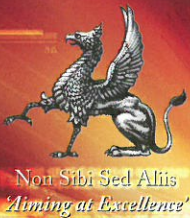
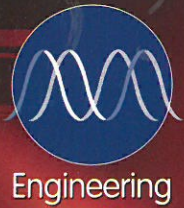


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TRANS- FORM

THE ENGINEERING NEWSLETTER
FOR BALSHAW'S C.E. HIGH SCHOOL

Once again it is time to write an editorial for our Transform Magazine. School life is as busy as ever and the many extra activities that pupils have been able to undertake have been directly linked to our Engineering Status.

We have had many compliments concerning the quality and professionalism of this newsletter, not least from prospective parents.

Thank you for your overwhelming support of all that we do and a particular thank you to our sponsors.

Yours sincerely,

J M Venn, *Headteacher*

ANTI-BULLYING WEEK — 20-24TH NOVEMBER 2006

TELL SOMEONE

FRIENDS
PEER SUPPORT
FAMILY
FORM TUTORS
CLASS TEACHERS
HEAD OF HOUSE
HEADTEACHER



There is no place for bullying
at Balshaw's

It takes effort
from **everyone**
to kick bullying
out



Research shows that:

- Peers (bystanders) are involved in **85%** of bullying
- **54%** of bystanders reinforce bullies by passively watching
- **25%** of bystanders intervene on behalf of victims
- **75%** of bystanders interventions were successful in stopping bullying

BULLYING

Is the intentional hurting of one person by another where the relationship involves an imbalance of power.

What can we do?

Extensive research by national agencies suggests that:

- It is easier to change the behaviour of bystanders than the aggressive bullies
- A bully rarely continues to bully without his supporters and audience
- Doing nothing is seen as supporting bullying by the bully and the bullied

Anti-Bullying Week
20-24 November

"Bullying:
See it.
Get help.
Stop it."

The above slides were part of an assembly shown during Anti-Bullying week to reinforce the message of this year's campaign...
"Bullying: See it. Get help. Stop it."

Pupils were shown different roles that people can play in helping the bully to victimize others. Pupils were encouraged to be defenders and say something if they saw an act of bullying rather than standing by and letting

it happen. Pupils also had the opportunity in PSHE to discuss anti-bullying issues in greater detail.

A big part of this year's Anti-Bullying campaign highlighted the growing difficulty that advances in technology have created for bullies. "Cyber bullying" via the internet (MSN) and text has increased dramatically in the last few years with victims being as equally traumatized and frightened as if it were happening face to face.

COMPUTERISED CANTEEN!

The school has embraced modern Engineering & Technology within the canteen. As a cashless school, everything is now computerised.

As well as individuals having their own card with their photograph on, we can track not just how much has been spent but what diet the pupil is having. Parents have found this very helpful, and several parents whose pupils are watching their weight have been able to plan out their week's eating habits.

The whole scheme has meant that it is easy to track us as a Healthy Eating school and less money is in school as parents pay by cheque for several weeks.

This together with the introduction of bottled water in lessons and available in the canteen links in with the healthy body leading to improved concentration in class.

Janet Counce, Catering Manager

YEAR 9: HISTORY TRIP TO THE MARITIME MUSEUM

On 19th October 2006 a group of Year 9 pupils, accompanied by Mr Barrett, Miss Hodgson and Mrs Wilson had the opportunity to visit the Maritime Museum in Liverpool at the Albert Dock.

They were there to view the "Transatlantic Slavery Exhibition" as part of the Year 9 History course looking at Britain between 1750 and 1900. Pupils were able to find

out via the interactive displays how African people became slaves and how they were treated. They also discovered about the huge impact the Slave Trade had on Britain particularly in Liverpool which was a slavery port. After they had completed their worksheets pupils were able to visit a few of the other exhibitions on The Titanic, the mechanics of the passenger liner and how to survive being shipwrecked before a quick visit to the Museum shop and then back to school in time for lunch.

YEAR 7: ROMANS BOX

During the week of 10th October all Year 7 History classes had the opportunity to experience a slice of Roman life in school.

Pupils were able to examine a variety of Roman objects from The Lancashire Museum. Pupils had to try and guess what each object would have been used for in Roman times. A selection of objects included an oil lamp, a wax writing pad, a Roman spoon, a kitchen bowl for grinding food, a two handled vase and a selection of coins. Some of these items were very much ahead of their time technologically as they were very similar to items we would use everyday.

