



ENGINEERING FOCUS

JUNE 2014

F1 IN SCHOOLS



SPECIAL



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Winners from the Start!
Flamin' Maneiacs our first F1 in Schools team won the award for Innovative Thinking! From that point on students at our school were hooked!

That was back in 2008 and since then a wide range of teams have gone on to greater and greater success in this international competition constantly supported by the F1 expert—Mr Winter.

The F1 in Schools challenge is aimed at different ages and levels, from primary schools who can take part in both the 2D and 3D challenge through to KS3 students who cut their teeth in the Bloodhound Class and finally the international category of F1 in Schools aimed at KS4 and 5.

Since 2008 we have had teams rising through the classes and demonstrating their skills and successes at each level. Mr Winter runs an enrichment week activity based on the challenge giving students the chance to find



**Texas
Fundraising
lead to
Mr Winter's
Any Hat for a
Fiver
Challenge!
He wore some
beautiful
creations**



Flamin' Maneiacs our first F1 in Schools team won the Innovative Thinking Award

out exactly what is involved to take part and giving them the opportunity to form teams from the best students who took part in the week long enrichment event. From then on they are responsible for setting their team roles and carrying out the tasks necessary to meet the challenge deadlines. Mr Winter, who believes it is entirely their responsibility to win is always watching but will not interfere unless they ask for his help. This is one of the reasons the teams do so well in all stages because they have a such a detailed knowledge and understanding of all their work.

Preparing for the regional and national finals means giving up weekends and holiday time every year so the teams can complete their work on time. There simply aren't enough hours in the day to complete the challenge without it. Mr Winter's dedication to the teams and the project is legendary in school and I asked why he did it? - "To inspire and develop the next generation of outstanding British Engineers would be the party line. The truth is I simply adore absurd millinery."



TURBOCHARGED'S 2013 SUCCESS



“We attempted and succeeded and now we will prepare for next year”

TurboCharged Team



Speeding Snails—our previous holders of the speed record



Bloodhound SSC is the 1000mph car—a project designed to push the boundaries of Science and Technology and to encourage students in schools throughout the country to do the same.

With this in mind it is obvious that the Bloodhound SSC class for FI in schools is about innovation and speed.

Previous successes in this class for Wilmington Grammar School for Boys includes Speeding Snails—the record holders in this class. Even when the challenge was thrown open to professional and amateur engineers of all



Turbocharged 2013 - The original team

ages at the famous Goodwood Festival Of Speed, Speeding Snails still came away with the fastest car of it's class. An impressive achievement!

One day that record had to be broken and it was only fitting that it was beaten by another WGSB team—Turbocharged!

2013 saw the original Turbocharged team not only break the speed record in the Bloodhound SSC class but also walk away from the finals as the 2013 National Champions.

The workload, intense concentration and demands

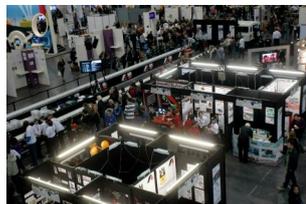
All aspects of the team's work is analysed and scrutinised at the finals.



of the competition took it's toll on the team and after a few weeks discussion it was decided the team would split and form two new teams for the following year.

Both teams would now be competing against each other and both needed new team members who had the right skills to ensure a balanced group that could work together on all aspects of the challenge.

Enthusiasts from the FI in Schools enrichment activity had the chance to show the champions that they had the skills needed to join our successful teams.



TURBOCHARGED— REMAIN CHAMPIONS

Rank	Time	Team No.	Team Name	School
1	0.800	819	Ego	Yagci Daa Ceyd
2	0.804	818	Turbocharged	Wilmington Grammar School for Boys
3	0.814	818	Olisium	Fitzalan High School
4	0.827	821	Simply Perfect	Shirton Collegiate Academy
5	0.828	817	Swiss	Kilnmead Academy
6	0.842	803	Nebula	Yogel Olym Yashifirne
7	0.848	827	Orion	Edmond Hallgate
8	0.872	811	Team Vortex	Robert May's School
9	0.883	828	Technically Viral	St Helen's RC Comprehensive School
10	0.897	815	Vectisator	Kilnmead Academy

Top times and a stunning pit display contributed to their victory



“We managed to defend our title as UK National Champions and keep our world record speed for this class”

The new recruits for the Turbocharged team had their work cut out for them. Raising money through sponsorship from local companies, marketing their team through both the pit display and Turbocharged branded products.

