

## Welcome to Pupil Power

### West Cumbrian Science Festival (23rd June – 15th July)

Esconded in a local hostelry Dr Dominic Rhodes NNL and Rik Wylie UCLAN hatched a plan to build on the Sellafield Ltd annual science & engineering week which always takes place during the first week of July.

Swept along by their enthusiasm I volunteered the education team to be willing participants and a partnership was formed that delivered a whole host of events over 24 action packed days.

Read on to find out what took place ...

#### The secret diary of a science festival planner aged 21 + VAT....

#### Thursday 23rd June

An impressive start to the festival with a Girls In Engineering event organised by Sellafield ambassadors who are also members of the local IMechE branch.

Over the course of the day students took part in a range of activities, presentations and career discussions. Over 200 primary school pupils were lucky enough to get the chance to see a full scale replica of the Bloodhound SSC car which will be attempting to raise the world land speed record to over 1,000 mph.

As if that wasn't enough excitement for one day the IMechE annual dinner was held at Energus in the evening with an impressive range of guest speakers and VIP's. Local mechanical engineering students were also presented with awards during the dinner.

From May through to July we have crowded the West Cumbrian skies with hand made rockets, produced mountains of Krispie cakes and created dancing robots.

In addition employees from our Business Improvements academy have worked with students on a government pilot scheme for year 11's, whilst year 10 students worked through a programme to raise aspirations and make plans for their future.

With more and more ambassadors signing up to help out in schools we are able to offer a wealth of knowledge and experience to share with pupils and teachers.

We are already working on specific requests from some schools on various projects but, as always we relish the chance to work on new ideas.

**Pauline Farrell**  
Education Manager



Pauline

## MONDAY 27TH JUNE

A group of disabled scouts and helpers from Glasgow arrived to spend the day at St Benedicts school designing and launching water rockets under the expert guidance from Dr Dominic Rhodes, NNL. Corrin Nichols Sellafield Ltd was his glamorous assistant together with some of our own ambassadors working alongside those from NNL.

Following a short brief the party spent some time designing and building their rockets using corriflute, duck tape, an empty pop bottle and a tennis ball.

Teams then made their way to the 'firing range' out on the field. Scouts were asked to give some thought as to how to achieve the maximum lift and thrust by considering how much water to add to the bottle, how much pressure to apply to the launcher and the angle at which the rocket was launched.

After the 1st launch to much laughter, encouragement and indignation at how wet they all were various modifications were carried out and several more test runs took place before the very final launch. At the end of the session the group left having had a great time, totally wet through but happy in the knowledge they had achieved some fantastic results.

## WEDNESDAY 29TH JUNE

A nifty bit of delegation resulted in Corrin being re-united with fellow ex-Yottenfews colleague Liz Temple to visit All Saints School Cockermouth to deliver not one but two workshops in one day!

The 'terrible' twosome spent the morning leading a circuits session to year 2 pupils rapidly followed by a forces workshop to year 4 students in the afternoon.

As always they made an excellent team and a great time was had by all.

Pauline Farrell said " It was great having Liz helping out again as her and Corrin were instrumental in designing these workshops originally. Delivering two different workshops in one day was always going to be a challenge but they certainly made best use of their visit by working with over 40 pupils.

Feedback from the teachers rated the educational value of the visit as excellent with pupils and staff really enjoying the opportunity to participate in lots of hands-on learning."



## OUT OF THIS WORLD EXPERIENCE

**Friday 1st July**

Jericho school students were treated to an out of this world experience by Mr Martin Lunn, MBE who visited the school with his Stardome inflatable planetarium.

Martin was helped by Sellafield STEM Ambassador Emma Nicholls who was happy to run things with no notice whatsoever. During their visit pupils whizzed through the night skies of the changing seasons star gazing along the way.

They heard all about the various stories linked to certain stars and planets before Martin tested their knowledge on the Earth and our solar system.

Climbing off the magic space carpet students returned to class a little spaced-out after a truly cosmic experience.

**Saturday 2nd July**

Martin set up the planetarium at Lakes College, Lillyhall for a family fun day which also included a water rocket challenge session led by Dominic Rhodes and a set of science experiments and activities delivered by the college staff.



