

Opening doors: ensuring equality of access to all subjects for boys and girls

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Opening Doors - an Institute of Physics and Government Equalities Office project

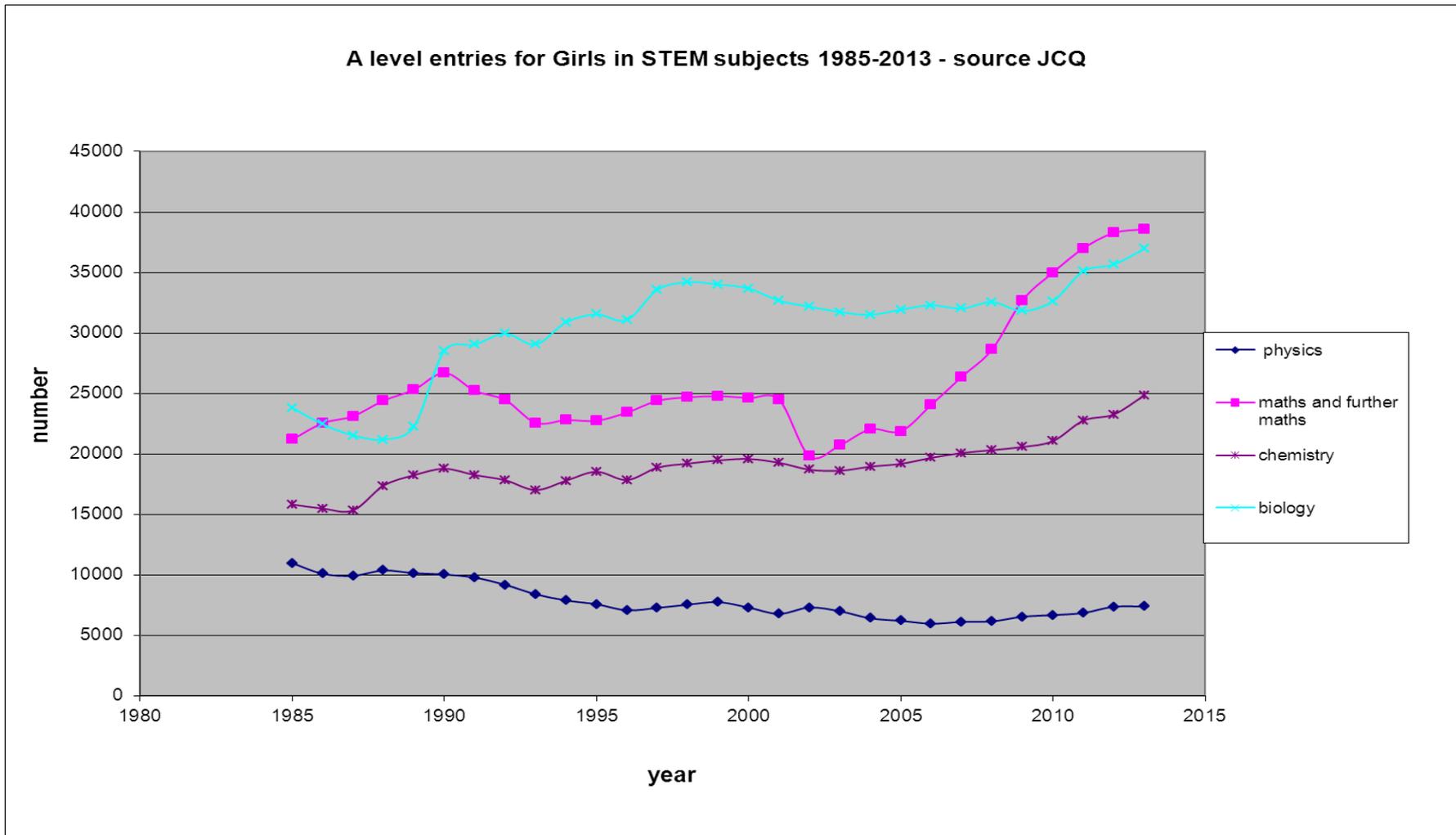
- investigating and addressing gender stereotyping in secondary schools.
- Resulted in a good practice guide, highlighting issues that many schools deal with on a daily basis.
- Presents suggestions for schools facing similar barriers, including nine essential features of a school that is actively addressing gender equity.



