

16th Schools Science Conference

Science for Sustainability

Dear Head Teacher, Science Teachers, Careers Advisors

I am writing to invite you to apply to attend our 16th Schools Science Conference, **Science for Sustainability**.

This annual conference aims to:

- **Inspire students to study science**
- **Demonstrate the importance of science in health and everyday life**
- **Showcase some of the exciting and rewarding careers open to those who study science.**

When is it?

Thursday

25

April 2019

Where is it?



University of Westminster
115 New Cavendish St
London W1W 6UW
This central location has fabulous facilities and enables the students to see and experience a University atmosphere

Why attend?

Unique opportunity to speak with science professionals and find out what they do
The conference comprises: interactive hands-on demonstrations and displays, workshops, lectures and presentations

Who can attend?

Students in school years 9 to 11
These conferences are open to students of all abilities



What is required?

Simply undertake a science project from which your students will present their findings at the conference
This can be a piece of work done as part of the curriculum rather than an additional undertaking! Prizes awarded!

How much is it?

The event is free of charge as long as you attend
We would only charge if valuable places are requested and then wasted

£0

The theme, **Science for Sustainability**, focuses on sustaining the health of people through the health of the planet.

We hope that you and your students will be able to attend our 16th Schools Science Conference.

Yours sincerely

Kimberly Gilmour & Stuart Adams

Kimberly Gilmour & Stuart Adams
Co-Chairs of the Organising Committee

Intrigued?

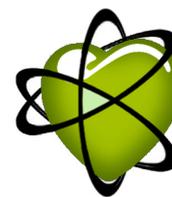


Watch the video of the 2018 event and see further details on the website



science4u.info
showcasing exciting careers in science

Invitation to attend



School Registration

The conference aims to promote awareness of the many exciting careers in Science through talks, discussions and informal interaction with professional scientists from the **NHS**, academia and industry.

School name

Address

School email

Telephone Post Code

Age of students

Number of students

We hope you will be able to register up to 22 students

Register now!

The new format allows more delegates to take part. Consequently, we can offer more places to each school. Places may go fast so register now to avoid disappointment!

Science for Sustainability Terms & Conditions

Pre Registration of Students

To enable entry to the venue to be as swift as possible, schools will need to submit the names of students who will be attending some weeks before the event (along with photography consent forms) Bar coded badges and photography exemption labels will then be sent to you before the event and students will be required to wear these to gain entry

Evaluation forms for teachers and students

Evaluation forms must be completed and handed in at the event by all students and teachers

Packed lunch

Students and teachers must bring a packed lunch to this event

A small bottle of water will be provided for students and coffee/tea will be available for teachers

Science Project

Each school is required to undertake a project to be presented at the Conference
Please note that there will be opportunity to enter your project(s) for a CREST award if you would like to follow guidelines: <https://www.crestawards.org>

Cancellation

Please note that if we receive a cancellation from a school less than two weeks before we will charge a cancellation fee of £20 per head or £250 (whichever is the greater) to cover administration costs

- Our school wishes to attend the Schools Science Conference on Thursday 25th April 2019
- We agree to undertake and present a science project
- We understand and agree to the terms and conditions listed above

Name of teacher

Signature

Teacher's direct email

Teacher's direct tel

E-mail sharon.gage@srgprojectmanagement.co.uk

Post 1 Cottimore Terrace, Walton-on-Thames, KT12 2BY

School Registration

The 16th Annual Schools Science Conference | Presented by science4u.info in collaboration with University of Westminster



Science Project Guidelines

Ideas:

Almost any idea is fine. Some example topics are below:

- Blood
- Mystery illnesses
- Diagnosing disease
- Things that used to kill you
- Sport
- Fitness
- Heart & Lungs
- Mothers & Babies
- Microbiology
- Life saving designs

What is required?

Simply undertake a science project from which your students will present their findings at the conference
This can be a piece of work done as part of the curriculum rather than an additional undertaking! Prizes awarded!

Investigation:

You can do different kinds of investigation, including:

- Experimentation: eg swab and culture bacteria from desks, pencils and other classroom equipment
- Observation: Record the number of invertebrates in a 1 square metre area outside of school
- Library/internet Research: Compare the 4 most common causes of death 60 years ago to today

All projects should contain:

- **Hypothesis**
- **Experimental/research design**
- **Data collection and analysis**
- **Interpretation**
- **Conclusion**

Presentation:

Each school will present to several other schools. There will be 5 minutes for the presentation and 5 minutes for questions. Presentations may be:

- Power point slide show
- Poster
- Show and tell (bring examples of the project eg Petri dishes and explain the results to the other schools)
- Talk and write (eg explain the project and write at the same time)

All the students may present or you may select one or two students to present, but all the presentations from your school must total no more than 10 minutes including question time.