## MONDAY 4TH JULY

A cracking day ahead as Dr Diane Aston, Education Manager IOM3 worked with 50 pupils from both Millom and St Benedicts schools to run a Material Science session for the year 9 students.

Her introductory lecture covered the different types of materials, how engineers extract them from the Earth's crust and why certain materials are better suited for particular jobs.

Many items were demonstrated during this including hip joints, artificial veins and thermochromic cutlery!

The 2nd part of her workshop was to design and build a protective suit for a raw egg from a tiny piece of bubble wrap, tape, polystyrene packing chips and a piece of foam.

As ever team names were very inventive (my own suggestion was Yolko Ohno!) and tension mounted as the competition took place to find the egg with the least packaging to survive the drop being declared the winner.

Readers will be pleased to know that assisting STEM ambassadors refused to use the rubber egg I purchased, their int-egg-rity remains intact....

## SATURDAY 9TH AND SUNDAY 10TH JULY

Rocket making workshops, exploding balloons, cosmic science shows and the chance to view the starchaser rocket were all on offer during a two-day family event funded by the Samuel Lindow foundation and hosted at UCLAN Westlakes.

## MONDAY 11TH JULY - TO INFINITY AND BEYOND!

Starchaser's Space4Schools team arrived at Cockermouth schools Eco centre on 7th July following a weekend of activities for the general public based at the West Lakes Research Institute.

80 year 8 pupils took part in the workshop sponsored by Sellafield Ltd where, acting as real life rocket scientists, they took part in all activities with great enthusiasm.

The day began with a presentation from Team Starchaser, an introduction to the company and their exploits over the last few years. It revealed and explained some of the landmarks of the space race, the basics of rocket science and the inspiration behind Starchaser's mission to launch tourists into space.

The students listened with great interest as Danny from the Starchaser team explained that their goal is to send British people into space within their life time, realistically and affordably within the next 15-20 years.

Rocket Factory 1 provided an opportunity for the pupils to show off their skills by building and launching their own real life solid-fuel rocket. The students were given an information pack with all equipment needed to construct a rocket, recovery parachute and fuel chamber. Teams had to come up with a team name, decorate their creations and then prepare to launch (once the PVA glue had dried!).

Before launching commenced it was time for Propulsion lab to entertain the teams by showing how to make a rocket move whilst demonstrating the various types of engines in use today in a fun and interactive way.

Starchasers 9 metre Skybolt rocket provided the perfect backdrop for several photos before it was finally time to launch the rockets.



20 teams, 20 rockets with possibilities of reaching 500ft, and reaching speeds of well over 150mph the students were set to be the best and beat the rest.

All launched successfully with a few parachutes failing to open, no one was stood in the wrong place at the wrong time when the rockets landed and all rockets were recovered with the winning one landing in a nearby field.

Corrin Nichols from Sellafield said 'I didn't know what to expect from the day as it was the first time I'd seen the workshop but it was very informative and the rockets worked great, all the pupils stayed engaged for the full day and enjoyed watching all the rocket launches not just their own.

The winning rocket was chosen after assessing how it had flown, how it looked and how far it had travelled - after landing in the adjoining field we had an out right winner! Well done team 'Speed of light'.





## TUESDAY 12TH AND WEDNESDAY 13TH JULY

Two more days of watery fun, thankfully the weather held out and it was only the rockets providing the soaking.

Dr Mike Edmondson, NNL was a brilliant host for these days, ably assisted by STEM ambassadors from Sellafield, NNL and some great GEN 11 apprentices.

The rockets seemed to get better and better with awesome height and distance disturbing more than a few oblivious birds. Winning teams received foam rocket launchers and all participating students received certificates.

Well done to the Primary school heads who also took part – nice to see a bit of friendly rivalry.

## THURSDAY 14TH JULY

A Young speakers competition was held for local students at Uclan facilities Westlakes, the standard of entries was extremely high and judges had a hard task to choose from those who participated.

### Friday 15th July

The festival ends with a great event organised by the local Imeche branch. Ambassadors worked with over 200 year 8 students from St Benedicts to run an event named 'Our World in 2050' which resulted in some innovative forward thinking from all the teams.

