Ethnic Diversity (pilot) Project

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Target students

• High achieving group of 67 students (all selected triple science at GCSE) from a school in a deprived area of London
Parental attitudes

- Parents held science in high regard but most could not identify what scientists/engineers do.
- Amongst most parents:
  - there was a strong desire for their sons/daughters to become Doctors/Dentists.
  - Having a well paid job was seen as more importantly than other factors.

**Most desirable jobs**

<table>
<thead>
<tr>
<th>Job Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor/Dentist</td>
<td>21</td>
</tr>
<tr>
<td>Solicitor/Journalist/Other professional</td>
<td>7</td>
</tr>
<tr>
<td>Other job</td>
<td>6</td>
</tr>
<tr>
<td>Scientist/Engineer</td>
<td>3</td>
</tr>
<tr>
<td>No response</td>
<td>7</td>
</tr>
</tbody>
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Activities

• **Outreach activities for students:**
  • Medical physics circus
  • Medical Physics lecture
  • Space- engineering off-site visit
  • Computer games/visual effects curriculum linked revision lesson

• **Parental event:**
  • Careers from physics speed-dating
Medical physics circus [Dec 2010]

Overview
Students in groups of **10** move around a series of **8 activity stations** led by physicists demonstrating applications of physics in medical settings.

Evaluation
- **Student feedback was very positive immediately after the event**
- **In focus groups 1.5 years later:**
  - The event was the best remembered of all the activities
  - Feedback was still overwhelmingly positive
  - However, students did not make link to careers

“I definitely remember that... they were shocking my teacher ...which was quite funny”. (Pakistani, female)

“..there was something inside it and you had to use the endoscope to ...take it out of there.” (Indian, male)

“on the laptops.. how radiation is used for tumours, ...... it’s really cool how they like spread it out and make sure they don’t damage anything else, and how radiation can affect you.” (White, female)
Medical physics lecture [March 2011]

Overview
1 Hour interactive lecture delivered by a medical physicist

Evaluation

• Student feedback was very positive immediately after event
• In focus groups 1 year later:
  – Feedback was negative and students had trouble recalling details.

“.. the demonstrations made it really easy to understand.” (Indian, male) 2011

“. it was more listening and ... I didn’t really learn anything because he was too fast and everything.” (Pakistani, male) 2012
Space-engineering off-site visit [July 2011]

Overview
Afternoon at Astrium in Stevenage, including a tour of the site and ran a hands-on engineering workshop.

Evaluation
• Immediately after event feedback for engineering workshop was mixed. With boys being more positive than girls.
• In focus groups 1 year later:
  – Feedback was generally better, with students preferentially recalling positive aspects of the visit.
Careers from physics speed-dating [July 2011]

Overview
An introduction to benefits of choosing STEM A-levels for parents and students followed by speed-dating with STEM graduates:

- Patent Attorney
- Medical Physicist
- Satellite Engineer
- Accountant
- Climate advisor
- Astrophysicist
- Mechanical Engineer
- Computer Games Designer
- Civil Engineer
- Financial strategist

Evaluation
- Feedback from parents and students was overwhelmingly positive immediately after event
- In focus groups 1 year later:
  - Feedback was still positive and students identified the events as a trigger for conversations about careers aspirations with their parents.

“...opened my eyes to the different things you can do into physics. It’s not just set, people sitting around a desk and doing numbers.” (Indian, male)

... I found the games designing one interesting, and my parents said that was okay. (Indian, female)

“I don’t think my mum really knew too much about physics, but by going there she knew what kind of like things this could like lead to in the future. ... Afterwards my parents asked me what career I would actually like to go into, and based on like the people that had actually come they were quite happy, because I told them I wanted to go into the physics area. (Indian, male)

Overview
Practical revision lesson on forces and motion highlighting how physics is used by car and computer games designers.

Evaluation
- Student feedback was positive immediately after event
- In focus groups 1 year later:
  - Students appreciated the lesson and felt it helped with their exams but did not associate it with careers

..., we applied that to the exam. If it’s done by the teacher we don’t really get it, we don’t really understand it. But if it’s done by ourselves it sticks to our memory because we know we have done it ourselves. (Pakistani, male)
At the end of the project

Evaluation

- **Students numbers taking A-level physics doubled**
- **Clear evidence that students in target group appreciated the benefits of studying physics at A-level and were making informed decisions**

"physics is like applied in probably all the jobs, all the jobs you see, like being a doctor, being a finance, being an accountant, it involves physics. So it gives us a range of like opportunity to go in different fields."

I'm going to study physics because I want to be a journalist, so I thought I'd rather have a wide range of subjects so I can go and be a physics journalist, or I can go into the financial side,

It is going to lead into a career that I want to do [i.e. astrophysics].