

UNIVERSITY OF
BIRMINGHAM

STEM
Education
Centre

ibscaTM
international baccalaureate schools & colleges
association of the United Kingdom & Ireland

The International Baccalaureate and the Transition to STEM Higher Education



A note of thanks

- Julian Metcalfe, University Liaison Officer, International Baccalaureate Schools and Colleges Association of the UK and Ireland
- James Handscombe, Deputy Headteacher, Bexley Grammar School
- John Claughton, Chief Master of King Edward's School, Birmingham
- Chris Sangwin, Admissions Tutor, School of Mathematics, University of Birmingham

A historical mathematics problem?

- A steady decline over the past 15 years of fluency in basic mathematical skills and of the level of mathematical preparedness of students accepted onto degree course programmes.
- An increasing inhomogeneity in the mathematical attainments & knowledge of students entering science and Engineering degree programmes.

Measuring the Mathematics Problem (2000)

A current mathematics problem?

1. A lack of core mathematical knowledge and concepts traditionally expected at the transition to university study;
2. A lack of fluency in applying mathematics and specifically an inability to model and solve (unfamiliar) problems;
3. Students, not studying sufficient mathematics prior to university entry particularly in disciplines outside of engineering, mathematics and physics.

“Cooling off” and “Cooling out”

Cooling off students:

“the experienced mismatch between their beliefs about the nature of mathematics and its rigorous university character soon makes them lose interest in mathematics and develop a negative attitude towards it.”

Cooling out students:

“The students who belong to this category usually seek the teacher’s guidance in the solving of exercises instead of counting on independent work and like working towards definite answers through applying an already acquired technique.”

Daskalogianni and Simpson (2002)

Some context

- All reports about the mathematics problem in the UK talk (almost) exclusively of those with A-level/GCSE backgrounds

IB Perspectives

- IBs made up 1.2% of pending HE entry qualifications in 2012 (up from 0.8% in 2008)
- Debate: Depth vs breadth
- IBs higher-level mathematics 'more challenging' than A-level equivalent (Ofqual)
- Salaries for IB school leavers higher than equivalent A-level students (£20,500 vs £19,000)
- Research (IoE) shows HEIs undervaluing IB qualification

Individual Perspectives....

"Mathematics is not a careful march down a well-cleared highway, but a journey into a strange wilderness, where the explorers often get lost..."

W.S. Anglin

Institutional perspectives

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counsellors where a keynote address was given by Dr Anthony Seldon, Master of Wellington College. This coincides with the publication of the 2014 undergraduate prospectus.

Professor Sir Rick Trainor, Principal of King's said: 'King's welcomes the great sense of energy, determination and diversity that IB students bring to the

King's College London has reviewed its position on the International Baccalaureate (IB) with the aim of achieving greater parity with other qualifications and ensuring that IB students with the ability to excel at King's are made an appropriate and fair offer.

The revised admissions requirements were announced this week at an event for IB school



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