Running throughout the festival Rik and Stephen from UCLAN had also arranged many evening lectures to appeal to a wide range of ages covering many fascinating subjects.

Speaking about the festival Pauline Farrell said "The partner organisations have put together a diverse range of lectures, events, workshops and activities catering for all age groups. All the hard work has been worth it and feedback has been very positive. None of it would have been possible without the massive amount of input from the STEM ambassadors from many companies or the financial support from various organisations – a big thank you to all who took part and helped out"

## SPOILT FOR CHOICE

Over 2 days in June Moorclose Sports Centre played host to more than 600 year 6 pupils from 28 primary schools during the annual Connexions 'Jobs In Our Community' event.

The award winning careers awareness session was sponsored by Sellafield Ltd who also had STEM ambassadors attend to talk about science-based career options.

More than 20 career areas were represented including the NHS, childcare, engineering and the police service, Pupils spent up to 15 minutes at their chosen stands questioning industry representatives whilst trying the hands-on activities.

Demand at the Sellafield stand was higher than ever and we were constantly surrounded by mini scientists testing PH levels of household solutions.

All students had a workbook to complete where they had to find out the qualifications required for a job, training, advantages and disadvantages.

The event has a number of aims including providing a positive message about the values of attendance, achievement and work before the transfer to secondary school and to emphasise the importance of staying in learning beyond 16 and achieving the highest level of qualification possible.

Cheryl Ireland, Technical Capability Sellafield Ltd said "Once again Sellafield Ltd was a great hit with the young people. As ever, they were eager to dress up in protective clothing and become scientists for a day. It's also an opportunity for us to stress to them how important it is to try hard with their science and maths once they are back at school, one day they may become scientists for real."



## IOM3 EDUCATION COMMITTEE

Many of our ambassadors here at Sellafield are material scientists and as such are members of the Institute of Materials, Minerals and Mining (IOM3)

I own up to the fact that I knew very little about material science until one of our ambassadors, Debs Reekie arranged for Dr Diane Aston, Education Manager IOM3 to visit us and deliver what has since become one of our favourite activities – the material science workshop.

The lecture Diane delivers is entertaining, fascinating and above all else so informative – the technology we all take for granted these days would not exist without input from material scientists.

The IOM3 Colin Humphreys award recognises the contribution made to enhancing students scientific/ technological literacy through the teaching or support of IOM3 topics in the curriculum.

Pauline Farrell, Sellafield Ltd had been nominated for the award and whilst unsuccessful the IOM3 education committee were so impressed by the work carried out through the sites education support programme that she was invited to join the committee.

Speaking about the award Pauline said "I was delighted to find out I had been nominated for an award, the education programme is so successful due to a large number of people, ambassadors and outside organisations, working in partnership. The committee meeting in London was a great opportunity to meet members from all walks of life and I look forward to working with Diane and her team in the future"

## GIRLS, GIRLS, GIRLS

Cumbria Stemcentre, working in partnership with Aimhigher Cumbria, arranged a ladies day with a difference at Sellafield.

6 of our secondary schools brought along more than 90 year 8 female students to spend the day working with ambassadors from Sellafield Ltd and NNL. During their stay the girls tried out 4 different activities –  
Launchpad ball launcher – an introduction to simple control technology, students had to build a machine to fire ping pong balls with accuracy.



KNEX challenge – using the KNEX kits provided the task was to design and build a windmill with working gears. Robot ducks – simple mechanical and electrical engineering skills were needed to build the duck. Rocket car – kits were provided to enable the girls to plan and build a mini rocket car. St Josephs students were able to use their newly found skills to their advantage by recording their involvement on their own individual e-passports, a portfolio that follows them throughout their school life, where they record evidence of skills etc

Language teacher and co-ordinator of fair trade and enterprise Jan Lishman was delighted they were able to add working with others, taking risks, coping with uncertainty, improving own learning and communication skills.

