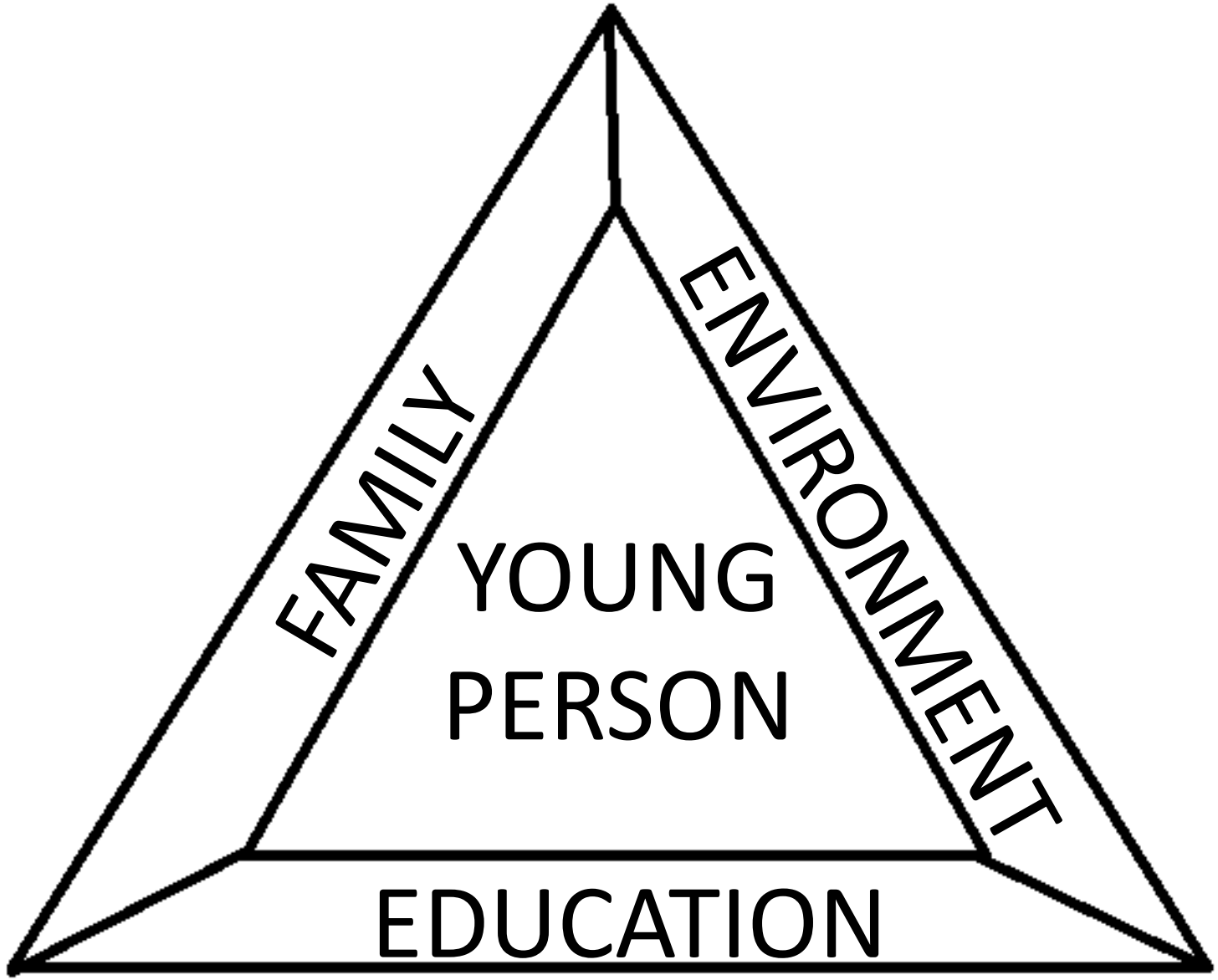
Public understanding of science

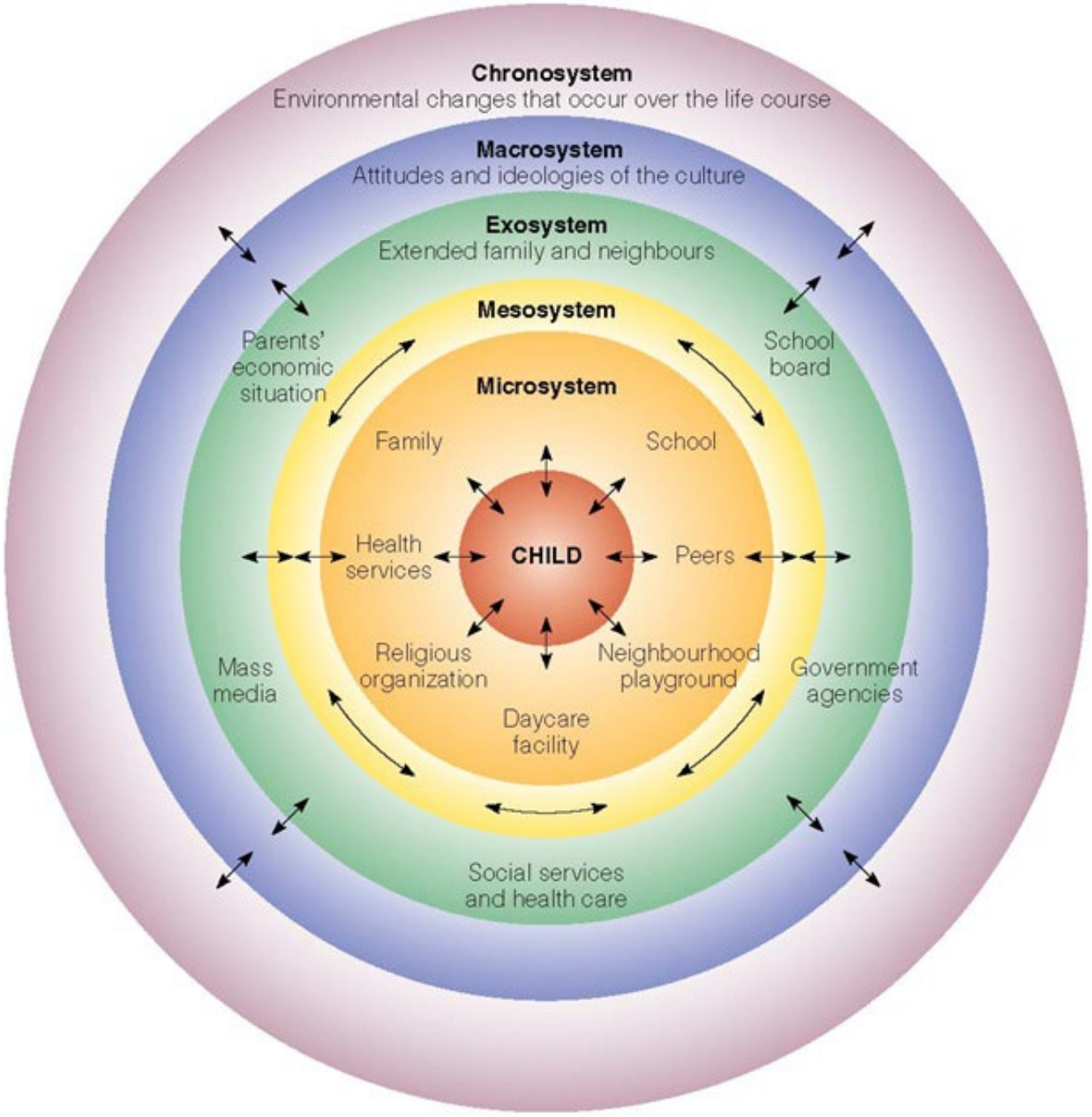
- We’re all publicly funded.
- Dispel myths (Climate change, GM, etc)
- Role models/Careers/Education etc
- Be open about results!
- Achieve a scientifically literate population.
- Fees!

COVID- All change!

- Pre-COVID issues were present but overlooked.
- Usual suspects
- Nuts and Bolts approach needed
- Inequality in education - EDI


OXYGEN
HEAT
FUEL


FAMILY
ENVIRONMENT
YOUNG
PERSON
EDUCATION


Chronosystem
Environmental changes that occur over the life course
Macrosystem
Attitudes and ideologies of the culture
Exosystem
Extended family and neighbours
Mesosystem
Microsystem
Parents' economic situation
School board
Family
School
Health services
CHILD
Peers
Religious organization
Neighbourhood playground
Mass media
Government agencies
Daycare facility
Social services and health care

Rhodes (2013)

Family

- Parents, Guardians, Carers.
- Need an understanding of the education system
- Level of Education = Support
- Tutoring
- Home schooling through COVID
- Lack of STEM role models
- Lack of science capital in family
- Food banks

Environment

- Role models in society
- Access to extra-curricula activities
- Economic situation
- Institutional barriers
- Changing ‘environment’

Education - Primary

- 5% of teachers have science qualification beyond GCSE
- Lack of ‘Science’ specialist teachers
- No SATS
- Not really a focus for Universities
- COVID forced focus elsewhere

- Personally – Greatest opportunity

The issues are not hierarchical – each are of equal worth.

