
Girls in Physics – The work of the IOP

EPWS General Assembly and Conference 2010

11 June 2010

www.iop.org

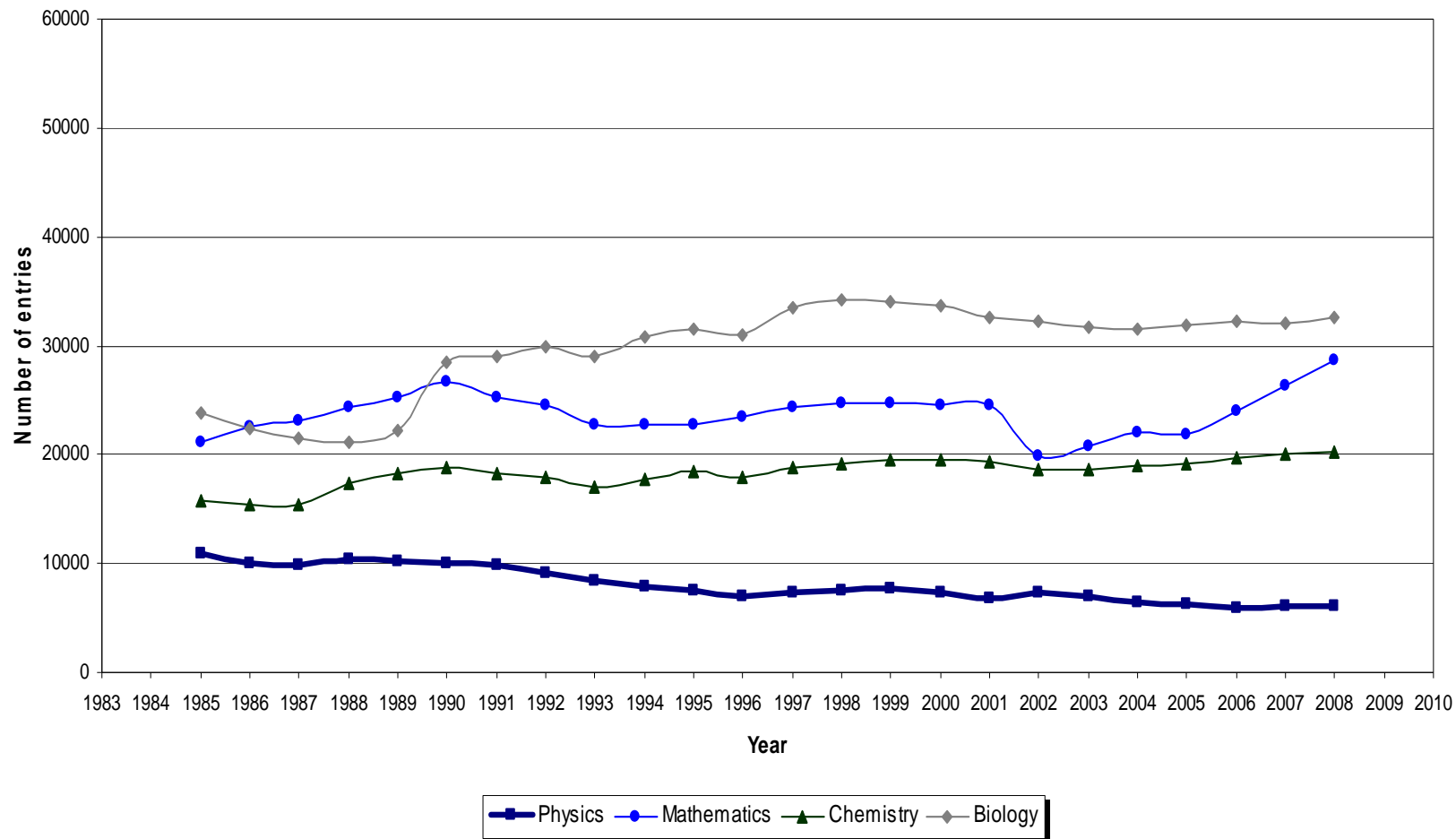
Girls in Physics project – the drivers

- Driven by concern about declining take-up of physics post-16 by boys and girls
- The Science and Innovation Investment Framework 2004-2014 – Next Steps had a challenging target to improve the supply of scientists
 - by 2014, entries for A level physics to be up by 45% to 35,000
- In a sample of 1500 schools nearly a quarter of all female entries came from 40 schools
 - most of these were single sex selective schools
 - what are these schools doing successfully?