Pauline Farrell said "The day was a great success with the students taking the opportunity to chat to the female ambassadors about their job roles during the tasks. The event was designed to encourage the year 8 ladies to be more aware of a range of STEM skills and occupations. The hands-on activities all carried some learning content as well as being fun to complete. The fact that some students were able to use the days activities to their advantage to add to their portfolio was a bonus"

## TEACHER TRAINING

Sellafield Ltd Information Officer Sarah Corlett recently escorted a party of primary school teachers on a site tour as part of their PSEP (Primary Science Enhancement Programme) training day held at Yottenfews Farmhouse. Corrin Nichols, Education Co-ordinator worked with Jonathan Barton, Advisory Teacher to pull together a programme where Jonathan spent the morning working with the teachers using web available resources coupled with an introduction to some creative thinking around science.

Following the site tour where they visited the THORP viewing gallery, feed pond and head end they returned to the farmhouse to examine how PSEP activities could lead towards a cross curricula project in schools.

At the end of the day the teachers had a greater understanding of some site processes together with a range of resources to use back in the classroom.

## KEY STAGE 2 FUN ENGINEERING DAY

Newly constructed KNEX bridge structures were lucky enough to survive the onslaught of numerous ping pong balls and high speed rocket cars during the above event held at Sellafield Ltd in June.

Over the course of the day over 100 year 5/6 pupils from 4 local primaries had great fun trying to build a launchpad ball launcher, a KNEX bridge to span a one meter gap and a rocket car that was then launched using compressed air.

All activities were developed by Cumbria Stemcentre and manned by ambassadors from Sellafield Ltd, NNL and Nuvia.

## JUST THE TICKET!

Making the right choices whilst still at school is a daunting prospect with subjects chosen at GCSE and AS level determining further education and career options.

Recently two groups of year 10 students from Whitehaven school worked with teacher Fiona Brown, Gary Hewer, Connexions and Pauline Farrell and Corrin Nichols, Sellafield Ltd on the STAR Windmills project. Developed by a team of professionals from Liverpool University as an interactive, hands-on careers advice programme aimed at 14-19 year olds the programme was delivered over several weeks.

STAR (Skills, Treasures, Ambitions and Roles) encourages young people to recognise that everyone is a star in their own right because we all have our own unique set of skills, treasures, ambitions and roles.

Using innovative resources including interactive games, DVD's and ambition cards coupled with fun, high-energy workshops students were encouraged to think about and discuss their feelings, concerns and ambitions for the future.

STEM ambassadors from industry including Sellafield Ltd and NNL also visited school where they took part in a 'speed dating' session where students had to ask as many career-related questions as possible in a 5 minute window.

Throughout the hourly sessions each individual had their own workbook to guide them towards the ultimate aim of producing their own unique golden ticket. Dated ten years from now they imagined they had just had the most amazing 10 years of their life. By answering a few questions including, what they had achieved, how their dreams became reality and what skills and expertise they had gained they created their own ticket to their ideal life.

At the end of the project the students presented their work to fellow pupils, teachers, parents and industry representatives talking about their journey and how they now have a clear path of where they want to be and how to get there. As well as sponsoring the project Sellafield Ltd worked with Connexions to enable every participant to achieve an accredited OCN qualification upon completion.

Pauline Farrell said " At the start of the programme I'm not sure who was more nervous myself or the students. However it has been amazing to see the difference in all of them from beginning to end. Their self-belief and confidence have grown and with a little encouragement they have all recognised they already have a lot to offer. With sheer determination and hard work they all have a brilliant future ahead".



## STUDENTS FROM PRIESTLEY COLLEGE ARE SUCCESSFUL

ENGINEERING students have been putting their skills to the test by solving real life problems with professional engineers.

The Engineering Education Scheme links teams of four Year 12 students and their teacher with local companies to work on real, scientific, engineering and technological problems, providing students with an in-depth experience in science, engineering and technology.

Priestley College students have been working in two teams to tackle challenging situations and were invited to the University of Liverpool to celebrate completing their tasks.

One team designed a method of safely transferring radioactive liquor from a storage tank across a busy road at Sellafield to two other tanks, while the other group investigated a device which confirmed the closure of a valve in a pipeline that carried radioactive liquid.

The groups presented their solutions to a panel of senior engineers, winning praise from the adjudicators for their efforts throughout the scheme.