Summary of presentation

- Background to the project from the IOP perspective
- Details of the project
- Next steps and discussion

Background – A level entries



A-level subjects for female students 2012

1	English	63838
2	Psychology	41308
3	Biology	35664
4	Art and Design subjects	34523
5	Mathematics	34301
6	History	26491
7	Sociology	23514
8	Chemistry	23260
15	French	8593
16	Economics	8037
17	Law	7994
18	Physics	7361
19	Design and Technology	7298
20	Political Studies	6591
24	Spanish	4871
25	ICT	4284
26	Mathematics Further	3972
27	Music	3790
36	Irish	203

A-level subjects for male students 2012

1	Mathematics	51413
2	Biology	27410
3	Physics	27148
4	Chemistry	25974
5	English	25800
6	History	25161
14	Physical Education	11030
15	Design and Technology	9807
16	Mathematics Further	9251
17	Political Studies	8669
18	Sociology	7843
19	Religious Studies	7298
20	ICT	6804
24	Drama	4763
25	Other modern languages	4020
26	French	3918
27	Computing	3512
36	Irish	101

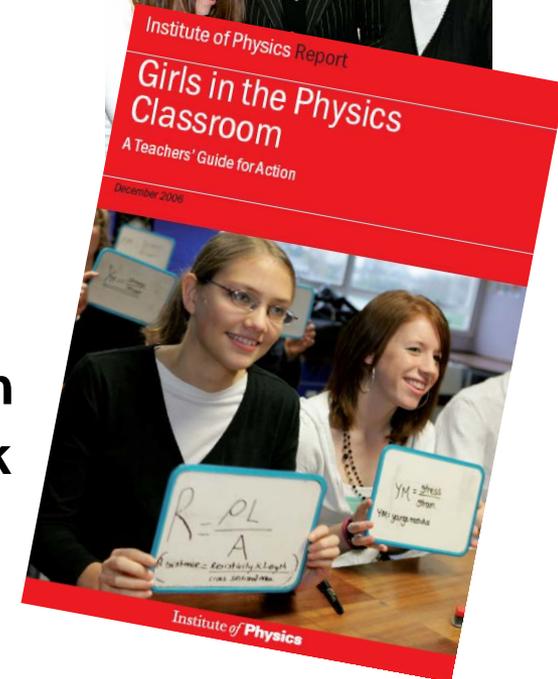
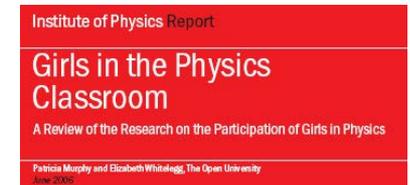
Degree course destinations for accepted applicants with physics and mathematics A-level in 2011

place	males		females	
	course destination	%	course destination	%
1	mechanical engineering	13.7	physics	9.2
2	physics	11.0	pre-clinical medicine	7.0
3	civil engineering	7.5	mathematics	5.3
4	electronic & electrical engineering	5.7	chemistry	5.1
5	aerospace engineering	5.2	civil engineering	4.8
6	computer science	4.9	architecture	4.8

Girls in Physics – under-representation post-16

To support teachers, IOP have:

- **Developed resources (2006)**
 - Girls in the physics classroom – research review
 - Girls in the physics classroom – teachers' guide
- **Run action research project for DCSF with Science Learning Centres**
- **Worked on improving physics pedagogy with schools, via the Stimulating Physics Network**



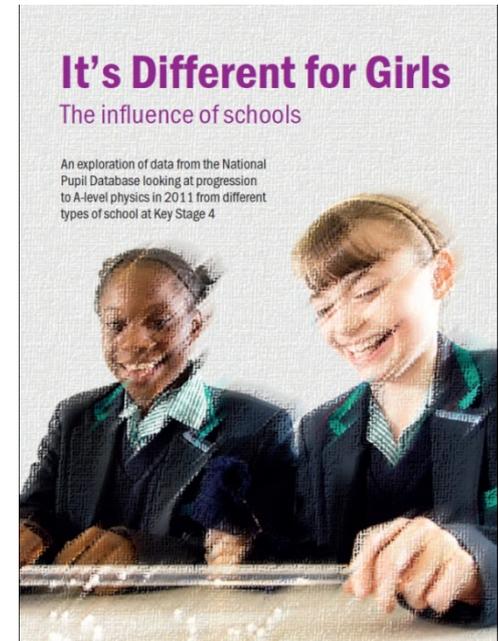
The key influences on students' attitudes to physics were identified as:

- Self-concept – that is, students' sense of themselves in relation to the subject; the value they place on the subject and their willingness to engage with it;
- Views of physics – that is, how students experience physics at school;
- Teacher-student relationships – that is, how personally supportive students find their physics teacher.

