

FUTURE SCIENCE LEADERSHIP

SEMINARS AT OXFORD

Workshop Summary

In mid-September 2011, early-career researchers from a variety of science disciplines across all of the UK came together at St John's College Oxford for a 2-day workshop to examine and improve the skills needed to be an effective research scientist and to communicate their science effectively to a variety of audiences. Over 100 participants (80% females) heard from a range of distinguished academics and thinkers on matters

related to "Acquiring confidence in research" and "What hinders clever people from excelling in research". A major theme in the workshop was communication skills not just to specialist scientific audiences but also to today's teenagers. In return for a scholarship to attend the workshop, participants undertook to give talks at two high schools (one in their home town and one in their university city) and so time at the workshop was

dedicated to consider how best to give science talks in schools. Via this trickle-down strategy, we will collectively reach 200 high schools and present role models to today's teenagers who may have previously not received such a clear vision of people like them studying science at university.

The workshop programme follows these four pages of photographs and feedback.





“Thank you very much for the wonderful workshop. It was truly inspirational and motivating. I enjoyed it very much and could see that many others did too, so it was a great success. Thanks again for such a special opportunity.”

Computer scientist from Oxford

“Thank you for organising this incredible meeting. It is by far one of the most useful meetings I have attended. I have already started implementing some of the tips and advice I learnt during the meeting.

Interacting with the speakers, particularly yourself, Jocelyn, Bill, Stephen & Alyssa, left me with new found confidence in my research and approach to life. Your response to my question on failure in science is still resonating in my head. The experience from the past two days is tremendously valuable and will no doubt have a long term and profound impact on me.”

“Thank you very much for organizing such a wonderful event, really gained a lot and ready to share the joy of learning with the students very soon.”

Pharmacologist from Bath



Physicist from UCL

“Thanks for organising such a brilliant workshop! It was so well conceived and organised and to be invited to be part of it was just wonderful.”

Physicist from Edinburgh





“Thank you for the wonderful 2-days of the Future Science Leaders workshop. It was incredibly helpful and I’ve already started implementing some of the ideas that were shared. I didn’t know what to expect but I really enjoyed the event and I know it will really make a difference to how I approach both my science and my career.”

Physicist from Bristol



“I had an absolutely brilliant couple of days; it was a privilege to be able to spend time in the company of such a warm, inspired and inspirational group of people.”

Physicist from Oxford

“A massive thank you for all your hard work on the Future Leaders in Science workshop, it was exciting and inspiring.”

Engineer from Bath



“I just wanted to say how much I enjoyed the Future Science Leaders conference last week. It really helped me in terms of how to approach my research, as an injection of enthusiasm and motivation, and of the importance of outreach and feeding back some of the things that we learn to the public.”

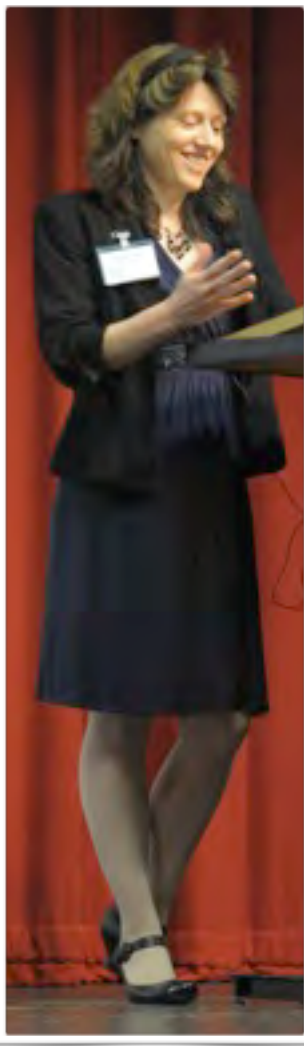
Physicist from Southampton





“Rosalind Franklin faced and overcame severe challenges on the path to scientific greatness and it is vital that we support today’s young scientists regardless of gender to enable them to avoid many of the difficulties she faced. I am delighted that in supporting this meeting the Oxford Physics department has been able to further that cause.”