NB Any electronic presentation (PowerPoint, PDF etc) will need to be provided in advance of the conference; there will not be any opportunity to load presentations on the day (due to time restraints and risk of viruses).



STEM Learning support

STEM Ambassadors are available to support you with these projects.

To find out more about the **STEM Ambassadors Programme** and how they can support your school please follow this link:

www.stem.org.uk/stem-ambassadors.

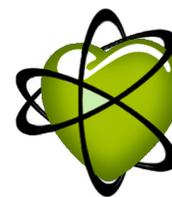


As part of the **National STEM Learning Network**, the **STEM Ambassadors** programme is working to make a difference in STEM education and address the UK's skills gap. **STEM Ambassadors** are volunteers working in STEM-related careers are passionate about STEM and want to help inspire young people to pursue science, technology, engineering and mathematics (STEM) and careers. **STEM Ambassadors** cross all ages and backgrounds, representing a vast spectrum of different employers across the UK. As professionals and specialists in their field, **STEM Ambassadors** bring real-life industry experience into context and enrich young people's knowledge of the breadth of STEM-related careers and opportunities available. They get involved in a variety of activities both in and outside of the classroom, including STEM Club activities, speed networking, mentoring and large festivals and fairs, as well as helping to develop resources or other forms of support.

With a community of over 30,000 volunteers, they are an important and exciting, free of charge resource for learners, teachers, youth and community groups and other individuals working with young people across the UK to promote STEM subjects to young learners in a vast range of original, creative, practical and engaging ways. Evidence shows that 90% of young people who engage with **STEM Ambassadors** say that it increases their engagement with STEM, helping them to make informed decisions about their future careers.

We can work with you to find **STEM Ambassadors** local to you that can support the projects, activities, clubs, lessons, careers fairs or events that you are running. In London there are 2,500 brilliant and inspiring volunteers helping to support the STEM curriculum and raise awareness of STEM careers, by revealing how essential STEM is throughout the world. Our Ambassadors include apprentices, zoologists, set designers, climate change scientists, engineers, farmers, geologists, nuclear physicists, and architects.

To find out more information and request a **STEM Ambassador** please visit, www.stem.org.uk/stem-ambassador-hub-london



CREST Awards

Projects may be eligible for a **CREST Bronze Award**. **CREST** is a widely recognised national award scheme for project work in science, technology, engineering and maths.



It is co-ordinated by the **British Science Association**, a charity which exists to transform the diversity and inclusivity of science; to reach under-served audiences, and increase the number of people who are actively engaged and involved in science.

CREST Awards are available at Discovery, Bronze, Silver and Gold levels, depending on the amount and depth of work you carry out.

Bronze is typically completed by 11-14 year olds (key stage 3).

Students complete a 10 hour project. Over the course of 10 hours, teams of students design their own investigation, record their findings, and reflect on their learnings, giving them a taste of what it is like to be a scientist or engineer in the real-world.

Further details can be found at

<https://www.crestawards.org>

Previous examples

Previous examples are available on the website:

<http://science4u.info/2018/science-for-experimentation/>

<http://science4u.info/2017/science-for-experimentation/>

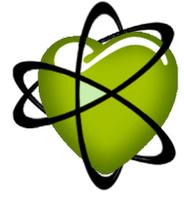
<http://science4u.info/2016/science-for-experimentation/>

<http://science4u.info/2015/science-for-experimentation/>

<http://science4u.info/2014/science-for-experimentation/>

Deadline

Each school will be asked to provide the title of their project in January 2019 and to submit their presentation before Easter.



How clean are the items in a pencil case?

An example of a simple project outline

Hypothesis:

- Items frequently used (eg pencils and pens) will be dirtier than those rarely used (eg protractor)

Experimental design:

- Swab each item in a students pencil case and then streak out onto agar plates
- Incubate plates overnight, count and photograph any colonies that grow

Data collection:

Item	Number of colonies	Description
Pen	Too many to count	Large streak of growth
Pencil	22	Small white
Rubber	5	Small white
Ruler	25	Small white
Protractor	2	Small white
Compass	0	-



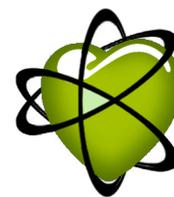
Plate from swabbed from pen

Interpretation:

- The most colonies grew from the pen, possibly because it was chewed
- It was difficult to swab the rubber and the compass so these may not represent the actual number of colonies

Conclusion:

- The pen grew the most colonies on the pen likely because it was frequently used and also placed in the mouth



Evaluation Criteria

Science for Experimentation

These notes are intended to assist teachers undertaking projects with their students for presentation at the Schools Science Conference.