Also in the box was a full Roman Legionary Soldiers outfit complete with breastplates, dagger, shield and sword. It was interesting for pupils to see exactly how the armour was interconnected with each metal piece of the outfit working simultaneously with the next. Most pupils could not wait to handle the soldiers outfit and some "lucky" people were even dressed up as a soldier. Unfortunately the pupils found they could hardly walk in the armour let alone fight because of the weight!

YEAR 9: STYAL MILL

For the second year running Year 9 Historians were offered the opportunity to visit Styal Mill in Manchester to see a Textile Mill at work.

On 13th December a group of Year 9 pupils visited the mill to see the technology of the mill at work and experienced how noisy and dangerous it would have been for young apprentices in the nineteenth century. Pupils got to see the huge waterwheel which powered the mill and a variety of different machines. All pupils got an opportunity to visit the Apprentice house to see what life would have been like for a child their age at the time. After hearing about lumpy porridge, freezing cold dormitories, the toilet bucket, nasty medical remedies including leaches and crushed rocks and seeing the attic where "naughty" children were locked in the dark they returned to school for the end of the day feeling very fortunate that they didn't live then.

Pupils wishing to find out more can access the mill at www.quarrybankmill.org.uk

ENGINEERING IS EVERYWHERE!

Engineering is everywhere you look, in each and every product that makes our lives safer, cleaner, easier and more interesting.

They all started as an idea in somebody's mind and the professional engineer's role is to convert that idea to reality through design, development and manufacturing. What engineers achieve is crucial in continuing to improve our lifestyle. Engineers are involved in a wide variety of products and services; consumables, medicines, clothes, environmental & electronic equipment as well as the more traditional automotive and aerospace engineering. The path to becoming an engineer is as varied, exciting & challenging as the subject matter itself. Gaining the qualifications required is the first step towards making a real difference, something close to the heart of every engineer.

Maths and sciences are essential. However, courses that encourage you to think laterally and creatively should also be considered. With a solid base like this, I left Balshaw's in 1997 and continued my education at Runshaw College and Loughborough University, building further understanding and developing through real-life problem solving and team work. These qualifications gained me the opportunity of a Graduate Development position at Leyland Trucks where theory became reality.

Within the past 18 months I have worked within various departments, each exposing me to different areas of the business, engaging and improving the engineering skills I have learnt. The challenges have been varied in size and discipline and I've been part of focused teams that have improved processes, quality and reduced cost in order to delight customers and ensure continuous improvement at Leyland. My current job as a Senior Engineer in the Facilities and Maintenance department involves me in a range of complex projects keeping Leyland's world class facility operating to its optimum level and at the same time working towards improving its performance to even higher levels. Training and career development hasn't stopped either, and Leyland's commitment to investing in engineers has ensured there will be plenty to follow.

Engineering is an excellent career choice, giving a broad understanding of how and why things work as well as giving the opportunity to follow a wide range of further prospects in research and development, design, manufacture and assembly as well as marketing and management. No two days are ever the same and every challenge is different. I would strongly recommend it as a career to all budding Balshaw's engineers.

Nick Isherwood, Leyland Trucks

ENGINEERS VS. GOD

One day a group of engineers got together and decided that man had come a long way and no longer needed God. They picked one engineer to go and tell Him.

The engineer walked up to God and said, "God, we've reached the point where we can clone people and create life ourselves. We don't need you any longer."

God listened patiently to the man and after the engineer had finished he said, "Very well, how about this? Let's have

a man-making contest."

The man replied, "Okay, great!" But God added, "Now we're going to do this just like I did back in the old days with Adam."

The engineer said, "No problem." He bent down and grabbed himself a handful of dirt.

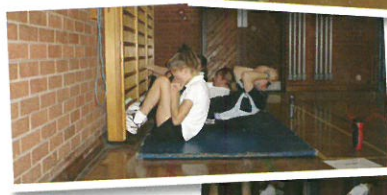
God just looked at him and said, "No, no. Go and get your own dirt!"

GETTING TO THE HEART OF IT...

The PE Department were delighted to purchase 30 Polar Heart Rate monitors through Engineering money which have enabled pupils to learn more about the mechanics of the heart.

GCSE PE students have used the watches and belts during lessons to find out about their own heart rates and how they are affected by exercise. They can also set their own Heart Rate Zones and Training Thresholds to get the most benefit from their activity/exercise and to help improve the health of their heart.