It's Different for Girls (October 2012)

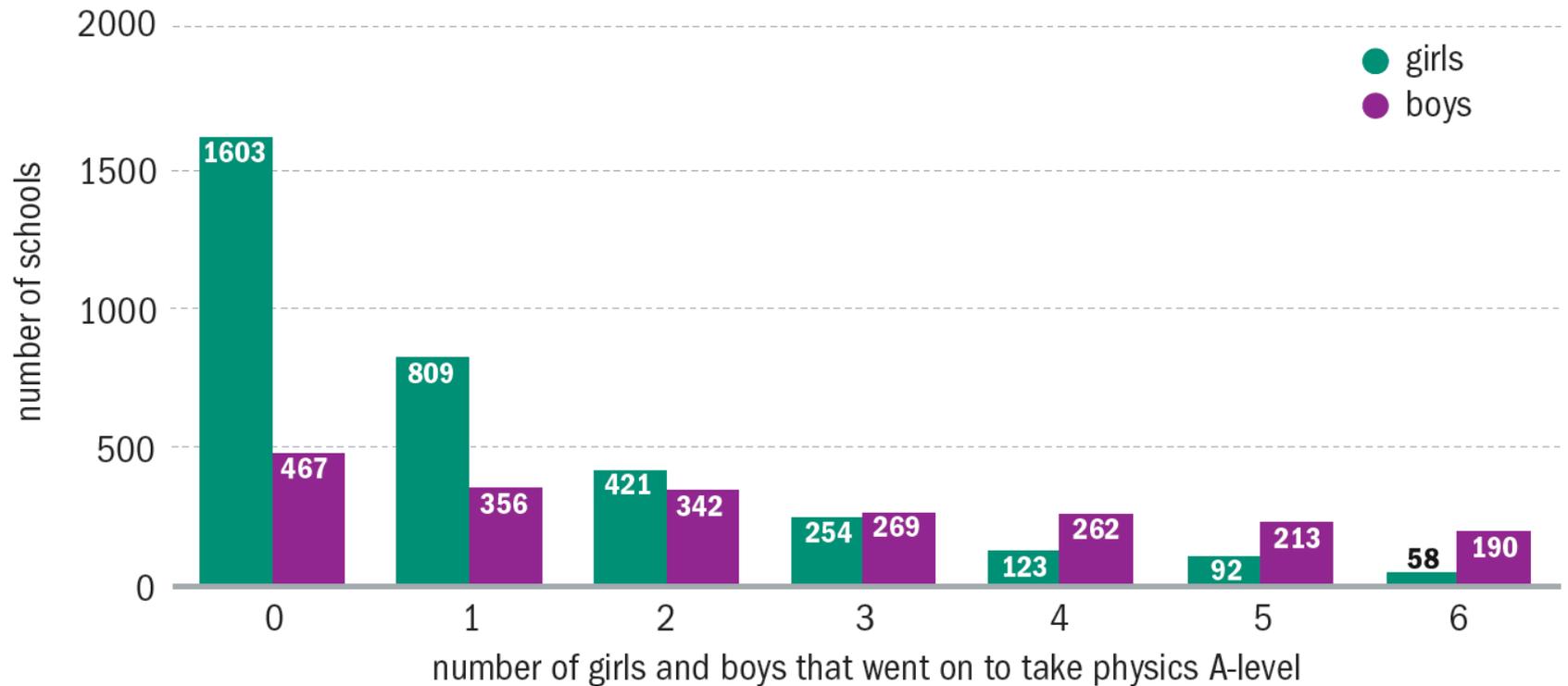
An exploration of data from the National Pupil Data-base

- Looking at progression to A-level physics from different types of school
- Assumed that pupils' experience of teaching at KS4 will be a critical factor in choice of A levels.
- Are there patterns in the type of school where pupils' sat their GCSEs and progression on to A-level physics?