John Wheeler,
Chairman of
Oxford Physics



& special thanks to our sponsors



St John's
College



THE ROYAL
SOCIETY



Photographs by Andrew Steele



FUTURE SCIENCE LEADERSHIP

SEMINARS *at* OXFORD

ST JOHN'S COLLEGE

Sept 2011
Tuesday 13TH & Wednesday 14TH

WWW.PHYSICS.OX.AC.UK/FUTURESCIENCELEADERS

WORKSHOP PROGRAMME

FUTURE SCIENCE LEADERSHIP

SEMINARS AT OXFORD

Programme

DAY 1 - TUESDAY

13 September 2011

10.00	REGISTRATION & COFFEE	RECEPTION ROOM
11.00	WELCOME, INTRODUCTIONS, & ORIENTATION <i>with John Wheater, Katherine Blundell, & Sarah Miller</i>	AUDITORIUM
11.15	TALK BY JOCELYN BELL BURNELL <i>'Challenges facing scientists today: an overview'</i>	AUDITORIUM
12:00	TALK BY KAY DAVIES <i>'Overcoming challenges: acquiring confidence in research'</i>	AUDITORIUM
12.45	LUNCH	HALL
14.00	TALK BY CATHERINE HEYMANS <i>'Preparing your elevator pitch'</i>	AUDITORIUM
14.45	TALK BY JUDITH FINCH <i>'Help with overcoming challenges: making your university work for you'</i>	AUDITORIUM
15.30	TEA	RECEPTION ROOM
16.15	TALK BY ALYSSA GOODMAN <i>'Solutions for scientists: modern software tools that facilitate research'</i>	AUDITORIUM
17.00	PANEL DISCUSSION & BREAK OUT GROUPS	AUDITORIUM
18.00	END OF BREAK OUT GROUPS	
19.00	DINNER <i>3 courses, coffee, tea, chocolates & berries</i>	HALL
	POST DINNER TALK BY WILLIAM D. PHILLIPS <i>'Succeeding as a scientist'</i>	AUDITORIUM

DAY 2 - WEDNESDAY

14 September 2011

8.15	BREAKFAST FOR RESIDENTS <i>Full english with fresh fruit, pastries, coffee, tea, & juice</i>	HALL
9.00	TALK BY ANNE TREFETHEN <i>'Techniques for savvy scientists: how to win and manage grants'</i>	AUDITORIUM
9:45	TALK BY STEPHEN BLUNDELL <i>'Techniques for educating today's and tomorrow's scientists: how to give a good talk'</i>	AUDITORIUM
10.30	COFFEE	RECEPTION ROOM
11.00	TALK BY BARBARA JUSTHAM <i>'Engaging tomorrow's scientists: speaking to teenagers in diverse cultures'</i>	AUDITORIUM
11.45	TALK BY STEPHEN JUSTHAM <i>'Tomorrow's scientists: learning physics from the GlobalJetWatch website'</i>	AUDITORIUM
13.00	LUNCH	HALL
14.00	PANEL DISCUSSION & BREAK OUT GROUPS	AUDITORIUM
14.45	TALK BY KATHERINE BLUNDELL <i>'Learning to excel in research'</i>	AUDITORIUM
15.30	TEA & FAREWELL	RECEPTION ROOM



Reflections

FROM COLIN FRANKLIN

I am pleased to learn that you are holding a workshop for early-career researchers, as part of Professor Katherine Blundell's prize from the Royal Society in memory of my sister, Rosalind. It would be wonderful if the participants in this venture could think of Rosalind's scientific life - her approach to a problem - as it truly was, and not as legend has shaped it.

The simple fact is that she was a wonderfully happy enthusiast in each phase of

research, enjoying - for instance - the communion of friendship in French Government Laboratories before coming to London, as well as immense, excited telephone talks with Aaron Klug about the mutual progress of their work. At King's College London, human relations were difficult, and a parody of that period in Jim Watson's book endures. Nothing will kill the legend, of a remote and difficult character.

I should like to invite the participants of this workshop to think of Rosalind's intellectual brilliance, together with the intense excitement she felt as problems moved towards solution; also, believe it or no, of her almost mystic joy in mountain climbing, and a witty sense of the ridiculous.

Best wishes for all of you in the success of what you have undertaken.

PROFESSOR
KATHERINE BLUNDELL

Foreword

Welcome to St John's College, Oxford for the Future Science Leadership Seminars.

Together at this workshop, we have a great opportunity to think about strategies for maximizing the potential of our research and using our

time and our resources well - all of these things have the potential to favour our progress in science.

Separately after the workshop, we can put into practice our training in communication skills to share with teenagers the field that

we are privileged to work in day by day. This is a particularly important epoch in human history to communicate science to decision makers. Let's all do our bit to improve the scientific literacy of the next generation!

Scholarships which cover all meals and refreshments during the workshop and accommodation for the night of Tuesday 13th September are provided for attendees who commit to visit two schools within the six months following the Oxford course. Ideally you should visit two schools from the following list:

- *your home town*
- *your university city*
- *another town/city that is convenient for you to visit*

To aid you on your way, we have constructed a letter template for your use.



Dear [Name of head teacher],

I am a [graduate student/post doctoral research fellow/etc.] in the [Department of X] at the [University of Y]. I have recently attended a seminar on Science communication with teenagers, and would be very interested in visiting your school to discuss my current research with some of your students.