Thanks to Mr Barrett who runs a regular Circuit Training session on Friday lunchtimes, which is well attended. There will also be a Running Club starting in the New Year to enable even more pupils to use the Heart Rate Monitors and improve the health and fitness.



TRIP TO BAE SYSTEMS

In October, a selection of Year 11 resistant materials students including myself were invited to visit the BAE Systems site at Warton, in order to be able to see how engineering is put into practise in everyday life.

As soon as we arrived we were escorted into the reception area where we were met by a BAE representative, who handed us our required passes, and showed us to our first destination – the Eurofighter assembly. Here we were told about the various stages of production, and how different parts of the aircraft were made in different countries, finally being brought together for final assembly in Samlesbury.

Next we went to the modelling facility, where my classmates and I were shown the high tech modelling processes available to BAE. In fact, the modelling machine was not too dissimilar to the laser cutter we have in technology, but this one was larger, and could make whole products in a single sitting, not just the components. As we were shown what could be made on

the laser, including a tower complete with spiral staircase and furniture, and a fully working scale model of a motor, our guide explained how BAE work in partnership with McLaren in order to model such parts as new brake discs, and even full size gearbox units. As we were listening, the laser was in motion building something, but when we asked, the reply was that it was top secret.

The final part of our tour took part in the simulation building, where an eccentric man demonstrated slightly too much of a typical flight in a Eurofighter. The ergonomics and complexity of the cockpit was outstanding, and I'm sure our guide was enjoying showing off to a bunch of school kids, who at the end of the day were not too complimentary about his flying skills.

Overall, the visit was highly interesting, and was a valuable insight as to how engineering plays such a huge role in the country's defence.

Daniel Zekavica

SOUND TECHNOLOGY ENHANCES SCHOOL SHOWS

The use of amplification and sound effects in our school shows has added much to the quality of our performances over past years and we look to improving this further.

Our pupils are the experts in this field and those who are able to grasp the technology and have a creative flair are the best equipped to take on the role of 'sound engineer' in school.

Currently Nick Elsby in Year 11 is training up his successors Pete Bird in Year 10 and Sam Lowe and Matt Porter in Year 9. Nick has mastered the intricacy of sound and lighting

technology and has gained this experience by working on productions such as 'Romeo and Juliet' and the recent Year 8 Drama Showcase. In addition the sound and lighting systems are in regular use for school events such as Speech Night, Concerts, Talent Shows and discos.

The Engineering bid funding has already provided money for new microphones, a smoke machine and portable lighting which has all added to the impact created on stage in our productions. Opportunities like these have also opened up possible career avenues with the experience gained in school.



PAPER MAKING

Representatives from Education for a Greener Future showed our pupils how to make their own paper using waste paper products.

They were also shown a wide range of other products that are made using waste items ranging from recycled plastic bags to old car tyres! All the pupils involved found the day fun and exciting as well as learning about how new engineering techniques are increasing the amount of waste that can be usefully recycled with obvious benefits to the environment.

RECYCLING TEXTBOOKS

As we move further into the 21st Century, with more and more whiteboards, computers and other technology in school, this has meant that we can re-look at old textbooks and see how relevant they are.

When we were asked by a charity that supplies orphanages in Africa with books we were delighted to respond by half filling a container with books from all subject areas. As we finish with textbooks they will have a new life in the Developing World. This fits in well with the Year 9 syllabus of how we can help with Education in these countries.

Thanks to Mr Temmen for delivering them all.

CELL MAKING COMPETITION

Year 7 pupils were asked to create a model of a cell showing and labelling important cell structures.

Sophie Woods chose to model a plant cell and created her model using marzipan to represent the cell wall,

jam as the cell membrane and cake to represent the cytoplasm of the cell. She then used sweets to represent the inner cell structures. Her model was chosen as the best example seen from this year's models. I think you'll agree her work was excellent and showed true creative engineering.

HOW I MADE MY PLANT CELL CAKE by Sophie Wilson

4 oz margarine
2 eggs
4 oz caster sugar
Food colouring (green)
4 oz self raising flour

1. I mixed the sugar and margarine together until smooth.
2. I added eggs and mixed it well.
3. I added flour a little at a time. I then beated the mixture until smooth and creamy. Add colouring as required.
4. I transferred the mixture into a greased baking dish/tin.
5. I then put it in a hot oven (180 degrees centigrade, 350 degrees F, gas mark 4) for approximately 25 minutes or until baked through.
6. I finally removed from baking dish and allowed it to cool.

