

# Engineering Update

## Summer 2009

Like Häagen-Dazs, engineering comes in a multitude of flavours or disciplines that seems to be ever expanding. The title 'engineer' crops up in many job titles - rightly or wrongly - and it is not inconceivable that, in the future, teachers could become known as 'knowledge engineers'.

Inspiring interest in engineering as a career and also presenting such a diverse range of career opportunities to students is no mean feat. Rising to the challenge, Newstead recently hosted an event entitled Engineering Your Future that was coordinated and sponsored by the major engineering institutions.

There is no doubt that engineering can be an exciting, challenging and rewarding field in which to work. Events such as this help to open students eyes to the opportunities available to them, in a way that is both stimulating and fun.

The success of this event is testament to the commitment and hard work of many individuals, companies and institutions. Our thanks, therefore, go to all those involved.

### 'ENGINEERING YOUR FUTURE' EVENT HELD AT NEWSTEAD

This event brought together universities, employers and Engineering institutions in a fascinating day of activities suitable for anybody with an interest in Engineering as a career.



Students work on a challenge set by Doosan Babcock Energy

Beginning with an introductory session providing insights into Civil, Electrical and Mechanical Engineering, the day then continued with workshops run by Doosan Babcock, Bovis Land Lease, EDF Energy and SEM, which set students various practical, interactive engineering challenges.

A 'speed dating' type session gave students the opportunity to discuss their interests, educational and career options with a variety of representatives from industry, engineering institutions and from university.

Students and staff from other schools in the local area joined Newstead for the day.

*"The workshop activities were really enjoyable. The day was not just all learning"*

Emily Singh  
Newstead Year 9 Student

Please feel free to contact us on any issue relating to our Specialist Engineering School status. E-mail our Engineering Development Manager at [peter.price@newsteadwood.bromley.sch.uk](mailto:peter.price@newsteadwood.bromley.sch.uk)

### IN THIS EDITION



ENGINEERING OUR STUDENTS' FUTURE



RIBA COMPETITION SUCCESSES



JOURNEYS OF A LIFETIME



ENGINEERING EDUCATION SCHEME



PRIMARY STUDENTS AT NEWSTEAD

AND MORE...

## NEWSTEAD PLACED FIRST IN RIBA ARCHITECTURAL COMPETITION

This year the Royal Institute of British Architecture (RIBA) Croydon, Sutton & Bromley branch relaunched their Schools Architectural Competition after a two-year gap.

Our year 7 students began their journey towards entering the competition with a talk from Mr Satish Bhatia on the work of an architect in January. This was followed up by a modular construction practical workshop in which they explored the design possibilities inherent in the Golden Section.

During March all the students enjoyed a cruise down the Thames from Waterloo pier to Greenwich, their mission being to take photographs and begin sketching their ideas for a new building to join the city's skyline.

They then had until the end of the spring term to model their designs and submit them along with an accompanying folio of research and design drawings.

Newstead is proud to have won first place, with five prizes awarded to our students, including first and second prizes, as well as three commendations.

Our congratulations go to Maeve-Anne Allen, Sophie Williams, Clara Wornell, Sheena Patel and Charlotte Dougan.

**Maeve-Anne Allen's prize winning entry**



## JOURNEYS OF A LIFETIME FOR NEWSTEAD STUDENTS

Currently on-going is a five-day cross-curricular project with year 7 on the theme of Space Exploration and Discovery. The project has been devised by D&T, science and maths with creative input from art, music and drama to help students consider the social, moral, environmental issues associated with a series of design problems linked to the seven planets of the solar system.

Students are delegates at an interplanetary conference and are working in teams to provide a solution to a range of planet based scenarios.

To develop their project, the students adopt the role of Engineer, Product Designer or Concept Designer with support from D&T specialists to help them develop a mechanism, structure or some form of movement for their final product.

On the final day (13th July), the students will present their team's solution to their peers in the same planet group who select the most effective solution and best presentation. The winners from each planet team will then be assessed by a team of galactic experts and STEM Ambassadors, who will select the overall winners of the challenge.