I am passionate about communicating the excitement of research with young people. Although I enjoyed [Physics/Math/etc.] at school it wasn't until I started university that I came into contact with Science that was currently being discovered. I understand that teachers are under pressure to deliver on system specifications and requirements, and while I cannot contribute to this particular endeavor, I hope I can support their efforts by showing students how the lessons they are learning are being applied and extended by those involved with research on the frontiers of knowledge.

I am aware that schools are very busy places and am happy to work within the limits of the school day. I would be comfortable talking to students aged between [12 to 14 / 14 to 18 / 12 to 18] and would be happy to come in during a normal lesson, or even as an extra session at lunchtime, after school or in the evening. My main area of research is [Z] which I believe links to the [Waves] material taught at GCSE and A level. I would very much welcome the chance to hear from the teacher about the previous learning of the students concerned to ensure my presentation is as relevant as possible.

[If there is any way the school would be willing to partially or fully cover my travel expenses, that would be greatly appreciated, however] there will be no charge for the talk itself.

I would be very grateful if you could forward this email to the Head of Science / Head of [Physics] for their consideration.

With best wishes,

[Name]

Biographies

JOCELYN BELL BURNELL



Dame Jocelyn is a professor at the University of Oxford, and has research interests in neutron stars, microquasars, and gamma ray bursts. Born in Belfast, she graduated with Honours in Physics from the University of Glasgow. She completed a Ph.D. at the University of Cambridge where she played a crucial role in the discovery of pulsars, opening up a new field of astrophysics, work for which her supervisor was awarded a Nobel Prize. Jocelyn has received honorary degrees from Harvard University, Glasgow University, and the University of Durham for her achievements, as well as many other medals and prizes from various institutions to honour her work. She was awarded a CBE in 1999, and was President of the Royal Astronomical Society from 2002 to 2004. In 2007 she was made a Dame of the British Empire. She is also a Fellow of the Royal Society and a Foreign Member of the US National

Academy of Sciences. She currently serves as President of the Institute of Physics, a post she has held since 2008. She has devoted her time to a number of outreach projects, encouraging young scientists of the future via television, documentaries, radio, and books, serving as a role model for generations to come.

KAY DAVIES



Dame Kay is the Dr Lee's Professor of Anatomy at the University of Oxford, and was Head of Human Anatomy and Genetics 1998-2005 and then Head of the merged Physiology, Anatomy and Genetics Department from 2008. Her research interests include the genetic basis of neuromuscular and neurological disorders. She is the Founding Director of the MRC Functional Genomics Unit aimed at exploiting genome information for the analysis of the function of nervous system genes. Kay also co-founded the

Oxford Centre of Gene Function to bring together genetics, physiology, and bioinformatics. She is a founding fellow of the Academy of Medical Sciences and was elected a Fellow of the Royal Society in 2003. She has an active interest in the ethical implications of her research and in the public understanding of science.

CATHERINE HEYMANS



Dr. Heymans is a European Research Council Fellow and Lecturer at the University of Edinburgh. She specialises in observing the Dark Side of our Universe, witnessing the ongoing battle between Dark Matters gravity bringing large scale structures together and Dark Energy's accelerated expansion of space stretching those same structures apart. She co-leads the Canada-France-Hawaii Telescope Lensing Survey and, with her team, is using this survey to test

whether we need to go beyond Einstein with our current theory of gravity. Amongst other projects she has also been a panel member on both the Hubble Space Telescope and European Southern Observatory time allocation committees. Since completing her PhD in 2003, Catherine has held postdoctoral fellowships from the Max-Planck Institute, the Canadian Institute of Theoretical Astrophysics, Marie Curie and most recently the European Research Council. When she is not busy unveiling the mysteries of the Universe or enthusiastically lecturing undergraduates she can usually be found building sandcastles and paddling in the sea with her two small children.

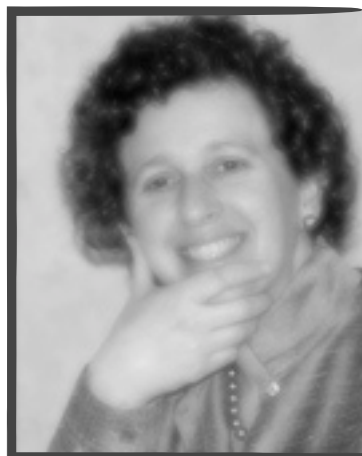
JUDITH FINCH



Judith Finch accidentally became the first woman to study French and German at New College Oxford, and followed this female-friendly start with a career in financial services in the City in the early 1980s. Qualifying with KPMG, she spent her formative years on the shop floor of a number of North London factories before specialising with some relief in venture capital. During her two decades with KPMG she variously worked in

financial services, manufacturing, retail, public sector, eBusiness, flexible working and race equality, produced three children and moved offices four times. She moved to Oxford University as head of Equality and Diversity where she ran the four University nurseries, managed the services to disabled staff and students, and organised the harassment network. Now a senior manager in the Oxford planning department, she regularly calls on her extensive secret network of fellow parents to get things done.

