Atlassian Williams Racing

CRJS NEWSLETTER

STEM

On 30th April, 40 pupils from Crawley Ridge Junior School accepted the opportunity to delve deeper into science, technology, engineering and mathematics at the Atlassian Williams racings Headquarters, Grove. This unforgettable STEM Enrichment Day allowed our students to experience the heart of racing at the pinnacle of motorsport. With 9 Constructor World Championships and 114 race victories, Williams has been at the forefront of pioneering design for almost 50 years.

The team members took our students on a remarkable journey to understand the foundations of Williams, established by the relentless passion of Sir Frank Williams and Sir Patrick Head who spearheaded the teams unwavering drive for innovation and success. We left with no doubt: it takes a team to achieve.

Our students experienced this first-hand: curiosity combined with awe and wonder; confidence building as they made, timely critical decisions on budgets and innovation strategies during the prototype building stages of the 'Composite nose cone challenge'; and the emotional highs and lows of competition. All showed respect and represented CRJS brilliantly.

The children returned to CRJS with a remarkable insight into the motorsport industry, and their enthusiasm for STEM truly has no limits. We very much hope to be able to offer similar experiences to other children in the future, and their teachers are already reflecting on how this can enhance STEM within our school.

Our enrichment experience included:

- *Williams Racing Heritage Museum tour.*
- *Formula 1 Racing Simulators.*
- *The impact compression challenge .*
- *Nose cone composite challenge: regulations, planning, budgeting, design, testing and innovation, team principal decision making and team presentation.*
- *Career pathways in motorsport and STEM industries.*

Learners follow their passions and learn for life. By providing rich experiences, new pathways present themselves, opportunities open and curiosity is ignited.

"Williams is a team that has my name over the door, something that for decades has made me truly proud."

Sir Frank Williams

<u>Williams Racing: Seven Formula One World Driver Championships:</u>

Alan Jones (1980)

Keke Rosberg (1982)

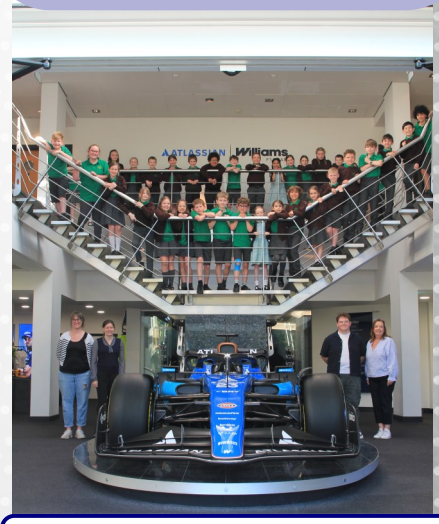
Nelson Piquet (1987)

Nigel Mansell (1992)

Alain Prost (1993)

Damon Hill (1996)

Jacques Villeneuve (1997).



Thank you to Atlassian Williams Racing.

Group A set off to the racing simulators to embark on the ultimate challenge of three Formula 1 race tracks. From Austria to Silverstone and Miami, the children had fun! It gave them an insight to the challenges of maintaining a racing line and how wet weather impacts on grip. Aquaplaning was a common theme! Group B would certainly agree as they faced the narrow, street circuit of Monaco.

Onto the heritage museum the group ventured. The astonishment of children as they held a section of the car bodywork could not be missed. Which composite materials could allow it to be so light and so strong? Which materials did they use before the innovation of carbon fibre? The children understood how aerodynamic models were used to test design concepts to identify air flow over a car and how it is vital to collect data, reflect and innovate to achieve performance. CRJS certainly has budding aerodynamicists in the making with the insightful responses they shared with our guides.

Awe and wonder continued as the children handled the steering wheel and racing helmet of racing icons.

















Group B began with a comprehensive guided tour of the £200 million Williams Racing Museum which embodies the design innovation of the team's sporting heritage. From the outset, while a dream is important, they learnt that money is required to operate. Through sponsorships and branding this can become possible. Together, the children explored changes in the flooring, aerodynamic features, and even the six-wheeled car of 1981. The car, FW08B, was so good, it was banned! The children learnt, that the sport is governed by rules outlined by the FIA and there was considerable discussion, with plenty of questions, over how this shaped car design. Keep an eye out for on track demonstrations at key motorsports events as many of their historic cars, which are maintained by the experienced heritage team, are truly awakened.