The number of male entries to A-level examinations in sciences and mathematics 1985-2008
(source JCQ)



The number of female entries to A-level examinations in sciences and mathematics 1985-2008
(source JCQ)



In 2006 the IOP published two reports

Girls in the Physics Classroom –

- A review of the Research on the Participation of Girls in Physics
- A Teachers' Guide for Action

Two 15 min. TV programmes also made:

- Saving Nellie
- KS3/4 Science: Girls in Physics

The Research Review - Myth Busting

- Enjoyment of physics won't increase participation on its own
- Girls can achieve high grades and still not feel satisfied with their understanding
- Teachers' effects on girls and boys differ
- Single sex organisation alone will not increase participation
- Girls are not afraid of physics any more than boys are
- Girls find it less interesting and less relevant to their career choices.

Teachers' Guide for Action

- Builds on the good practice exemplified by successful schools
- Suggests strategies for science teachers and departments to use, to reflect on teaching and learning and find out what is happening in their schools
- Has questionnaires to use with students and teachers to facilitate this
- Ideas on how to use the videos as part of a seminar or CPD session.

Girls into Physics Action Research Project

- **Support for teachers; understand the issues and take action**
- **IOP Resources / DCSF funding**
- **Action research with teachers – National Network of Science Learning Centres**
- **Pilot 2007, extended 2008 funded by DCSF (100 schools)**
- **Participatory Evaluation 2009 – Teachers Voices**

So how are teaching and learning strategies based on gender research being used to engage girls with physics?

What happened...

- Students heard and involved
- Teachers better understanding of students
- Teachers and students know each other
- Better planning – re-frame and shape intervention
- Reflect and monitor progress

What helps...