ALYSSA GOODMAN



Alyssa Goodman is Professor of Astronomy at Harvard University, a Research Associate of the Smithsonian Institution, and the Founding Director of the Harvard Initiative in Innovative Computing. Goodman and her research group at the Harvard-Smithsonian Center for Astrophysics study the dense gas between the stars, seeking how this interstellar gas arranges itself into new stars using a variety of observational techniques from radio to X-ray wavelengths. Goodman is principal investigator of the

unprecedented COMPLETE Survey of Star-Forming Regions, mapping out three large star-forming regions in our Galaxy, addressing key questions in Milky Way and stellar astrophysics. In 2008-9, Goodman was "Scholar-in-Residence" at WGBH, Boston's public television and radio station. She is also a major collaborator on the Microsoft WorldWide Telescope project. Goodman received her undergraduate degree in Physics from MIT in 1984 and a Ph.D. in Physics from Harvard in 1989. She held a President's Fellowship at the University of California, Berkeley from 1989 to 1992, after which she took up a post as Assistant Professor of Astronomy at Harvard. Goodman received the 1997 Newton Lacy Pierce Prize from the American Astronomical Society for her work on interstellar matter, and she became full professor at Harvard in 1999.

WILLIAM D. PHILLIPS



Professor Phillips shared the Nobel Prize for Physics in 1997 for the "development of methods to cool and trap atoms with laser light." He obtained his PhD at MIT, and was a

Chaim Weizmann postdoctoral fellow there for a few years, before taking a position at the U. S. National Institute of Standards and Technology (then the National Bureau of Standards) where he continues to do research on various aspects of ultra-cold atomic gases. He is also a Professor of Physics at the University of Maryland, College Park, and a Fellow of the Joint Quantum Institute, a joint venture of NIST and the University of Maryland. He has held Visiting Professorships at the Ecole Normale Supérieure in Paris and at Balliol College, Oxford and is a Fellow of the U. S. National Academy of Sciences. We encourage you to check out his excellent auto-biography: http://www.nobelprize.org/nobel_prizes/physics/laureates/1997/phillips-autobio.html

ANNE TREFETHEN



Professor Trefethen is the Director of the Oxford e-Research Centre. The Centre works with research units across the University, nationally and internationally to enable the use and development of innovative computational and information tools and

technology in multidisciplinary collaborations. Anne's research interests focus on numerical algorithms and software, computational science and high-performance computing. Before joining Oxford Anne was the Director of the UK e-Science Core Programme, having been the Deputy Director for four years. The Core Programme focussed on the generic issues for e-Science applications and Grid infrastructure through the development of appropriate middleware and infrastructure in collaboration with UK industry. Anne has worked both in industry and academia. She was Vice-President for research and development at NAG Ltd, developing a range of scientific, statistical and high performance libraries, Associate Director for Scientific Computational Support at the Cornell Theory Center and previously a research scientist at both the Theory Centre and Thinking Machines Corporation.

BARBARA JUSTHAM



Barbara Justham would have studied languages at university were it not for one inspirational GCSE Physics teacher. Instead she gained a degree in Natural Science from Cambridge

University followed by a PGCE there. Subsequently, she has gained 10 years of experience teaching Physics in a wide range of schools. The first was euphemistically described as being in 'challenging circumstances'; the second took the local asylum seekers' children and had a student body speaking 50 different home languages. Today, she is Head of Science at the Harrow International School in Beijing. Student uptake of Physics at A-level has increased dramatically in each school she has taught at. In addition, Barbara was for several years a PGCE mentor for the Oxford University Department of Education where she coached trainee Science and Physics teachers to develop a full suite of professional skills.

STEPHEN JUSTHAM



Stephen Justham is currently a Kavli research fellow at the Kavli Institute for Astronomy and Astrophysics in Peking University, Beijing, China. He studied Natural Sciences, specialising in physics, at Cambridge University. Stephen's PhD at the Open University was followed by a postdoc in Oxford, during which time he lectured three

courses at the Oxford University Summer School for Adults in both physics and astrophysics. His research mostly concentrates on problems related to stars and supernovae, applying theory and computational models to understand the formation and evolution of a range of perplexing systems.