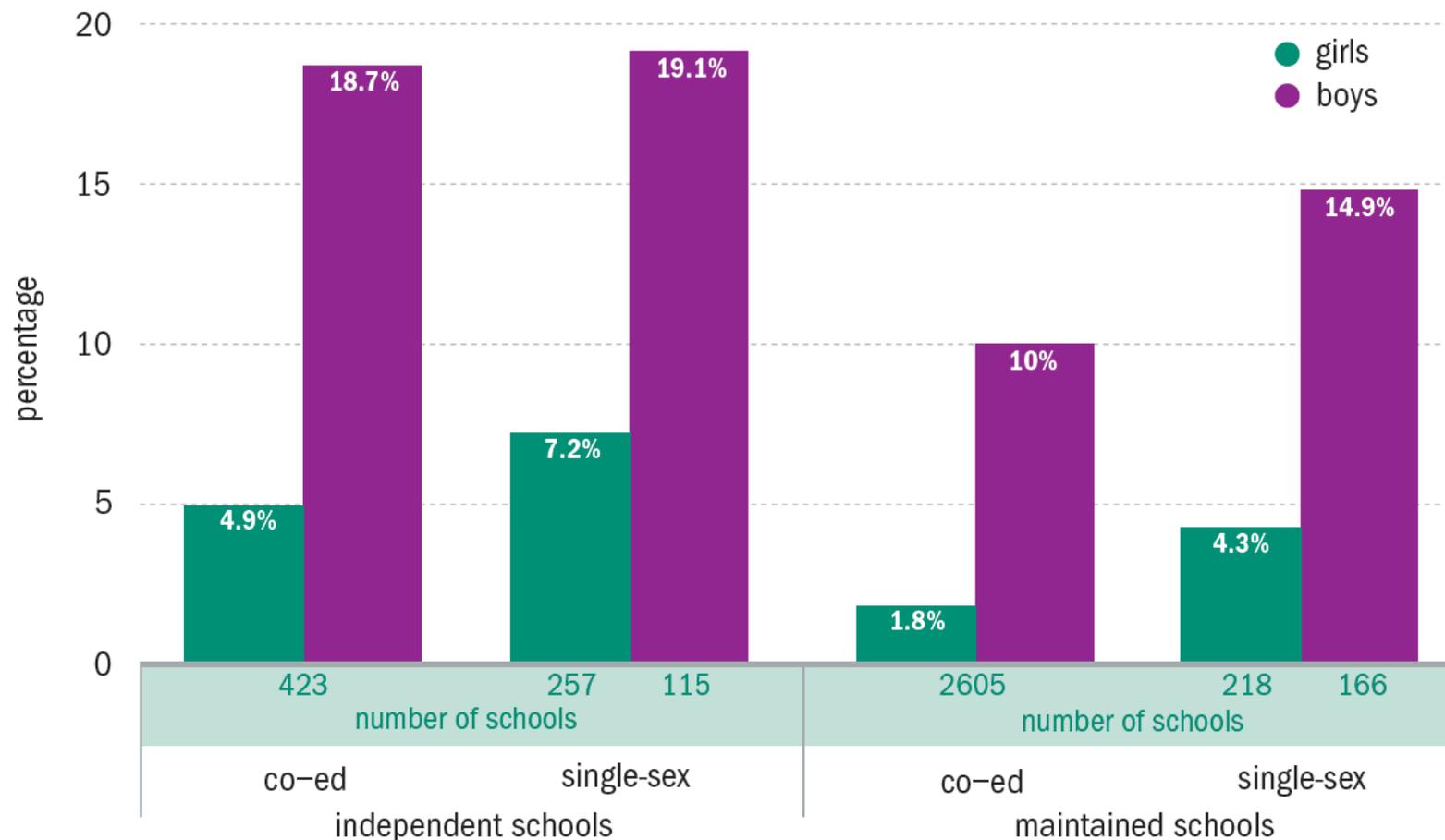
http://www.iop.org/publications/iop/2012/page_58292.html

Figure 1a: Number of schools against the numbers of girls and boys progressing to A-level physics in 2011



Almost half (49%) of state-funded, co-ed schools sent no girls to study A-level Physics in 2011

Figure 2: Percentages of girls and boys who went on to take physics A-level in 2011 by type of school