Decorating my cell

I went to do the super market for ;

Marzipan

Apricot jam

Sweets to represent cell components, for example; liquorice, pick 'n' mix assorted sweets

Cake board

1. I sliced the top off cake to reveal coloured sponge beneath
2. I cut the cake into desired shape and place on cake board
3. I rolled the out marzipan and fix round edge of cake using apricot jam to stick
4. I placed the sweets on top of the pack in a desired pattern
5. I cut around the sweets and used a teaspoon to remove a little sponge to form a well for the sweet
6. (Eat sponge removed from wells in step 5!)
7. I then placed the sweets in the wells using jam to stock

I made flags to show what everything was and what it meant. I typed them on the computer. Folded them and put them on cocktail sticks.

WESLEY AND THE WHEEL — A STORY OF ENGINEERING IN ACTION

As part of geography fieldwork the task was to measure and record the speed of the River Wyre. This is the account of one persons attempt to solve this practical problem.

The River Wyre starts in the Trough of Bowland in Lancashire and flows around 30km westwards to Garstang before turning sharply north to enter the sea at Fleetwood.



Photo A: The area near the source of the Wyre

A typical solution to measuring speed is to time a float like a twig or table tennis ball along a 5 or 10 metre stretch of the river and work out the speed

from the time it takes to do this. This method however has two major flaws. In the trickle of water near the start of the river the float often gets stuck behind rocks, boulders or vegetation (see photo A),

Whilst in the turbulent sections lower down the float is often bounced along the river or blown about by the wind. It is difficult to track the float and following it is near impossible. (See photo B).



Photo B: The more turbulent section lower downstream

This leads to poor accuracy in the results. One pupil, Wesley Doherty, tried to solve both of these problems with his solution of constructing a velocity wheel.

The wheel is essentially a set of paddles that will turn when propelled by the water flow. Wesley had to overcome two problems, firstly making the paddles large enough to collect water and secondly making the machine light enough to be able to be turned by the flow of water. Wesley constructed the wheel himself at home,

using easy to obtain components and tested it first for practicality on the River Lostock at Cuerden Valley.

A wheel bearing based on the idea from a shopping trolley provided smooth turning with the bottoms of small water bottles giving good water catching capacity so that the wheel turned.



A straight handle would mean the person operating the wheel would be stood in the way disrupting the flow of water. Wesley adjusted the handle so it connected at an angle, now the operator could stand with the wheel held at a distance so that it measured the natural flow of the water.

Tests showed it worked, but how could it record actual speed of the river rather than just turning a lot or a little. Investigations into speedos from bikes didn't work, as they don't mix well with water. The solution was to paint the tip of one arm red and adjust the length of the arms so that the red arm travelled a distance of 1 metre in circumference before it hit the water again. Now all that was required was to time the operation over 30 seconds and to count how many metres the river pushed the red arm. **Using: -**

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

Speed could be worked out. What a fantastic idea, solving a geography problem using simple engineering and even physics.

The only snag is that it measures velocity on the surface of the water. It's a well know fact that the erosive power of a river is best measured by finding the velocity of the water near the bottom of the river as well as on the surface...Mmmmm... maybe that's the next project!



MATHS DEPARTMENT — USING SMALL SUMS TO MAKE LARGE SUMS

On 4 December Balshaw's was one of hundreds of schools throughout the country taking part in the NSPCC's biggest and most exciting maths fundraising event ever – Number Day 2006.

This initiative – backed by Catherine Tate and Carol Vorderman – was a fantastic opportunity for young people to practise those essential numeracy skills.

Pupils paid £1 to abandon their usual maths lesson and instead took part in a variety of stimulating and

entertaining maths games whilst generating vital funds for the NSPCC.

The event was a fantastic way of making maths fun and generating interest in the different ways that we can use numbers. It also helps to increase awareness of the work of the NSPCC and raises money for other children who are vulnerable and need our help. The pupils raised a whopping £300 for the NSPCC.

Here are some pictures of keystage 3 pupils enjoying the activities:





NUCLEUS

BALSHAW'S SCIENCE NEWS

An update of past and future trips, new exciting technology and facilities in the Science Department

SCIENCE CLUB MEMBERS GO ANIMAL MAD!