Gareth Davies, a Process engineer said: "I'm extremely proud of the Priestley College teams. They worked very hard over the 7 months and delivered high quality solutions to real life engineering problems. I think this has been a unique opportunity for the students to see what a career in engineering has to offer and hope to see Sellafield's continued support of such a worthwhile scheme."

Parents and members of the general public were invited to meet with the teams and discuss the progress they had made over the last six months.

The Priestley teams were handed certificates by Professor Peter Goodhew from the School of Engineering at the university and Chris Harris, the scheme's regional director, was on hand to congratulate them.

Adrian Birchenough, Priestley science tutor, said: "Attending the University of Liverpool for this final presentation was a great way for our students to bring the curtain down on their projects."

"The Engineering Education Scheme is a great way to challenge the engineers of tomorrow and the college's teams should be really proud of their efforts."

Dan Brook, a Mechanical engineer at Risley said: "Working with the students and teachers from Priestley College has been a great opportunity to inspire a new generation to the possibilities in engineering. They each rose to the challenges we set and came out on top."



**Team A - (left to right) - Engineers Dan Brook and Gareth Davies with students Calum Smith, Lorna Kearns, Sam Drinkwater and tutor Alan Durbin.**



**Team B - (left to right) - Engineers Dan Jones and Mirban Hussain with students Emma Keenan, Mike Lakeland, Ryan Lloyd, Matthew Pennington and tutor Adrian Birchenough.**

## YOUNG CITIZENS AT YOUR SERVICE

Employees from Sellafield Ltd's Business Improvement Academy have been part of a trailblazing national youth programme.

Connexions Cumbria together with partner organisations including the Outward Bound Trust and Young Cumbria were successful in their bid to become one of only 12 groups nationally to deliver the first National Citizen Service (NCS) pilot projects.

Minister for the Cabinet Office Francis Maude was quoted as saying "Too many young people feel isolated from society, NCS will bring together 16 yr olds from all different backgrounds to give them the skills and confidence to make a difference in their communities"

Over 120 year 11 students were split into teams to work with 3 dedicated support workers over a 3 week period. A residential programme of outward bound activities for week one, a second week of living in a youth hostel with other team members whilst taking part in a number of activities with the last week living at home but dedicating 30 hours to complete a social action project.

With participants from all over West Cumbria some students worked on individual community projects with those who were geographically closer opting to do group projects. These have included renovating a bus shelter, working with Howgill childrens services and delivering a 'flash mob' in Workington town centre to promote NCS. Sellafield Ltd Improvement Engineers Daniel Frankland and Wendy Storey, assisted by Sharon Hodgson, dedicated each Monday afternoon during week 2 to guide students through the A3 thinking planning tool as a mechanism for them to take away to use to plan their community project.

A3 thinking is a 9 box process used to manage any project on one piece of paper by breaking it down in to bite-sized chunks. Users are very clearly led through the steps progressing from the background, current state onto future state and the root cause to the problem. Completing a gap analysis and action plan leads onto milestones and benefits.

Daniel demonstrated how one sheet of paper becomes a road map/storyboard that could be taken to job interviews or university applications as a record of achievement. Having one piece of paper with all information on also creates a concise, one-stop shop for all team members to use.

Pauline Farrell said " It soon became apparent how the A3 thinking idea would benefit the teams – it's an excellent idea which has a proven track record of success on site. The business improvements team delivered a packed 1 hour session including 2 ice-breakers which demonstrated how a tough job can be made easier and the importance of giving specific, clear instructions. They made the sessions fun and informative – I'd like to thank Business Improvement champion Hank De Groot for his assistance with delivering the project"

Wendy added "I have really enjoyed working with the groups over the last 6 weeks. They were all fantastic and up for the challenge of learning something new in a very short space of time ....we also had some fun too. I would like to wish them well in completing their worthwhile projects and hope they found the A3 thinking system helpful planning and execution"



# SO YOU THINK YOU CAN DANCE

Once the students had spent the morning designing, building and programming their robots from a LEGO Mindstorms kit they carried out further fine tuning to make the robot dance to a chosen track of music.

Tension mounted during the test runs, ambassadors got very competitive and judges sharpened pencils at the ready (if you closed your eyes and squinted it was just like Louis Walsh, Cheryl and Danni were right before us).