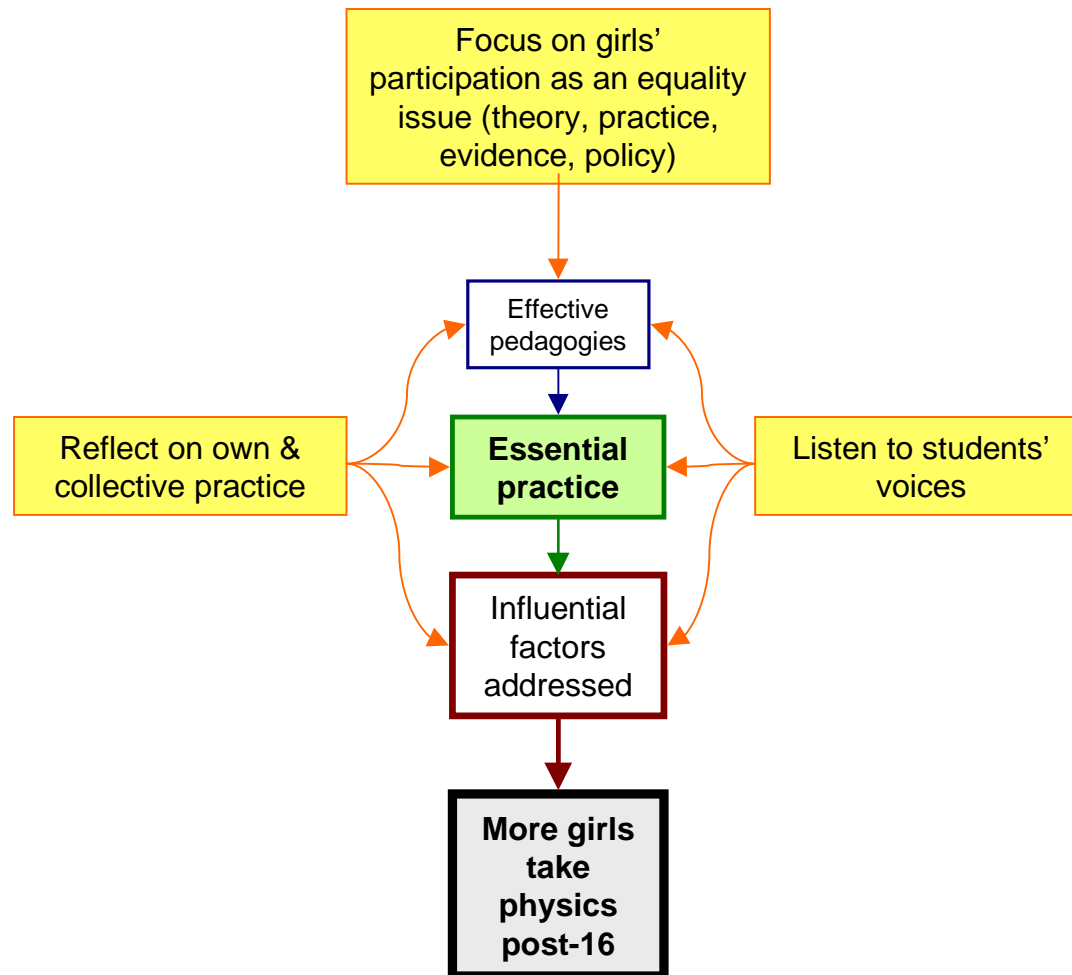
- CPD
- Accessible literature and pedagogical research
- Action research process
- Self evaluation
- Working with others

“Better teaching is a better experience for us and for the students, whether boys or girls.”

“We don’t want to make it more ‘girly’ – just make girls like it.”

Teacher practices in effecting change

Girls into Physics
Action Research



Recommendations for teachers

Learning & Teaching

- Talk to students to understand the context in your classroom
- Get students onside to work with you to change this
- Make sure students understand what physics is
- Discuss the nature, purpose and relevance of physics

Classroom Management

- Actively manage groups and group work
- Vary questioning styles
- Sharing good practice in school and beyond is valuable

Careers

- Careers advice should be integrated throughout secondary school
- Become aware of students' career aspirations
- Improve access to existing physics-related careers materials
- Links to careers should be highlighted throughout normal teaching

Where we are now

A new resource now available:

Engaging with Girls

Increasing the participation of girls in physics— an action pack for teachers

Includes a practical guide to developing and embedding good classroom practice, as well as other resources for teachers to use in the classroom.

Workshops for teachers:

Interactive workshops to help teachers develop gender aware approaches and make use of the resources in the action pack.



In particular, girls are more likely to continue with physics after the age of 16 if:

- **physics is taught in a way that engages with the interests of young people**
- **there is an expectation that anyone can do physics**
- **classrooms are managed to ensure active participation by students**
- **the focus of learning is ideas rather than unconnected facts**
- **students feel supported in their learning**
- **young people understand the contribution that physics makes to society and can make to their lives.**

Find out more...

'Girls in Physics' at The Institute of Physics

www.iop.org/education

'Girls into Physics' at the Science Learning Centres

www.sciencelearningcentres.org.uk

The Girls into Physics Action Research Evaluation is available from the DCSF:

1. Research Brief DCSF-RB103 Girls into Physics: Action Research

<http://www.dcsf.gov.uk/research/data/uploadfiles/DCSF-RB103.pdf>

2. Full Research Report DCSF-RR103 Girls into Physics Action Research

[http://www.dcsf.gov.uk/research/data/uploadfiles/DCSF-RR103\(R\).](http://www.dcsf.gov.uk/research/data/uploadfiles/DCSF-RR103(R).)