Researching materials and manufacturing techniques the team trialed new designs. These improvements to the original car were tested and the results from a wide range of variations were analysed to find how they impacted on speed, weight and strength of the car.

Virtual modelling with Solidworks to come up with

the design and test that it meets the requisite safety points for the car. Running Computational Fluid Dynamics (CFD) simulations to test the aerodynamics of the shape and finally building and testing the prototypes to see if their modifications had worked all took weeks and weeks of commitment and dedication from all members of the team.

The London regional finals saw our team awarded the fastest car trophy and invited to the national final as 3rd place finalists

In Birmingham the results were remarkable. The London podium positions of 1st, 2nd, and 3rd were reversed and Turbocharged took the top step, being crowned National Champions for the second year running.

They further tested the ability of our overflowing trophy cabinet to cope by being judged to have The Best Engineered Car and the Best Use of Research and Development.

The 2014-2015 season will see Turbocharged going for the hat-trick of titles and betting against them would be ill-advised.

Sam Webb
Turbocharged
Team
Manager



“The 2014-2015 season will see Turbocharged going for the hat-trick of titles and betting against them would be ill-advised.”

Mr Winter





2007-8 : THE SCHOOL'S ROOKIE YEAR – INNOVATION.

WGSB first entered the F1 in Schools competition in the 2007-8 season. The Flamin' Maneiacs entered the D Class (which was to evolve into the Bloodhound Class). We came back with the trophy for Engineering Innovation, but also a very clear understanding of the quality of the opposition. We knew that to win would need fundamental improvements in many areas.











2009-10 : REG

In 2009, the school entered the maximum allowed. The Hotrods were close behind the Speeding Snails. Flamin' Maneiacs had graduated to the F1 Class.










2010-11 : ENGINEERING AND INNOVATION.

For 2010 there were again three teams representing WGSB. The Snails tried to repeat their success, but this time in the F1 Class. In the Bloodhound Class, the Hectic Hotrods evolved into the Speed Demons and were joined by Full Throttle. The Snails brought back the Best Engineered Car trophy and Full Throttle were rewarded with the Technical Innovation trophy for making their own wind tunnel.













2011-12 : ENGI

The Speeding Snails were again judged to have the best car, designed and made the fastest F1 Class car that was faster than the Snails' record hold up after the finish line. As the rules require a








2012-13 : NATIONAL - CHAMPIONS & A NEW WR.






At the National Final, Turbocharged really raised their game. Their hard work all came good, with trophies for the Best Engineered Car, the Fastest Car and they came back as National Champions. The Speeding Snails' World Record time from 2010 had to be beaten one day and Turbocharged were the ones to do it !! Their car covered the 20m track in 0.587 seconds, so the WGSB reputation for breaking World Records was significantly enhanced. Part of their prize was to attend the British Grand Prix on race day, including Paddock access. This was truly a day to remember.




Silverstone




2012-13 : F1 NATION




RedShift also put in a huge effort as they prepared. Full Throttle joining them. Over a 2 day... The awards ceremony was increasingly tense... the announcement of the podium positions. They were also rewarded with a day at Silverstone.






NATIONAL - MAKING OUR MARK.

able 3 teams, two in the Bloodhound Class and one in the F1 Class. The Hectic Snails, who won the Bloodhound Class and an invitation to the National Final. The Snails and won the highly prized trophy for Best Engineered Car. Go WGSB !!!



2009-10 : NATIONAL - A NEW SPEED RECORD.

For the National Final, the Snails really went to work. They designed and made a new car from scratch, trimming every component down to just fit within the requirements of the rules. Their car was stunningly fast, covering the 20 metre track in 0.62 seconds and setting a new National Record. Strangely, they were judged to be runners-up overall.