A little light relief had been on hand throughout the day as students got to chat individually to Oscar before trying the Babcock manipulator challenge – successfully manipulating a remote handling arm around the course using only the in-cell camera to monitor progress.

All successful students were entered into a draw to win a prize donated by Babcocks. Back on the dance floor and the robots reggaed one by one – some more successfully than others. Judges had set criteria to award marks against but still had a tough task, winners received prizes donated by Sellafield Ltd, Babcocks and Aim Higher Cumbria.

Pauline Farrell said “ Cumbria Stemcentre have ran this event for us for a number of years now and everyone loves it regardless of their age, none more so than the ambassadors!”.

Without a sequin, tap shoe or feather boa in sight and in a fake-tan free zone Sellafield Ltd ran two days of dance competitions back in May. Bruce Forsyth has got nothing on our compere – the very talented, verbally eloquent (!) Oscar the robot who kept us all entertained.



## KS2 STEM EVENT

8 local primary schools were invited to bring along a group of year 5/6 pupils to an ImechE STEM experience day which was held at Lakes college, Lillyhall recently.

Sellafiled Ltd ambassador were on hand to assist the students while they tackled three 45 minute activities which contained elements of electrical, mechanical and constructional engineering. All were designed to enthuse and inspire pupils about different aspects of science and engineering.

Activities were devised by Cumbria Stemcentre who also co-ordinated the event which proved to be as popular as ever.



## MATHS MORSELS

Pupils from Ennerdale & Kinniside, Hensingham and St Joseph's Frizington have all worked with Sellafield STEM ambassadors taking part in maths workshops with a difference.

As a result of which mums and dads need never plan a birthday party ever again! Our first session set them all the challenge to plan a birthday party for 20 people from a set budget. Careful planning was needed to buy enough food, entertainment and the all-important party bags – some of them even remembered to feed the adults.

Moving on to the second session they worked on scaling up and ratios by converting a recipe for a chocolate cake for 5 costing £5 into a cake for 20 costing £20.



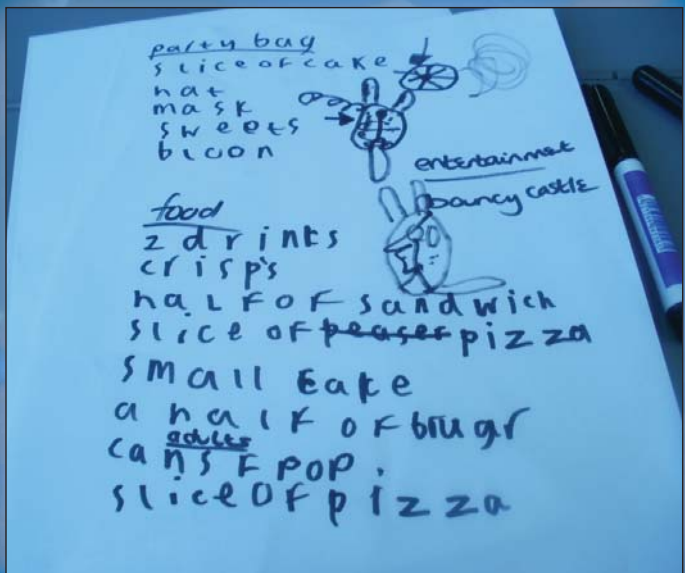
At the end of the workshop our mathematicians added another skill by becoming master bakers. Measuring and weighing together with strict portion controls resulted in some mathematically correct Krispie cakes to take home and share.

Pauline Farrell said " Had there been cakes involved during maths lessons in my school I'm pretty sure I would have been top of the class. The workshop is a great way of making maths enjoyable and relevant to every day life"



St Josephs also received a visit from Corrin Nichols who delivered a circuits workshop. Using trays of equipment provided by Sellafield Ltd pupils completed a worksheet which tested their knowledge on both series and parallel circuits, batteries, banana plugs and buzzers and motors.

These workshops and others can be brought out to any primary school, as you can imagine they are very popular and demand is high but if you are prepared to wait please contact Corrin on 019467 73366 to book.



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