Helping BTEC students to prepare for university: mathematics-based activities for non-mathematics students

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- Background
- Motivation
- BTEC On Track programme
- Summer school



Background

- Since 2011...
 - Pre-sessional material
 - Additional small group support
 - Alternative teaching arrangements
- Cohorts
 - Computer Science
 - Sports and Exercise Science
 - Engineering





- What about getting students to apply in the first place?
- Lack of knowledge
 - Can I apply with a BTEC?
 - I need Maths??!
 - I need to improve my Maths
- Motivation for attending and engaging with BTEC On Track



Background: On Track to Bath

- Sustained programme of activities for A-Level students
- Cohorts:
 - Science
 - Social Sciences
 - Computer Science
- Masterclasses and an Academic Project



Motivation for BTEC On Track

- Encourage more BTEC students to apply to HE
- Widening Participation benefits
- Build mathematical skillset over a more practical timescale



On Track to Bath: the BTEC way

BTEC Year 1



On Track to Bath: the BTEC way



Summer School – Computer Science

- Matrices: operations and transformations
 - Multiplication associative but not commutative
 - Translation, scaling and rotation of a 2D homogeneous coordinate system
 - Practised: Algebra, Pythagoras, trigonometry and polygon geometry
- Programming Python and OpenGL to create 2D animations



Summer School - Engineering

- Basic control theory
- Concept of moment of inertia
- Lego MINDSTORMS robotics challenge



Summer School – Sports and Exercise Science

- Departmental talks
 - How can Usain Bolt run so fast? An introduction to Biomechanics
 - London 2012: A sociological analysis
- Equations of motion
- Percentages and ratios
- Estimation



Summer School – All

- Maths session
- Group presentations
- Social activities









Summer School – student feedback

The projects we are doing now are a similar challenge to what university students do. As opposed to A-levels, which is all theory, theory, theory.

It gives you the enthusiasm to study harder; you want to aim higher.

This has really helped me to see how maths links together with the real world.

> It has been great to use a proper lab, because you would never be able to do that at college.

It has been good to get a feel for uni life.

I wasn't really sure about it. Not until this week really. Now I actually do really want to go!



BTEC On Track – Next steps

- Problem solving workshop
- College-based tutorials
- Transitions workshop

The Acid Test



Thank you for listening

Questions or comments welcomed



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