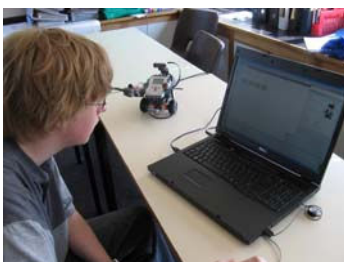


**Year 7 students work on their 'Journeys of a Lifetime' challenge**

## ENGINEERING DIPLOMA NEWS

The past six months have seen our first intake of Higher and Advanced Diploma students working hard. They have now completed their formally assessed assignments in approximately half of their Principal Learning units. Our students are also our ambassadors for the Diploma, demonstrating this most recently through their help with our Diploma Taster Sessions.

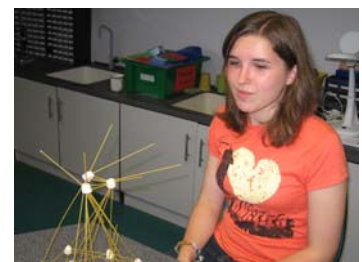
### A TASTE OF THE DIPLOMA



**Programming a Lego NXT Robot provided a challenge for our prospective Advanced Diploma students...**

Prospective students of the Engineering Diploma were recently given a chance to gain a better insight into the learning requirements of the Diploma, as well as experience some hands-on engineering, through taster sessions run for both the Higher and Advanced Diplomas.

Jenny Wright, Bromley Consortium's moderator for the Engineering Diploma, provided information on the structure of the Diploma. Participants then took part in a variety of fun challenges.



**...whilst prospective Higher Diploma students faced the challenge of making a structure using only spaghetti and marshmallows**

## ENGINEERING EDUCATION SCHEME CELEBRATION DAY HELD

The Engineering Education Scheme (EES) provides participating year 12 students with the opportunity to work with real engineers on a challenging engineering project.

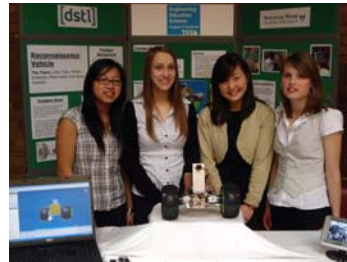
This year, a team of four Newstead students were given the task of designing and manufacturing a 'Remote intelligence gathering vehicle for urban environment' by engineers from dstl Fort Halstead.

*"Working with real engineers at the university based 3 day workshop was a valuable experience. I learned a lot."*

**Marie Kasai**  
Newstead Year 12 Student

To meet the technical brief, the students chose to mount a video camera with radio link on a custom designed motorised buggy type chassis.

A three day workshop at the University of Kent saw good progress on the project, with the girls developing valuable Computer Aided Design (CAD) skills using Autodesk Inventor, gaining practical experience in a mechanical engineering workshop, and learning electronics skills through the manufacture and programming of a PIC microcontroller based control circuit.



The scheme culminated in a Celebration day, held in April.

**(l-r) Lilian Tran, Miriam Endersby, Marie Kasai & Laura Gardiner celebrate their achievements**

## COMMUNITY NEWS

Working with our local primary schools has been the recent focus of our Design & Technology department. We have provided some of our partner schools with CAD 2D Design software along with teacher training in its use. Tubbenden Junior School has also benefited from a series of activities run by Newstead students as part of their Engineering Society.

### LOCAL PRIMARY SCHOOLS SUPPORTED BY NEWSTEAD

Once again, this summer Newstead are working with year 5 and 6 pupils on a range of projects developed in collaboration with primary school staff.

This year we have modified and developed our buggy building and cam based toy projects in response to the needs of our partner schools. Projects are designed to enhance and enrich the primary curricula in science, design and technology and engineering.

Newstead year 9 students assist in the delivery of these projects, working alongside teaching staff.



**Farnborough Primary School pupils show off their CAM based pop-up toys**

**Red Hill Primary School pupils assembling their buggies**



**Tubbenden Junior School using CAD to design buggy body shells**

### TUBBENDEN ENGINEERING CLUB STIMULATES PUPILS

The organisation of an Engineering Club for pupils of Tubbenden Junior School has provided the focus this year for our student run Engineering Society. Run fortnightly, this club has attracted about twelve pupils on average.