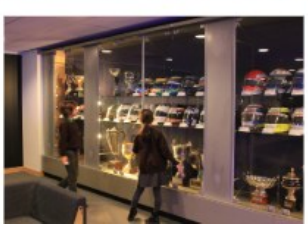
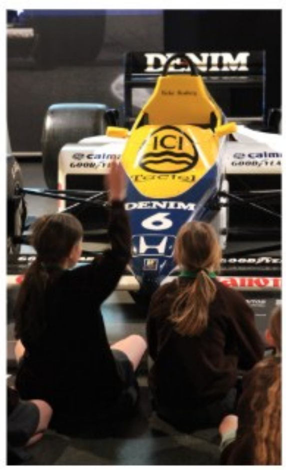
We learnt that Sir Patrick Head made a special request not to repair the sidepod of Jacques Villeneuve's car after it was struck by Michael Schumacher in the championship title decider, Jerez 1997. And, yes, that is Sebastian Vettel's FW14B as we first stepped into the museum!

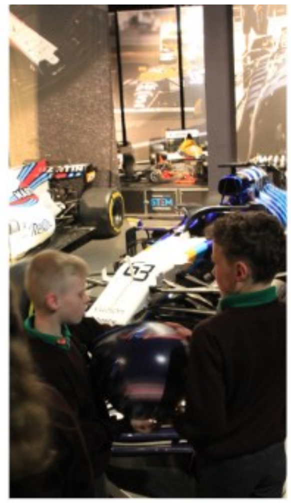
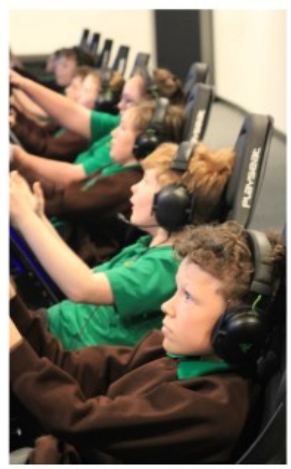


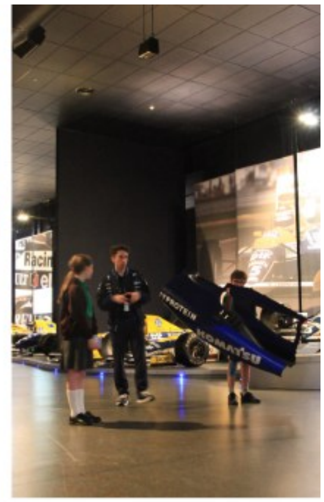


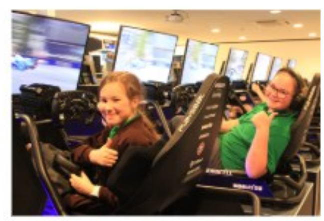





Group 1

To begin, the crumple challenge with the paper and plasticine got us thinking and we learnt straight away to talk as a group to share ideas. We were relieved that our paper idea did work well. This helped us in the second challenge.

In our composite challenge we used cardboard to absorb the impact during testing. It had chicken wire too. Over time, we did improve. However, our final nose cone did not perform as expected. We learnt that the chicken wire was important to our composite nose cone.

The day was amazing and we learnt so much about working as a team as well as the importance of testing ideas.

Group 2

As a team, we worked really well together to develop our design ideas. We each had jobs to do in our teams. We thoroughly enjoyed watching the impact testing of the nose cone to see if any of our design ideas worked and how to make changes to improve our design.

This day was fantastic because we got to learn so much more about Formula 1 and the hard work that goes into every part of the design.

Group 3

At the start it was a challenge to communicate our ideas, but we got underway with our second challenge. The more we talked, the better our ideas became. By making changes to our nose cone, we were able to improve our results during the impact challenge. Importantly, we came within budget.

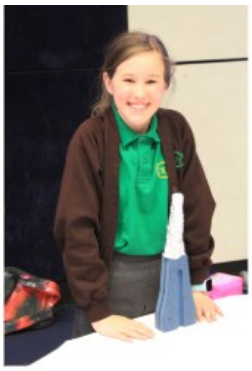
The day was really fun, from the simulators to the design of the nose cone. We learnt that it is important to use the right materials, in the right way, for the nose cone to crumple and be safe for the driver.