Issues identified	Implication	Observations
1 CHILDREN'S SCIENCE LEARNING IS SUPERFICIAL AND LACKS DEPTH	Children are not developing a deep understanding of the big ideas of science.	o Lesson planning lacks sequence: the 'Why this? Why now?' isn't clear o Teachers and senior leaders align success in science with vocabulary recall, often using age-inappropriate terminology o Overload of inappropriately selected science
2 CHILDREN'S PRECONCEPTIONS AREN'T ADEQUATELY VALUED	Children are not able to process or build on their prior learning.	o Staff have limited science subject knowledge relevant to their year group teaching o Assessment does not inform next step teaching
3 CHILDREN'S SCIENCE LEARNING LACKS CHALLENGE	Children do not meet their full potential which limits their opportunities and aspirations.	o Assessment practice does not inform teaching leading to insufficient response to pupil needs o Resources are selected with insufficient professional critical analysis
4 CHILDREN ARE OVERRELIANT ON TEACHER TALK AND DIRECTION, THEY LACK AUTONOMY AND INDEPENDENCE IN LEARNING SCIENCE	Children's learning outcomes in science mimic those of their peers, as such not supporting individual feedback and progression.	o Teacher talk often dominates the lesson o Learning is not structured to be truly collaborative with decisions on groupings steered mainly by organisation of equipment, or behaviour issues o Talk for learning is compromised o Children's work lacks value and ownership
5 CHILDREN EXPERIENCE 'FUN' SCIENCE ACTIVITIES THAT FAIL TO DEEPEN OR DEVELOP NEW LEARNING	Children retell the 'magic' moments in science learning and aren't able to explain what they have seen or the concept explored.	o Teachers misunderstand the point and purpose of practical work
6 CHILDREN ARE NOT ENCOURAGED TO USE THEIR OWN CURIOSITY, SCIENTIFIC INTERESTS AND QUESTIONS IN THEIR SCIENCE LEARNING	Children lack motivation towards working scientifically.	o Inconsistent understanding of how to model working and thinking scientifically o Contexts for learning science relevant to children or of public interest are poorly utilised or seized
7 CHILDREN ARE ENGAGED IN PRESCRIPTIVE PRACTICAL WORK THAT LACKS PURPOSE	Children experience working scientifically that is formulaic and lacks authenticity.	o Being 'hands on' dominates being 'minds on' o Teachers are working harder than the children
8 CHILDREN DO NOT DRAW ON THEIR LEARNING FROM PRIOR SCIENTIFIC SKILLS, THEY DO NOT BUILD ON REPEATED AND REGULAR EXPERIENCES	Children have gaps as they move to the next phase of learning.	o National curriculum coverage is not met o Formative assessment is not focused on developing skills o Availability of equipment or its accurate use when available is ad hoc o Inappropriate scheduling or timetabling for science
9 CHILDREN RARELY SEE THEMSELVES, THEIR FAMILIES, COMMUNITY MEMBERS OR THEIR TEACHERS AS SCIENTISTS	Children believe that science is about other people making a difference, not them.	o Unconscious bias reinforces messages of scientific stereotypes, gender and BAME (Black, Asian and Minority Ethnic groups) o The needs of disadvantaged children are not met o Contexts for science learning are poorly utilised
10 CHILDREN DO NOT APPLY LITERACY AND NUMERACY SKILLS IN SCIENCE AT THE STANDARD THEY USE IN ENGLISH AND MATHEMATICS	Children fail to see the interconnectedness of their science learning.	o Limited opportunities for children to transfer, practise and embed skills

Education - Secondary

- Lack of Physics teachers
- Impact of COVID
- Access to tutoring
- Teacher backgrounds
- Access to technology/Labs
- A-level tutoring

le 1 shows that schools with a higher proportion of disadvantaged students are less likely to have a
dents entering separate science GCSEs. On average, schools with no entries have 38% of their Year
dents from disadvantaged backgrounds.