Main findings

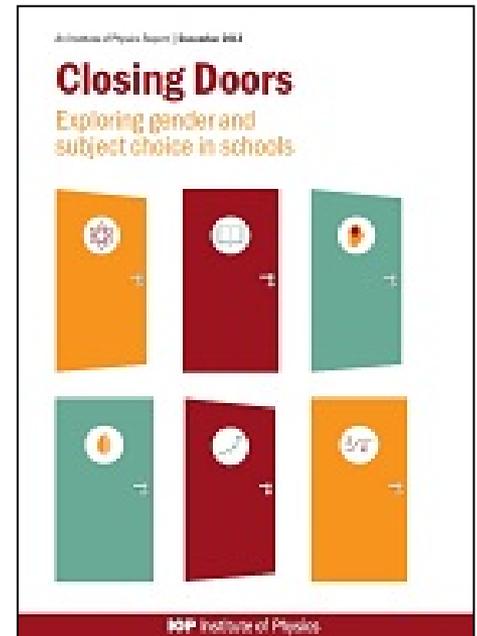
- 49% of state-funded co-ed schools sent no girls on to take A-level physics in 2011. The figure for all secondary schools in England is 46%, compared to only 14% for boys
- Girls were almost two and a half times more likely to go on to do A-level physics if they came from a girls school, rather than a co-ed school (for state-funded co-ed schools in England).

Observations

- The school environment can have a large effect on whether girls choose physics
- Part of that will be due to better teachers...
- ...but some of it will be due to the culture of the school
- Next project was to look across a range of subjects

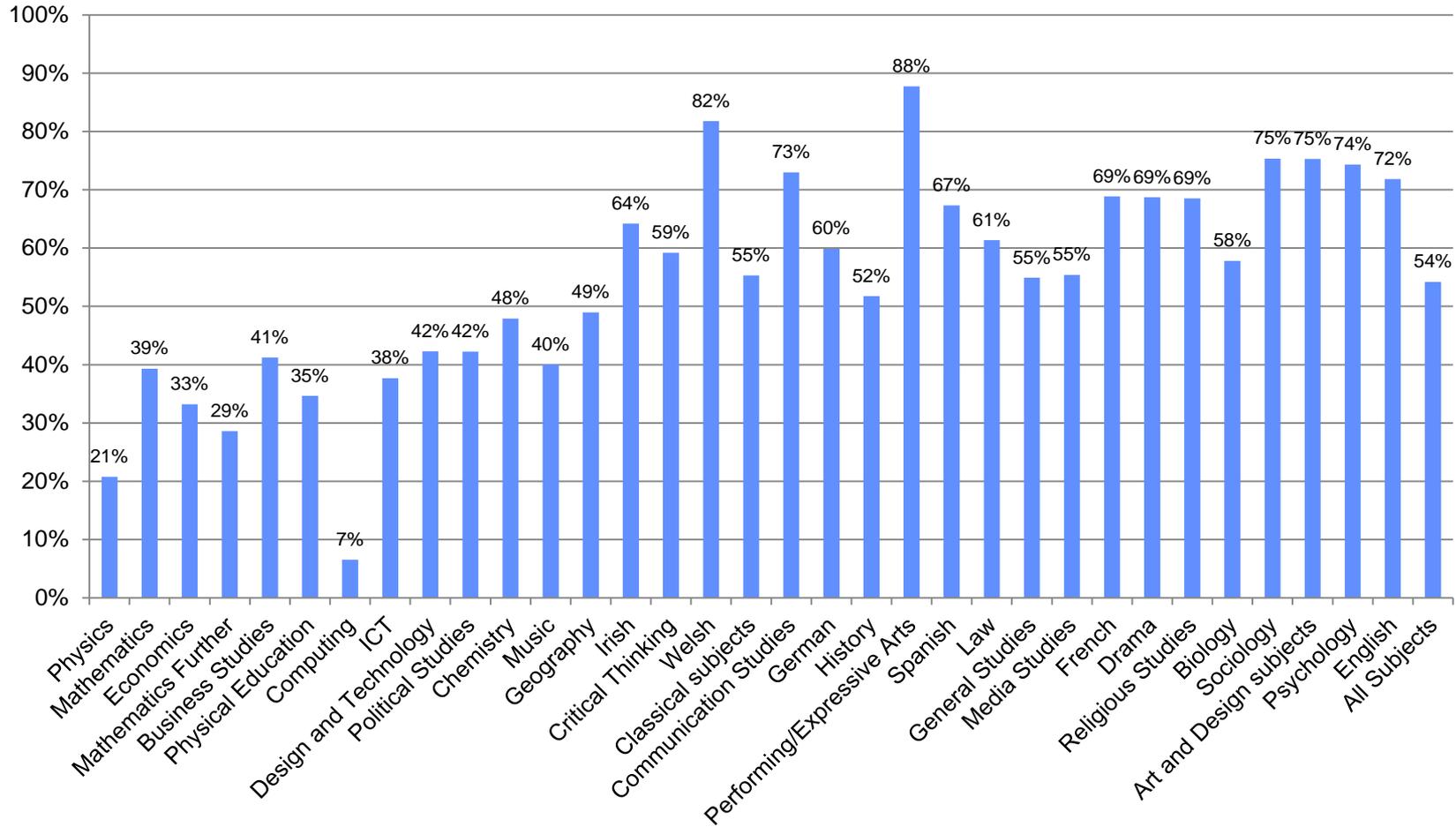
Closing Doors: exploring gender and subject choice in schools