In October Science Club members from Year 7 and 8 travelled to Chester for a fun packed day of animal madness! In the morning we went to the Blue Planet Aquarium to see the Sharks, Hammerheads and Piranhas.

We spent the afternoon in Chester Zoo amongst the lions, camels, tigers and penguins!

A fantastic day out!



Laura's got turtle power!



Year 8 boys in front of the Shark Tank!

BALSHAW'S STUDENTS GO GREEN!

November 6-10th was Environmentally Friendly Week at Balshaw's. On Monday members of the EGF (Education for a Greener Future) team joined us for activities on the topic **REDUCE, REUSE, RECYCLE!**

Pupils looked at recycled products – everything from a pencil case to a table and chairs, and hand made recycled paper.

On Tuesday a representative from Friends of the Earth visited to speak to Year 10 and 11 on the important topic of climate change.

Together we can save our planet!



010.

TRANSFORM

WEIRD WAVES!

On Tuesday 14th November, Balshaw's was privileged to host the Royal Institution Lecture "Weird Waves" which took pupils on a journey through the Electromagnetic Spectrum.

Pupils discovered how x-rays work, why you should always use sun-screen and how radiation can kill cancer cells.



A big thanks to the RI for their visit

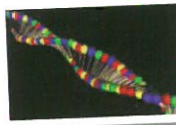
FOCUS ON GENETIC ENGINEERING



During Year 10 and 11, all pupils study "Genes and Evolution" as part of the GCSE course.



Genetic Engineering means to manipulate genes in some way and usually involves the introduction of new DNA into cells. The first genetically engineered drug was insulin in 1982 which changed the lives of millions of diabetics worldwide. It is now possible to



"knock out" genes altogether, making many once fatal genetic disease curable even before birth.

Whole organism cloning is also a large part of the research that is ongoing in this field of study. The most famous product of this was Dolly the Sheep. Dolly was the first mammal ever to be successfully cloned from an adult cell in 1993. Although much controversy surrounds the subject, it is now believed that humans can be cloned in the same way.

What do you think? Let us know?

science@balshawshigh.co.uk

SCIENCE BLOWS YOUR MIND!



Excellence in Science and Engineering Conference 2007

Balshaw's teamed up with Sharples Specialist Science College, Bolton to produce an exclusive event at Bolton Arena called the "New Year Lectures

Up North". Able and Talented pupils from across the North West attended a thought provoking, interactive day of workshops and lectures presented by some of the best scientific minds in the country.

Speakers and organisations who gave lectures included;

- Dr Tim O'Brien – Jodrell Bank and Manchester University
- Dr Richard Hall – Robotics, ex BAE Systems
- Fit and Fertile – Selective Breeding experts

For more information please visit our website www.scienceblowsyourmind.com

Look out for a review in the next issue!

**SCIENCE
BLOWS
YOUR MIND**

EARTH, WIND, WATER AND FIRE



Year 8 Trip to MAGNA

Ms Quick took 100 Year 8 pupils to a Chemical and Physical extravaganza in Yorkshire!

MAGNA is an exploration of the four Greek elements; Earth, Fire, Wind and Water.

Trip Pictures coming in the next issue!

MISSION TO MARS



Year 11 students visited the University of Central Lancashire for an evening lecture by Professor Colin Pillinger, Chief Scientist on the BEAGLE 2 Mars

Mission. He talked about the famous Beagle Mission and discussed his plans for future expeditions to Mars.

More on this next time! Well done to Year 11 students; Daniel Zekavica, Callum Darbyshire, Tommy Turner, Matthew Baxendale, Jack Dillon, Josh Halstead, Adam Stableford, Josh Skinner, Heather Bailey and Jake Nicholas.

NATIONAL SCIENCE AND ENGINEERING WEEK — MARCH 10-18TH 2007



The theme at Balshaw's for NSEW this year was Renewable Energy.

Look out for pictures and reviews in the next issue! www.balshawshigh.co.uk and click on Science!

WHAT ONE PERSON THOUGHT OF TRANSFORM ISSUE 2...

Dear Miss Venn

Can I say what a most professional and interesting magazine Transform is. As a former Engineer who started off as an Apprentice and ended up as a Technical Field Supervisor with National Cash Register, I would have loved to have had the opportunities that are open to your young people at Balshaw's.

Growing up in the 30's and going to a Technical College in East London, we had a good schooling but none of the fun and excitement available now.

I have now read both issues and look forward to the third.

Keep up the good work.

Mr EL Scott, High Wycombe