Activities require pupils to work in groups with the aim of improving team working, and are designed so as to encourage creative thinking whilst developing problem solving and planning skills.

Newstead students have enjoyed working with the primary school children, one society member saying "It has been fun showing the young people what engineering involves."

**Tubbenden pupils having fun making marble runs**



## A WISE APPROACH INFORMS NEWSTEAD STUDENTS

Enrichment week during March saw Women in Science and Engineering (WISE) day, an activity aimed primarily at Newstead's year 10 students.

The aim of this day was to broaden students' horizons, informing them of the many different careers paths in Engineering that they could potentially follow. Students were able to spend some time researching the different areas of engineering and what each area involves.

During this day, students received a talk from Dr Martin Knight from Queen Mary University of London – an expert in the field of Mechanobiology, cell and tissue mechanics.



Dr Knight explained what is involved in biomedical engineering, tissue engineering, biomaterial science, and the development of artificial joints and implantable devices.

He informed the students about the various entry routes into engineering and outlined the qualifications required for entry.

The opportunities offered by the many different taster courses run by Queen Mary University was highlighted to those year 12 students studying STEM subjects.

More information on these taster courses can be found at [www.eng.qmul.ac.uk](http://www.eng.qmul.ac.uk).

**Dr Knight sheds light on the fascinating area of Biomedical Engineering**



## STUDENTS GET A HEADSTART IN ENGINEERING

Headstart is a well-established education programme whose aim is to encourage students to consider technology-based careers. It provides an opportunity for those in year 12 to spend up to a week at university prior to making their UCAS application.

This June saw two Newstead students staying at Jesus College, Cambridge for a week-long Headstart sponsored course in Engineering. The course followed a typical week for engineering undergraduates, involving attending lectures, practical sessions, project work and tutorial sessions in small supervision groups.

Headstart is a programme of the Engineering Development Trust (EDT). A wide range of Headstart Courses are available, which take place at many locations around the country. More information can be found at [www.headstartcourses.org.uk](http://www.headstartcourses.org.uk).

### What the students thought:

*"I found the course stretched me because the lectures were fast paced and went beyond the A-level syllabus. However, I learnt a lot and had a lot of fun, especially going punting down the Cam!"*

**Laura Gardiner**  
Year 12 Student



*"I thoroughly enjoyed my course at Cambridge University. It was a great experience. I would recommend it to anyone interested in engineering as a possible future career."*

**Charlene Browne-Marke**  
Year 12 Student



## IN BRIEF

### Arkwright Scholarship Successes

Newstead is delighted to announce the success of Supriya Gopinath, Rachel Lee-Warren and Corina Thomas in their applications for Arkwright Scholarships.

A fourth Newstead student, Lily Webb, was also placed on the reserve list for a scholarship, making this our most successful year to date regarding Arkwright Scholarships. Our congratulations go to all four girls.

### Rapid Response Challenge

During Enrichment Week in March year 9 students took part in a Rapid Response Challenge organised and run by representatives of the Institution of Civil Engineers (ICE). Students assumed the role of disaster relief workers with the task of providing temporary shelter and a watercourse supplying fresh water.

### Munich Trip

Planning is now well advanced for our combined Languages / Engineering school trip in October. The destination for this trip is to be Munich in Germany and already an impressive list of visits is lined up.

The Audi car factory, the Allianz Arena, the Siemens Forum, The Deutsches Museum, the National Art Gallery and Munich Airport form part of an exciting itinerary that will immerse students in the culture and language of Germany, while at the same time maintaining an engineering focus.

### Summer School Flies Again

Our Summer School this year is once again following the theme of 'Flight: A Leonardo Question Answered'. With many activities in common with last year's summer school, this year's timetable also includes a visit to the Surrey Space Centre at the University of Surrey and a flight themed design workshop run by Leo Todeschini, a.k.a. Tod (as seen on TV's Scrapheap Challenge).