- published December 2013
- built on the findings of the previous report which showed that progression of girls to physics depended strongly on the type of school they attended
- decided to look at progression to other gendered subjects and see if there was the same pattern as for physics



http://www.iop.org/education/teacher/support/girls_physics/closing-doors/page_62076.html

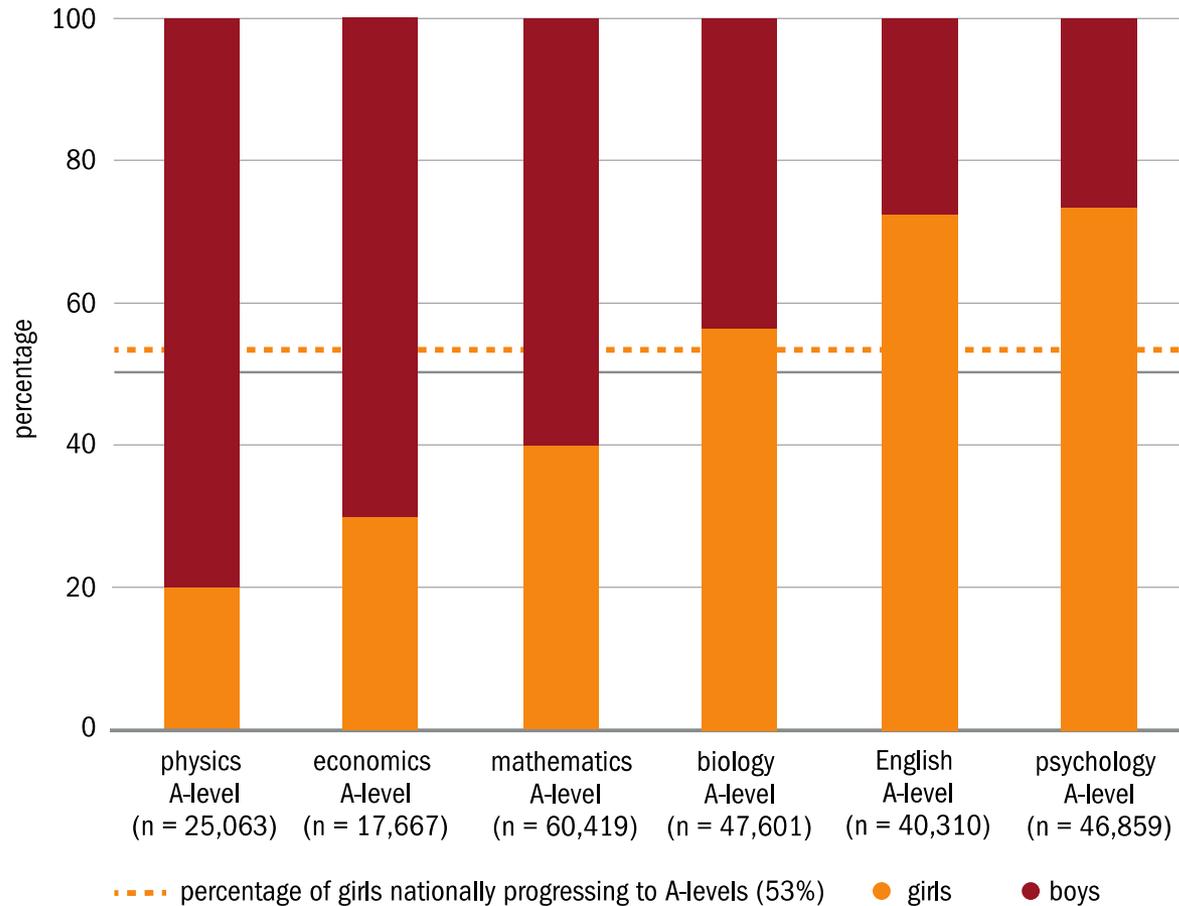
% Female entry to A-level subjects in 2013