STEPHEN BLUNDELL



Stephen Blundell is a Professor of Physics at the University of Oxford and a Fellow of Mansfield College. He has been Head of Condensed Matter Physics at Oxford from 2008 until 2011. He completed his PhD in 1993 at the University of Cambridge, where he had been an undergraduate, and worked on polarized neutron reflection from magnetic multilayers. His current research interests in Oxford include muon-spin rotation, molecular magnets, organic metals and superconductors, magnetic frustration and strongly correlated oxides. He has written a textbook on magnetism in condensed matter physics, coauthored a textbook on thermal physics with his wife, the astrophysicist Katherine Blundell, and also

written a popular introduction to superconductivity.

KATHERINE BLUNDELL



Katherine Blundell is a Professor of Astrophysics at Oxford University and a Fellow of St John's College and was until recently a Royal Society University Research Fellow. Her research interests include extreme energy phenomena in the Universe, for example around black holes, astrophysical jets, relativistic plasmas, accretion discs, microquasars and extragalactic radio galaxies and quasars. She has published extensively on these matters, with over one hundred papers in academic publications and is frequently invited to speak at conferences and different institutes around the world. She has lectured Oxford physics undergraduates for a number of years on Cosmology, and now lectures on Special Relativity. She has co-edited the Oxford University Press book "Energy... beyond Oil" and published, also with OUP, a text book for physics undergraduates co-written with Stephen Blundell called "Concepts in Thermal Physics" the second edition of which appeared in autumn 2009. She was awarded a Leverhulme Prize in 2005 for her research in

Astronomy & Astrophysics and the Royal Society Rosalind Franklin prize for research achievements in 2010.

SARAH MILLER



Sarah Miller is a Rhodes scholar finishing a DPhil in Astrophysics at Oxford, researching galaxy evolution and dark matter. While at Oxford she has received grants from the American Astronomical Society and New College, as well as won the Margaret K B Day Scholarship, awarded for academic excellence by the British Federation of Women Graduates. Her thesis work, published in *The Astrophysical Journal*, has resulted in numerous invitations to speak around the world. As she finishes her DPhil, she shares her time between Oxford and the California Institute of Technology, where she has a visiting studentship. Sarah is also dedicated to the public understanding of science as well as the scientific community's engagement beyond the world of science, and has appeared in or hosted radio shows and podcasts, as well as given public lectures with these aims.

Future Science Leaders Workshop

Oxford, 13th-14th September 2011

OXFORD
UNIVERSITY PRESS

20% discount

valid until 14th December 2011
only if orders are placed directly with OUP



Presenting Science

A practical guide to giving a good talk

CIGDEM ISSEVER AND KEN PEACH

Giving a good talk on science is a skill that can be learnt like any other, and in this book we take the reader through the process of preparing and presenting science to a wide variety of audiences, from a handful of colleagues to a major conference with a thousand delegates. Our approach is pragmatic rather than dogmatic.

152 pages | Paperback | 978-0-19-954909-2 | £19.95 £15.96
130 pages | Hardback | 978-0-19-954908-5 | £39.95 £31.96



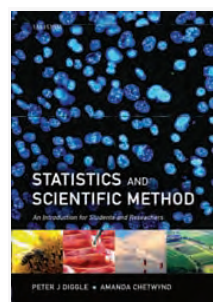
Practising Science Communication in the Information Age

Theorising Professional Practices

EDITED BY RICHARD HOLLIMAN, JEFF THOMAS, SAM SMIDT, EILEEN SCANLON, AND ELIZABETH WHITELEGG

Reviews the trends and issues that are engaging practitioners of science communication, critically exploring topics as diverse as peer review and the protection of intellectual property.

264 pages | Paperback | 978-0-19-955267-2 | £22.99 £18.39



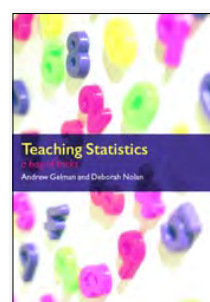
Statistics and Scientific Method

An Introduction for Students and Researchers

PETER J. DIGGLE AND AMANDA G. CHETWYND

An antidote to technique-orientated approaches, this text avoids the recipe-book style, giving the reader a clear understanding of how core statistical ideas of experimental design, modelling, and data analysis are integral to the scientific method. No prior knowledge of statistics is required

192 pages | Paperback | 978-0-19-954319-9 | £19.95 £15.96
192 pages | Hardback | 978-0-19-954318-2 | £50.00 £40.00



Teaching Statistics

A Bag of Tricks

ANDREW GELMAN AND DEBORAH NOLAN

Students in the sciences, economics, psychology, social sciences, and medicine take introductory statistics. Gelman and Nolan have put together a fascinating and thought-provoking book. Based on years of teaching experience the book provides a wealth of demonstrations, examples and projects that involve active student participation.