SCHOOLS	TIME	CLASS
1. WILMINGTON GRAMMAR SCHOOL FOR BOYS	0.62	BLOODHOUND
2. ST. ALBANS SCHOOL	0.65	BLOODHOUND
3. ST. ALBANS SCHOOL	0.68	BLOODHOUND
4. ST. ALBANS SCHOOL	0.70	BLOODHOUND
5. ST. ALBANS SCHOOL	0.72	BLOODHOUND
6. ST. ALBANS SCHOOL	0.75	BLOODHOUND
7. ST. ALBANS SCHOOL	0.78	BLOODHOUND
8. ST. ALBANS SCHOOL	0.80	BLOODHOUND
9. ST. ALBANS SCHOOL	0.82	BLOODHOUND
10. ST. ALBANS SCHOOL	0.85	BLOODHOUND
11. ST. ALBANS SCHOOL	0.88	BLOODHOUND
12. ST. ALBANS SCHOOL	0.90	BLOODHOUND
13. ST. ALBANS SCHOOL	0.92	BLOODHOUND
14. ST. ALBANS SCHOOL	0.95	BLOODHOUND
15. ST. ALBANS SCHOOL	0.98	BLOODHOUND
16. ST. ALBANS SCHOOL	1.00	BLOODHOUND
17. ST. ALBANS SCHOOL	1.05	BLOODHOUND
18. ST. ALBANS SCHOOL	1.10	BLOODHOUND
19. ST. ALBANS SCHOOL	1.15	BLOODHOUND
20. ST. ALBANS SCHOOL	1.20	BLOODHOUND
21. ST. ALBANS SCHOOL	1.25	BLOODHOUND
22. ST. ALBANS SCHOOL	1.30	BLOODHOUND
23. ST. ALBANS SCHOOL	1.35	BLOODHOUND
24. ST. ALBANS SCHOOL	1.40	BLOODHOUND
25. ST. ALBANS SCHOOL	1.45	BLOODHOUND
26. ST. ALBANS SCHOOL	1.50	BLOODHOUND
27. ST. ALBANS SCHOOL	1.55	BLOODHOUND
28. ST. ALBANS SCHOOL	1.60	BLOODHOUND
29. ST. ALBANS SCHOOL	1.65	BLOODHOUND
30. ST. ALBANS SCHOOL	1.70	BLOODHOUND
31. ST. ALBANS SCHOOL	1.75	BLOODHOUND
32. ST. ALBANS SCHOOL	1.80	BLOODHOUND
33. ST. ALBANS SCHOOL	1.85	BLOODHOUND
34. ST. ALBANS SCHOOL	1.90	BLOODHOUND
35. ST. ALBANS SCHOOL	1.95	BLOODHOUND
36. ST. ALBANS SCHOOL	2.00	BLOODHOUND
37. ST. ALBANS SCHOOL	2.05	BLOODHOUND
38. ST. ALBANS SCHOOL	2.10	BLOODHOUND
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44. ST. ALBANS SCHOOL	2.40	BLOODHOUND
45. ST. ALBANS SCHOOL	2.45	BLOODHOUND
46. ST. ALBANS SCHOOL	2.50	BLOODHOUND
47. ST. ALBANS SCHOOL	2.55	BLOODHOUND
48. ST. ALBANS SCHOOL	2.60	BLOODHOUND
49. ST. ALBANS SCHOOL	2.65	BLOODHOUND
50. ST. ALBANS SCHOOL	2.70	BLOODHOUND
51. ST. ALBANS SCHOOL	2.75	BLOODHOUND
52. ST. ALBANS SCHOOL	2.80	BLOODHOUND
53. ST. ALBANS SCHOOL	2.85	BLOODHOUND
54. ST. ALBANS SCHOOL	2.90	BLOODHOUND
55. ST. ALBANS SCHOOL	2.95	BLOODHOUND
56. ST. ALBANS SCHOOL	3.00	BLOODHOUND
57. ST. ALBANS SCHOOL	3.05	BLOODHOUND
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95. ST. ALBANS SCHOOL	4.95	BLOODHOUND
96. ST. ALBANS SCHOOL	5.00	BLOODHOUND
97. ST. ALBANS SCHOOL	5.05	BLOODHOUND
98. ST. ALBANS SCHOOL	5.10	BLOODHOUND
99. ST. ALBANS SCHOOL	5.15	BLOODHOUND
100. ST. ALBANS SCHOOL	5.20	BLOODHOUND