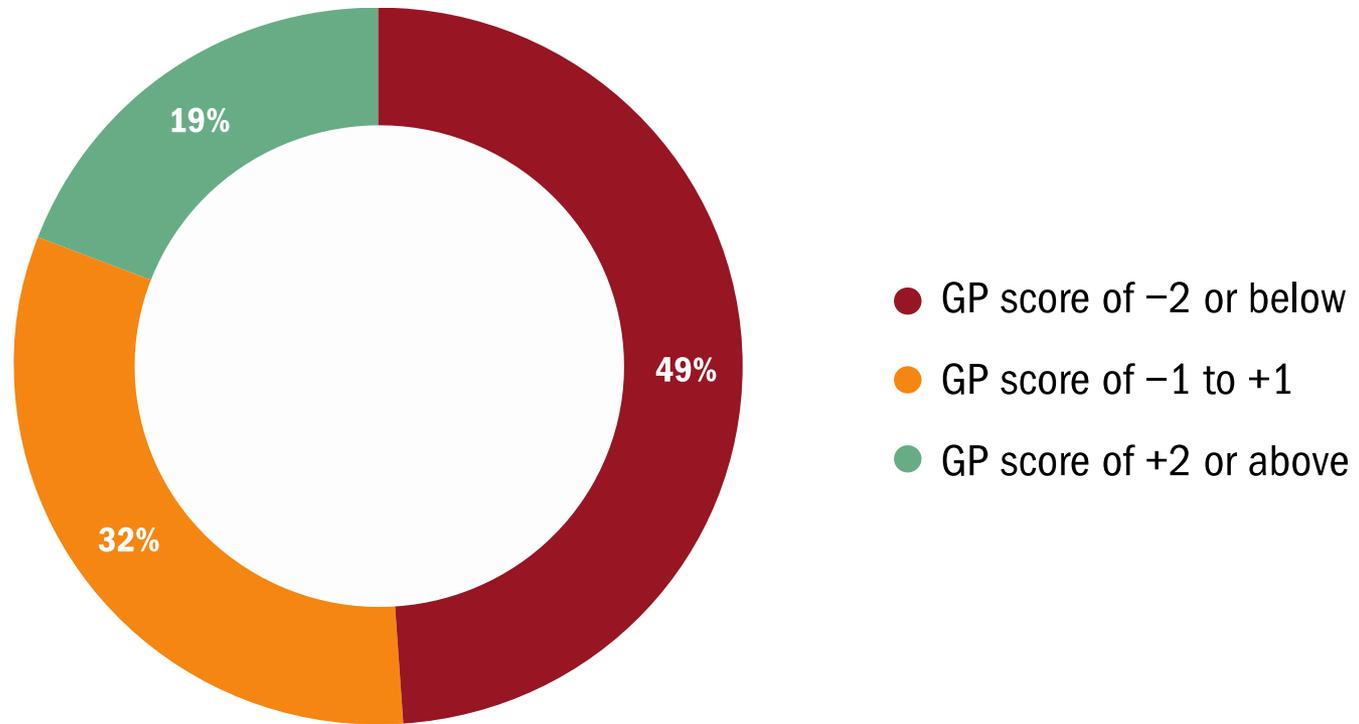
Observations

- About half the subjects show significant gender bias
- Boys are more likely to choose “facilitating subjects” (with the exception of languages)
- Gender influence on choice of subjects is not necessarily correlated with ability or performance

National ratios of male and female entries to the six selected A-level subjects averaged over the years 2010 to 2012 in England (JCQ)



81% of state co-ed schools either maintain or make worse gender stereotyping



Despite statutory duty on schools to promote equality of opportunity

Main Findings

- 81% of state-funded, co-educational schools are either sustaining the (dismal) national ratios, or making them worse
- The fact that so many co-ed schools are at or below “average” means that single-sex schools must be better at challenging gender stereotypes
- Large regional differences : London and East Midlands “best” and South West “worst”
- % FSMs has a major effect on overall numbers progressing to A levels but not on gender balance.