320 pages | Paperback | 978-0-19-857224-4 | £38.00 £30.40
320 pages | Hardback | 978-0-19-857225-1 | £92.00 £73.60



Mathematical Techniques

An Introduction for the Engineering, Physical, and Mathematical Sciences: Fourth Edition

DOMINIC JORDAN AND PETER SMITH

Provides a complete course in mathematics, covering all the essential topics with which a physical sciences or engineering student should be familiar. It introduces and builds on concepts in a progressive, carefully-layered way, and features over 2000 end of chapter problems, plus additional self-check questions.

1,008 pages | Paperback | 978-0-19-928201-2 | £34.99 £27.99



Exploring Leadership

Individual, Organizational, and Societal Perspectives

RICHARD BOLDEN, BEVERLEY HAWKINS, JONATHAN GOSLING, AND SCOTT TAYLOR

This book describes the theories and models of leadership that have developed over time, and provides an analytical and multidisciplinary framework for discussion of leaders and leadership from individual, organisational, and societal perspectives.

232 pages | Paperback | 978-0-19-954766-1 | £19.99 £15.99
320 pages | Hardback | 978-0-19-954765-4 | £50.00 £40.00

See below for information about how to claim your 20% discount with our promotional code: AAFLY5



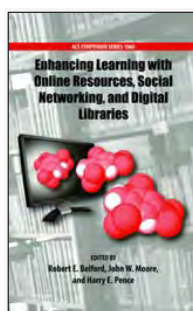
Explaining Research

How to Reach Key Audiences to Advance Your Work

DENNIS MEREDITH

Meredith maps out how scientists can utilise sophisticated tools and techniques to disseminate their discoveries to important audiences. As the “information age” places new demands on scientists, *Explaining Research* will be a valuable resource not only for current professional scientists, but also for students who are the voice of the science community’s next generation.

374 pages | Paperback | 978-0-19-973205-0 | £22.50 £18.00



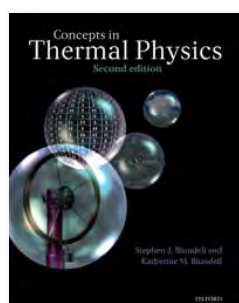
Enhancing Learning with Online Resources, Social Networking, and Digital Libraries

EDITED BY ROBERT BELFORD, JOHN MOORE, AND HARRY PENCE

Our science and our society are in the midst of a digital revolution. How will education in general and chemical education in particular respond to these dramatic changes? This book discusses the evolution of information and the various state-of-the-art communication tools that are available for scientific research and education.

352 pages | Hardback | 978-0-84-122600-5 | £95.00 £76.00

OUP titles from Future Science Leaders Workshop 2011 speakers...



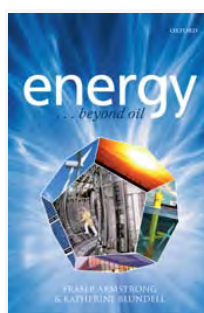
Concepts in Thermal Physics

Second Edition

STEPHEN J. BLUNDELL AND KATHERINE M. BLUNDELL

This modern introduction to thermal physics contains a step-by-step presentation of the key concepts. The second edition of this popular textbook maintains the structure and lively style of the first edition but extends its coverage, and new examples and exercises have been added.

512 pages | Paperback | 978-0-19-956210-7 | £28.50 £22.80
512 pages | Hardback | 978-0-19-956209-1 | £57.50 £46.00



Energy... beyond oil

FRASER ARMSTRONG AND KATHERINE BLUNDELL

Both the forthcoming depletion of oil reserves and the urgent need to arrest global warming caused by the combustion of fossil fuels necessitates new thinking from individuals and governments alike. This book will consider a global, long-term matrix of solutions to the energy problem as a necessary condition for a sustainable future existence on this planet

240 pages | Hardback | 978-0-19-920996-5 | £37.50 £30.00

HOW TO ORDER:

20% discount

when orders are placed directly with OUP

Valid until 14th December 2011

If you would like to place an order after the Workshop please order from
OUP Website: www.oup.com/uk
By Telephone: +44 (0) 1536 452640
(Mon-Fri, 8.30-17.00 UK time)

P&P: UK FREE P&P on orders over £20, or £3 per order. Europe: £5. Rest of World: £7.

QUOTE PROMOTIONAL CODE: AAFLY5

Your best research starts here : www.oup.com/online

OXFORD
UNIVERSITY PRESS

ENGAGING TOMORROW'S SCIENTISTS: SPEAKING TO TEENAGERS IN DIVERSE CULTURES

Barbara Justham

HEAD OF SCIENCE
HARROW INTERNATIONAL SCHOOL, BEIJING

Do!

OR AT LEAST, CONSIDER Techniques to try

Sharing objectives

Near the start show (don't just tell) the students what you are hoping they will learn. This helps them listen out for the key points. Make the language clear, active and simple.