Students will compete for The Association for Clinical Biochemistry and Laboratory Medicine Trophy for the Don Henderson Award

Below is a summary of the criteria that will be used by the judges on the day to evaluate the presentations. Hopefully this will assist in choosing and undertaking the project as well as preparing and rehearsing the presentation. There may be more than one prize available and these may be awarded according to ranking or to reward some exceptional element of a project that did not win overall or a combination of these. There is only one shield so it is important to identify one overall winner, however difficult this may be! The evaluation is based on awarding marks out of 5 for each of six criteria that are explained below. General comments from the judges assist in differentiating between projects in the event of a tie in scoring.

Types of Project

Schools may undertake their investigations in three different ways and the interpretation of each evaluation criterion by the judges will take this into account. Hopefully the following notes will help when undertaking the different types of investigation to know how the criteria will be applied:

Experimentation

The students undertake experiments to test the hypothesis. There is no need to have used complex apparatus (eg A previous individual prize winner evaluated the strength of Velcro using only a spring balance and some weights)

Observation

The students undertake and record structured observation of something happening around them in order to test their hypothesis (eg traffic flows or composition)

Library/internet Research

The students undertake a comprehensive review of published material in order to test their hypothesis (eg they might compare and contrast the varying evidence and opinions concerning life on Mars to reach a conclusion)

Criteria

Originality

The topic should come from an interest or curiosity of the students themselves even if it has to be selected from a list because of limited facilities available. The hypothesis being tested should be something tangible and relevant.

Understanding

The students should show that they have understood the topic they investigated and the various factors that may affect it. There are rarely cut and dried answers to a particular question so the students need to have an understanding of uncertainty and recognise that disproving a hypothesis is as valuable as proving one! They need to understand the limitations of any measurements undertaken and the degree to which published work they refer to can be trusted.

Design

The students should plan their investigation before embarking on it and investigate the reference sources available and their credibility or the experimental techniques they could use and their limitations and complexity. They should also understand the value of checking different opinions and different experimental techniques and interpreting differences between them.

Iteration

In any investigation new material or evidence is likely to come to light and the experiments or sources of information. The students should show an understanding of this and demonstrate how they changed their approach – or would change it in the future if time did not permit – to address this.

Interpretation

The students should demonstrate that they have understood their results or findings by presenting a concise and straightforward interpretation. This needs to be supported by the evidence they have obtained and they should be able to respond to any questions.

Presentation

This is where the students demonstrate that they can not only undertake research but also communicate what they have done clearly, understandably and within time constraints. Clarity and accuracy are more important than flashy gimmickry! A slick presentation cannot hide deficiencies in the work but a poor presentation can conceal a sound piece of research. Rehearsal is important to help address this. The judges will take into account nervousness but won't ignore sloppiness. This element represents only a portion of the marking but the judges can only judge the work through the material presented!



Evaluation Criteria



About **science4u.info**

The Annual Schools Science Conference is organised by **science4u**

Science for Sustainability is the 16th Annual Schools Science Conference and is produced in collaboration with **University of Westminster**

The objectives of the Conference are to:

- **Inspire students to study science**
- **Demonstrate the importance of science in health and everyday life**
- **Showcase some of the myriad careers open to those who study science**

The conference is presented by Professional Scientists and Healthcare Professionals

Up to 340 secondary school and further education college students (years 9-11) attend with their teachers

Some 80-100 professional volunteer scientists from the **NHS**, academia and other public sectors, industry and commerce provide the backbone of the conference and hands-on interactive displays

Organising Committee 2019

- **Don Henderson** **Founder**
- **Kimberly Gilmour** **Co-Chair** Great Ormond Street Hospital For Children NHS Foundation Trust
- **Stuart Adams** **Co-Chair** Great Ormond Street Hospital For Children NHS Foundation Trust
- **Sue Alexander** **Secretary** The Royal Marsden NHS Foundation Trust
- **Manfred Almeida** **Treasurer** Imperial College Healthcare NHS Trust
- **Sarah Armstrong** The Royal Marsden NHS Foundation Trust
- **Mike Carter** Public Health England
- **Paul Hampson** University of Westminster
- **Penny Fletcher** The Royal College of Pathologists
- **Ayuen Lual** Public Health England
- **Hannah McGregor** Public Health England
- **Maria Rossini** British Science Association
- **Sharon Gage** **Event Organiser** SRG Project Management

About **science4u.info**