% of students entering GCSE Separate Sciences	Mean % of FSM Year 11 students	Total schools	Total Year 11 GCSE students
0%	38%	269	43,769
1-25%	31%	1,467	250,455
25 – 50%	23%	1,102	188,862
50 – 75%	16%	172	27,544
>75%	12%	155	22,485

2019, 26.6% of GCSE students from all state-funded schools in England entered the separate science GCSEs. In 2018, this

the top grades compared with around 19% of non-disadvantaged students.

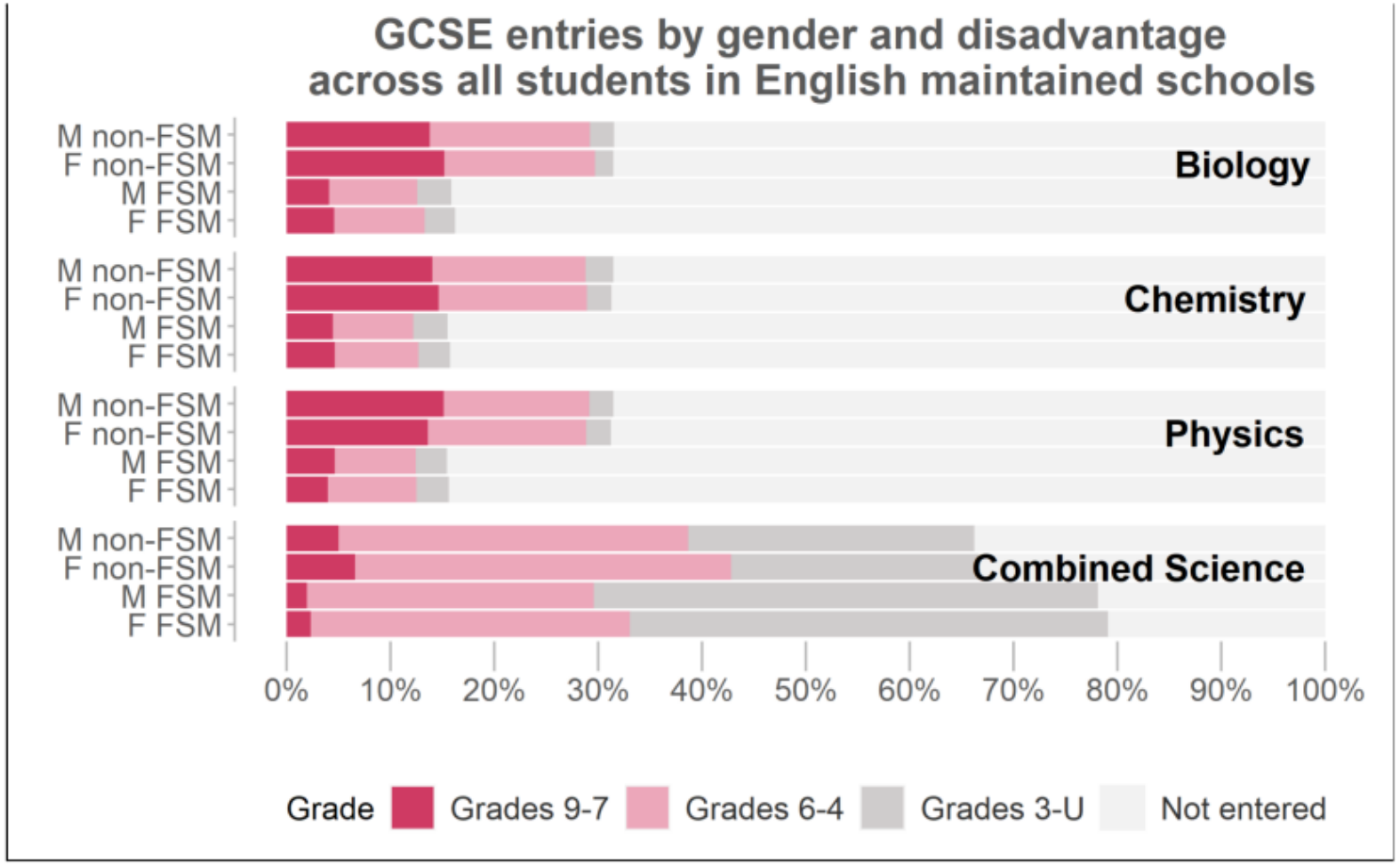
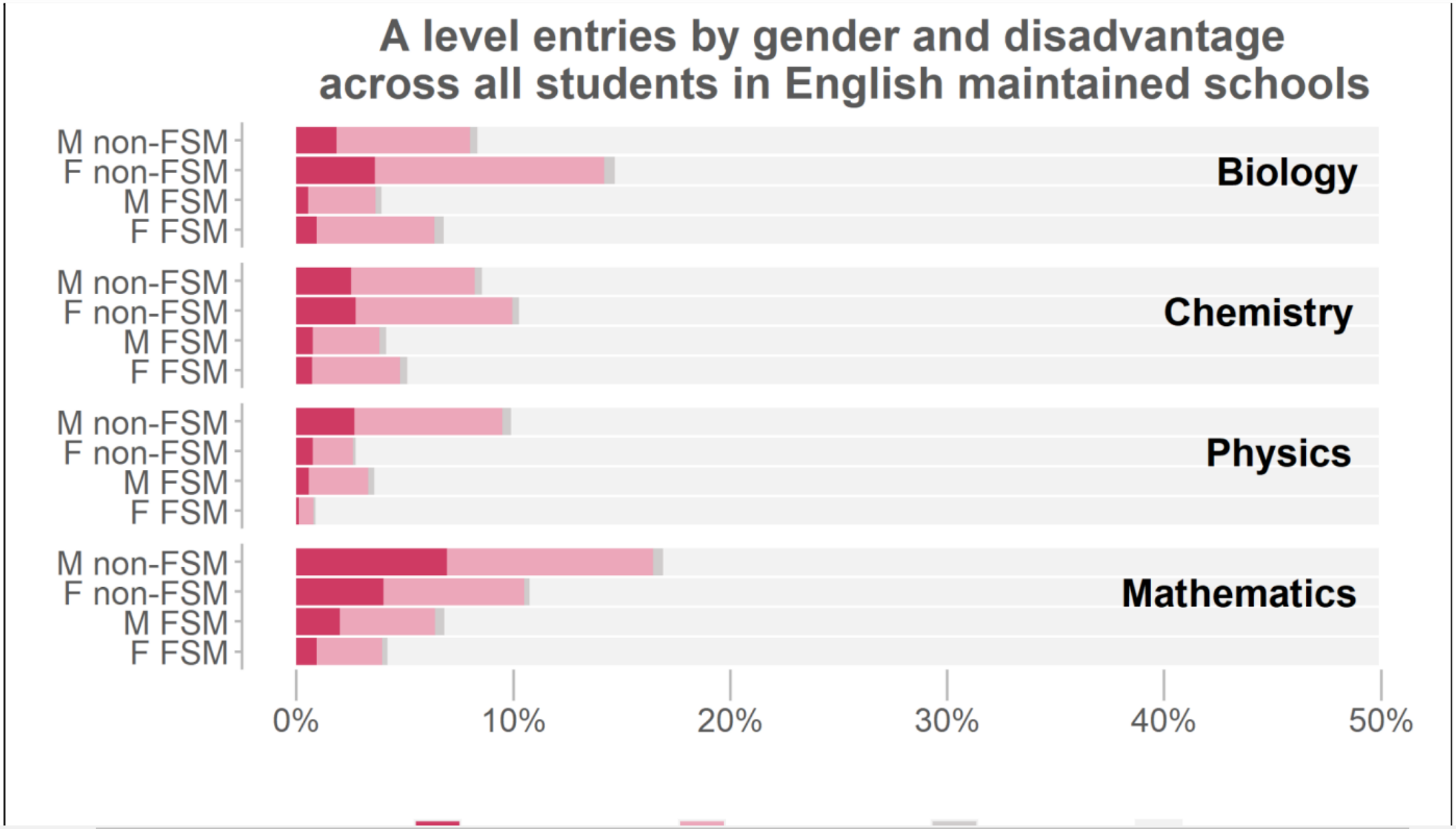


Figure 5: The percentage of the key stage 4 cohort in maintained schools and colleges across England in 2019 entering science GCSEs, and those who did not enter, split by grade achieved, gender and disadvantage (FSM).

In summary, compared with students from non-disadvantaged backgrounds, students from disadvantaged backgrounds are less likely to:


A level entries by gender and disadvantage across all students in English maintained schools
M non-FSM
F non-FSM
M FSM
F FSM
Biology
Chemistry
Physics
Mathematics
0%
10%
20%
30%
40%
50%

IMPERIAL

Provide feedback!

https://forms.office.com/e/pHBZpniFvB

If you used this resource, please take the time to fill out this form to provide your feedback.

If you have any questions or require more information about the REET (Resources for Embedding EDI in Teaching) project, please contact the Project Lead using the following contact details:

Chloe Agg c.agg@imperial.ac.uk