Plenary

At the end show the objectives again and allow students to assess whether they have achieved them all – they may need to discuss them together and/or ask you to clarify. This gives them a sense of achievement that they really have got something concrete from the talk. More interesting ways to conduct the plenary are given below.

Key images

A lot of students really appreciate images to help them remember key points. These don't have to be relevant pictures – bad puns or dingbats will also help them to remember! Show these on the screen and also...

Out of the hat

As you show each image, fold up a piece of paper with it on and put it into a hat. Pause the talk at intervals, ask students to pull out 2 pictures at random and to find a way to link them together (give them time to think about this). As the talk progresses this becomes more difficult but it can be quite fun!

Build up a mind map

Use the key images to create a mind map on a board at the front of the room. At the end of the presentation give groups of students sets of the pictures, hide your map, and ask them if they can recreate it. While they are discussing it some may also be willing to ask you to explain any they don't understand again.

Set the scene

Show a few of the key technical terms for your talk and ask students to discuss what they already know about them. From their answers you should get a reasonable idea whether you need to recap key terms or can move ahead quickly.

Match them up

For quantitative data; can be good as an intro to the whole presentation to give them an idea of your area. Show a range of numbers and ask students to match them to their quantities, then tell them the answers.

Break up the format

Don't only rely on powerpoint! Try prezi, or a video section – your own or something downloaded from YouTube or elsewhere.





Think – pair – share

This one works well for forming an opinion as well as facts. Give students a question or problem and allow them a specified length of time to try it individually. Then pair them and ask them to agree on a mutual solution. Then share the answers – a show of hands is quick; be careful if you don't want a full-blown argument!

Pyramids

Best for ordering priorities, e.g. which projects would students fund. Give out 10 options and ask students to order them with the most important at the apex of the pyramid. Asking students to do this in pairs encourages discussion.

Key terms

Show important vocabulary as it appears in your presentation – many students need to see new words as well as hear them. It's a good idea to give out a key terms sheet with definitions so that they can check back later in the talk when they have forgotten what you said.

Team teaching

Stop at intervals and ask pairs of students to try to summarise the story so far to each other. This may encourage them to ask about bits they have not followed.

Personality shines

Share yourself: if you love Calvin & Hobbes, let them see that. If you're a keen climber and can link that to your presentation, great – they need to know researchers are real. Being funny / dreadful is fine, it helps them to remember what you say. Personally I would avoid apologising for being a geek or making jokes at the expense of the subject – your enthusiasm is really important.

Lecturing

If you want to speak for an extended period (this means >5 mins!) make a feature of it by explaining how to take notes and giving them a chance to try it. They will really struggle – don't put them off applying to university by being unsympathetic!

Wake me up

Physical movement is great for waking up a group who are slowly zoning out. Ideally tie it to your talk – get them to stand if they agree, for example – or else get them doing a quick finger/foot wiggling exercise and tell them this is one way of staying awake without drawing attention to yourself in lectures.

Visual puzzles

Try what happens next / what's missing or spot the difference puzzles.

Scratch where they itch

Recognise that they probably would really like to ask you about university and agree with the teacher how much time you will give them for this; let them know at the start it is coming up.

Question box

At the start give everyone small slips of paper for them to jot down any questions. Allow opportunities to do so at a few key points; also a good idea to get them to discuss possible questions with each other. Towards the end, everyone puts their paper into a box (even if it's blank) so that no-one stands out for asking a 'stupid' question.

DON'T!

Pitfalls to avoid

Losing face

Teenagers can be excruciatingly easy to embarrass. Avoid putting anyone on the spot. Instead... Always give take-up time – the chance to think about a question for a reasonable period (very slow count to 5 as an absolute minimum)

Allow students to discuss their ideas before sharing them with you. They are also much more likely to ask a question if they have checked their friend doesn't think it's obvious first!

Following discussion, ask if anyone heard anything they thought was good – they prefer presenting someone else's ideas.

Don't pick on people to answer; ask for volunteers. Use the expertise of the teacher. Ask them to choose who should answer for you; they know who is likely to know and who will be willing to speak out.

Give out slips of paper at the start so they can jot down anything they want to ask; collect them in when they are doing an activity or at the end and answer them so it isn't clear who was asking what.

Lost and confused... or patronised and bored

You need to know what the students in front of you already know. Perhaps the easiest way to find out is to talk to a teacher – who will not only be able to tell you which concepts are taught when but also which aspects students find the most difficult. Alternatively check the specification of the relevant exam (GCSE for 14-16s, GCE A level for 17-18s, but remember they haven't covered everything until the end of the course so check with their teacher).

Talk talk talk talk talk

School students do not know how to listen to a lecture! Teachers break up their speaking, aiming not to talk for more than 5 mins max without giving some activity.