The rewards for F1 in Schools success can be pretty fabulous. The Speeding Snails were invited to the British GP at Silverstone, spent half an hour in the Ferrari garage, hung out in Red Bull hospitality and met Sebastian Vettel, a fellow world champion. Money couldn't buy a day out like it.



ENGINEERING, FASTEST AND FASTER.

They produced the Best Engineered Car and RedShift, which had evolved from the Speed Demon car. Representing the school in the Bloodhound class, Full Throttle designed and made a racing car. Unfortunately, it did not survive stopping from 100 mph in 2 metres and broke the car to complete two runs, they were disqualified and the Snails' record lived on.



2012-13 : REGIONAL - 2 GOLDEN TICKETS.



2012-13 again saw 3 WGSB teams at the London Final. Turbocharged had the fastest car and were overall winners in the Bloodhound Class. RedShift produced the best engineered car and were runners up in the F1 Class. This meant that both teams qualified for the National Final. Full Throttle moved up from Bloodhound to F1 Class and were placed a creditable 6th overall.



NATIONAL - WORLD FINAL QUALIFICATION.



Prepared for the National Final. Their team of 4 at the Regional was enlarged by two members. In the judging programme, we were confident that they were in the top 5 out of 30 teams. As the minor trophies were handed out and RedShift were empty handed right up to when they came in 3rd and had qualified for the World Final. We were going to Texas !!! One for the GP including Team Garage tours and Paddock access.



2012-13 : WORLD FINAL - 2nd FASTEST.

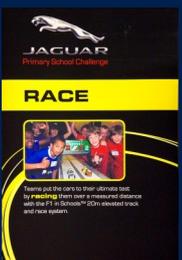
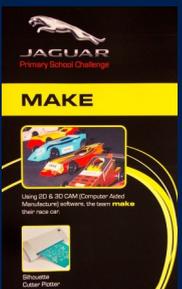
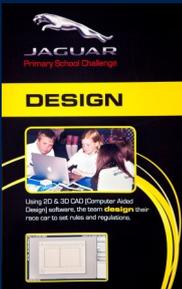


As the 3rd place team Nationally, RedShift qualified to represent the UK at the World Final in an International Collaboration Team. They were paired with Team X-Treme from Raffles Girls' School, Singapore. Their merged names became X-Shift and they again set to work. The technical rules were very different, so a new car design had to be produced from scratch. The project was costed at £18,000 so sponsorship and fundraising were on a scary scale. The relative strengths of the two teams were a good, complimentary fit and the end result was a very competitive team. They placed 17th overall out of the 38 best teams in the world and came second in the Knockout competition, being beaten by India in the final. This was rewarded by the Chair of Judges trophy and a day at the US GP in Austin.

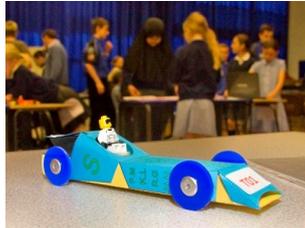




“We learned to co-operate while we’re having fun”
Superstars Team Member



F1 IN SCHOOLS JAGUAR PRIMARY SCHOOL CHALLENGE



Students arrive and start preparing for the judges



Students who were successful in the finals last November, were chosen to host this amazing event giving students from The Brent Primary School a fantastic opportunity to demonstrate their creative engineering skills.



Thrilling, Exciting, Challenging!

Eight highly successful teams of year 5 students brought their cars, portfolios and presentations to the first Kent regional final for the F1 in Schools Jaguar Primary School Challenge.

Teams competing in the finals had worked on designing and manufacturing a car using 2D CAD software and a CAM cutter before assembling the final product to test it on the day.