Opening Doors

- Joint funding by the IOP and Government Equality Office
- Aimed to identify barriers to, and good practice in, overcoming gender stereotypes
- 2 networks with 5 schools in each of them –
 - a) in the SW around Bristol and Bath
 - b) along the S coast between Portsmouth and Brighton

Opening Doors – how it worked

- Two to three network meetings to share good practice and raise awareness of the issues.
- Working with the two networks to set up site visits to each school to assess their “gender awareness” and commitment to equality of opportunity
- A ‘good practice guide’ for schools to use at the end of the pilot.
- Analogous to *Project Juno* and *Athena SWAN* projects operating in universities.

Network meetings

- Reviewing results of initial survey to establish awareness of policies and practice in each school
- Sharing good practice
- Discussions on unconscious bias and gender stereotyping.

Site visits to each school

- Panel comprising teachers from other schools in the network, a gender “expert” and IOP staff
- After the visits, host schools received confidential reports on perceived issues, recommendations and good practice observed

Good Practice Guide is based on these reports

Site Visits

Meetings with:

- School leadership team
- Teachers with special responsibilities
- Careers advisor, pastoral support, PSHE etc.
- Departmental heads
- Classroom teachers
- Lunch with segregated male and female students from Y10 and above

- Brief feedback to SLT

Highlights of good practice

Management, structure and environment

- Member of SLT acts as gender champion
- Teachers of all subjects are aware of classroom management techniques
- The school environment is used to counter gender stereotyping
- Timetable blocking of subjects does not reinforce stereotypes

Policy and training

- All teachers are trained in diversity issues, including unconscious bias
- A clear policy on diversity and inclusion, which has been put together by staff and students and is widely known across the school

Language and Communications

- Sexist language is considered by staff and students as being as unacceptable as racist and homophobic language
- All school publications are gender neutral in their content and presentation
- Staff have been trained to be careful in their use of language, particularly in informal conversations

Monitoring and Support

- **Disaggregated data on achievement and progression is collected, discussed and acted upon at a whole-school level, using benchmark data.**
- **Diversity is embedded in all school activities. The school applies a diversity impact analysis of any school activity.**
- **Pastoral support operates in tandem with a strong PSHE programme and is not seen exclusively as a way of dealing with personal issues.**
- **Girls develop their self-confidence and resilience and boys understand the link between hard work and high levels of achievement.**

School Initiatives

- Initiatives are related to issues identified from data analysis and are developed on the basis of evidence
- Initiatives form a coherent programme of activity across the whole school; they are evaluated and the outcomes shared across the school
- Visiting role models and external visits are continuing, not one-off, projects

Academic Matters

- School has a strict policy that all subjects should be presented equally to students in terms of their relative difficulty
 - In grade requirements for progression
 - Being careful in making informal comments
- Schools have a culture in which all subjects are potentially accessible to all students
- There is an emphasis on working hard to make the best of one's ability rather than seeking subjects where one has innate talent.

Careers advice and parental engagement

- Careers advice starts early, is proactive and tailored to the individual, and focuses on the next educational phase and keeping options open.
- Teachers are aware of both academic and vocational routes.
- Student destinations are monitored and analysed in terms of data and national benchmarks.
- Parents are engaged at an early stage and stereotypical views challenged.

Student Experience

- Students are at the heart of the campaign to counter gender stereotyping.
- Students act as ambassadors, working with pupils lower down the school and with local primary schools to raise awareness of, and to counter, gender bias.

Next Steps

- Work with partners to establish an Opening Doors conference series
- With partners, consider the possibility of a national voluntary scheme, based on the guide, analogous to Athena SWAN/Project Juno in universities.

Thank you

Questions, comments....?

http://www.iop.org/publications/iop/2015/file_66429.pdf

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