Time may not be money...

Schools are timed to the minute; there is no leeway on lesson changeovers. You need to arrive early as there will be visitors' documentation to complete. Make sure you know exactly what time the lesson ends and stick to it. Be aware the teacher may not have time to collect you from reception or walk you back with effusive thanks – they probably have lessons either side of your presentation and a science teacher is not allowed leave students alone in the lab. Similarly don't arrive expecting them to be able to photocopy sheets for you!

Trust the technology

Schools are notorious for having old, half-broken IT equipment and teachers who don't know what to do with it. Don't rely on anything working unless you bring it with you (you may need to request a projector, screen, speakers...). Also be aware that most schools block YouTube and social networking sites – you need to download any videos you want to use.

Go it alone

Remember the teacher is there! He/she knows these students and has a far greater vested interest than you in your session going well. Make it clear beforehand that you want him/her to deal with all discipline issues and that you will rely on his/her help in choosing students to answer. If there's a sticky patch where the students appear not to understand something you thought they had studied, ask the teacher to bring them up to speed quickly – he/she will know what the problem is and you can get back to your presentation more quickly.

HELP!

Sources of information, inspiration & advice

My email: bjustham@harrowbeijing.cn

Exam boards – for specifications or past exam papers. It's probably best to navigate to the appropriate qualification (GCSE/A level GCE) for the age group you are speaking to and then search for the keywords you are presenting to see what the students should know. Remember they won't have covered everything for this qualification until the end of the course though!
OCR - <http://www.ocr.org.uk/>
Edexcel - <http://www.edexcel.com/Pages/Home.aspx>
AQA - <http://www.aqa.org.uk/>
CIE (international only) - <http://www.cie.org.uk/>

Lots of ideas for good lessons and resources to use:
<http://www.iop.org/education/teacher/resources/index.html>

Lots more ideas, resources and also TV clips:
<http://www.tes.co.uk/teaching-resources/>

Prezi (for presentations)
<http://prezi.com/>

Notes

Notes

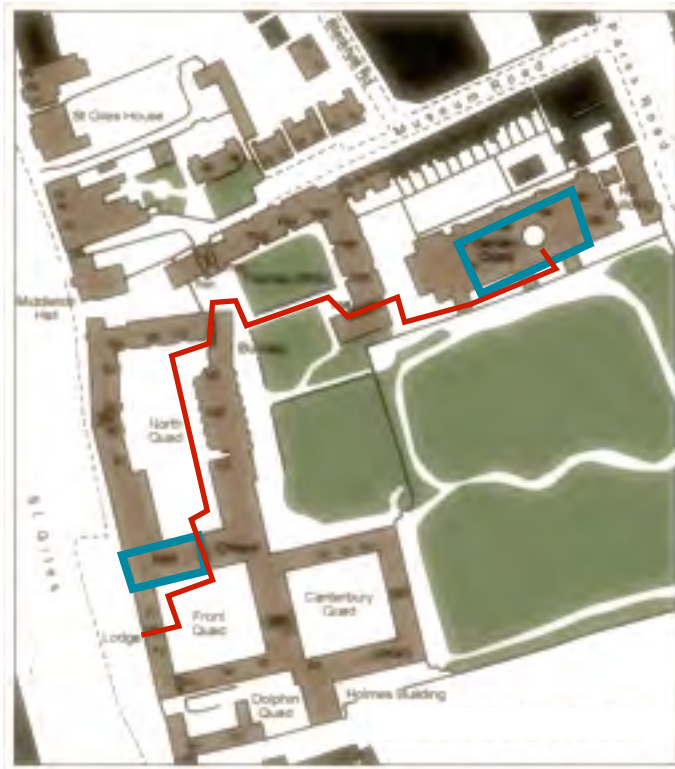
Notes

Notes

Maps



Zoom in on St John's College Grounds



To get to the Auditorium and Reception Room in the Garden Quad:

- Enter the College at the Lodge entrance
- Cross Front Quad and go through the passage way between the Hall and Chapel
- Cross North Quad and go through the passage way by the Bursary
- Turn right and go past Thomas White Quad and through the passage way to Garden Quad
- The Reception Room is opposite the Auditorium in the middle of Garden Quad

Allow 3-4 mins to find your way through the College to the Garden Quad.

Principal Organiser: Katherine Blundell

Co-organiser: Sarah Miller

*We would like to acknowledge the help of those
who made this workshop possible, namely:*

Fraser Armstrong

Andy Carslaw

Jackie Couling

Vanessa Ferraro-Wood

Murray Goodes

Helen Hall

Ashling Morris

Andrew Parker

Sebastian Perez

Sophie Peterson

John Wheeler

& special thanks to our sponsors



St John's
College



Programme design by Sarah Miller