Companies for sponsorship, produced a portfolio to demonstrate their planning and progression throughout the project and prepared a verbal presentation to demonstrate how they had worked together, developing a wide range of personal skills as well as their competition car.

Wilmington Grammar School for Boys, whose senior teams include the current F1 in School Bloodhound SSC Class speed record holders and national champions for the last two years as well as being one of three schools to represent the UK at the international

Duties were allocated within the teams to ensure that, as well as producing the car, teams contacted

Judging took place throughout the day with STEM Ambassadors from Delphi Diesel Systems, KBR Power, Costain and Bloodhound SSC being thoroughly impressed by the students detailed understanding of the work they had carried out.



Students work on their additional challenge while the judging takes place



F1 IN SCHOOLS

THE RACING THE RESULTS



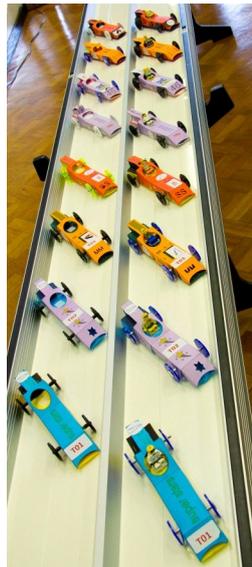
Red-Shift and Turbocharged set up the track and the racing began



CO2 cartridges were used to fire the cars down a 20m long track through timing gates that measure to 1000ths of a second. The fastest car covering the distance in less than 1.3 seconds was travelling at approximately 30 MPH.

Prizes were awarded by the judges for best portfolio, best verbal presentation, best additional challenge, best engineered and fastest car with the awards going to four different teams.

Gareth Johnson, MP for



Dartford and special guest for the afternoon, presented the awards for 2nd and 3rd place overall. He then congratulated the overall winners – The Achievers – as he presented them with their Jaguar trophy and golden invitation to the national finals being held in Coventry in June.

When congratulating all of the teams for their excellent work he said “We need all of the engineers we can get and there has been a wonderful opportunity here today for you to find something out about how engineers work.”

“Every year we have doubled in size and this year we have 12,000 children taking part nationwide”

David Barnard

Founder - Jaguar Primary School Challenge



RED-SHIFT'S TEXAN SUCCESS



3rd place at the Nationals means a ticket to Texas!

Red-Shift have been taking part in the FI in Schools challenge for many years and has won numerous prizes at the different events. The one success that had eluded them up to now was a podium place at the Nationals that would take them to the world finals.

Honing their skills in design, manufacture, presentation and displays the 2013 nationals finally delivered—3rd place and a ticket to Texas!

X-treme in Singapore also qualified for Texas and the rules meant that the collaborative team X-Shift was born.

Both teams put in hundreds of hours of work, Red shift were in school for the majority of the summer holiday developing the car and display but this was only half of the challenge. £18,000 to get to the finals had to be raised and that was a mammoth task in itself, searching for sponsors, running fund-raising

Alex's reaction times took them to 2nd in the world



The team met Mark Webber at the American Grand Prix



Team X-Shift an English and Singapore collaboration



Time to go X-Treme

activities, quiz nights and Mr Winter's notorious challenge to pay him to wear any headgear for a day—he really suited the pigtails!

November came round at a frantic pace and the team were heading for Austin, Texas.

The international finals were intense, many of the teams that were there had been before and it was obvious just how much work it takes to get to such a prestigious event. Day 1 saw the team in 22nd place, disappointing but a start, spurred on by the desire for success the team excelled themselves on day 2 taking second place in the knock-out rounds. A fantastic achievement and great reward for all of their hard work and dedication.

On the final day X-shift received the Judges Recognition of Achievement Award!

What an amazing experience for them all.

For further information regarding any topic in the Engineering Focus please contact esmith@wgsb.org.uk
Or visit our website at <http://wgsbengineeringfocus.weebly.com/>



Common Lane Wilmington Dartford Kent DA2 7DA

tel: 01322 223090 fax: 01322 289920 email: office@wgsb.org.uk www.wgsb.org.uk

Company Registration No.07682311