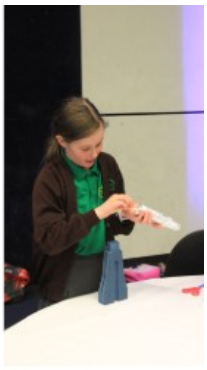
Group 4

For the first challenge we had to drop the mass onto the plasticine, we learnt a lot about forces. As the mass falls down, and if the paper is stuck in the tube, it absorbs the impact and slows it down. This first task got us talking like engineers.

Together we worked really well as a team and made lots of decisions. Our favourite part was watching the crash testing. What would happen? Would our design work? What could we do better? Do we have the budget to try again?

This day was phenomenal! A day that we will remember and it is already inspiring us to draw the cars using an Iso Sketch and learn more about Formula 1.







Group 5

Everything about out Williams STEM experience was amazing, but one activity truly stood out was the composite challenge. This was a test that requires teamwork and resilience; we had to experiment with our unique ideas whilst trying to get the best result. The aim was to design the best overall nosecone.

Our activity to start was to protect a plasticine ball with paper! Is that even possible? We only got two A4 pieces to do this and a time limit of five minutes. We had to protect it from a 1kg weight.

The day was fun and engaging, yet informative and it gave us memories to last a lifetime.














Group 6

To begin the afternoon, we started by dropping a block of aluminium onto a clay ball. To prevent it compressing, we had to create a paper nose with only two sheets of paper. Once created, we placed it into the tube and dropped the aluminium on top. If you made your nose cone crash-proof, the clay ball would not be crushed by the impact force. The practise run of the nose cone was so fun. The real competition tested our resilience but we shone through it. We used this teambuilding activity to help us in our next task. On our final challenge, 'the nose cone compression challenge', we used resources to construct our design. We used card, tape, cotton balls, foil, polystyrene, folded card and on the outside we added logos to add advertisements. This is how the teams raise money to help fund themselves.

This day was unforgettable and really fun.








Group 7

To begin, in the crumble challenge, we were only able to use 2 A4 sheets of paper to make a barrier to protect a small ball from an aluminium 1kg weight attached to string.

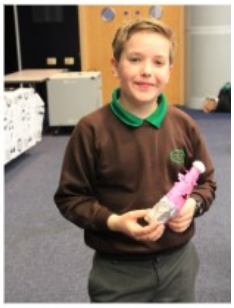
Once we had completed this warm up activity, we were ready for the final challenge. Together, we did the composite challenge with cardboard and cotton wool balls. At first, this plan was not a success so then we adapted it. We added tinfoil, elastic band and strips of cardboard (using the glue gun to help). We were able to do some practise runs until we did the real one.

Our day was amazing. We enjoyed it thoroughly. Thank you!








Group 8

One of my favourite events was the crash test where we had to make F1 style nose cones. The nose cone needed to crumble to absorb the impact and they were tested on the machine. We were allowed to adapt and improve our design after each test. However, each machine test needed to be part of our budget.

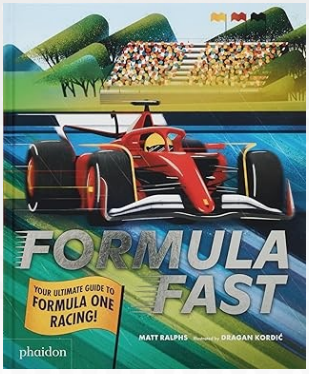
At the end of the crash testing, each team took to the stage to present. We shared our inspiration behind the design, how much it cost us and if we had any budget remaining.

The day was fantastic and we learnt so much during our visit to the Williams F1 team.

Next Steps:

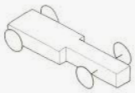
Do you want to delve deeper into the world of motorsport?

Take a pit stop and explore a growing range of books and resources to deepen your knowledge and understanding. Miss Chick has many books in class if you are curious.



Design Engineer:

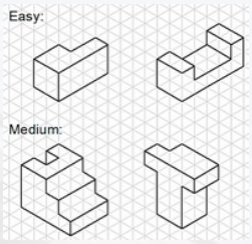
Develop your ideas and innovate your car designs using isometric paper. Grab a sharpened pencil and use precision in your drawings.



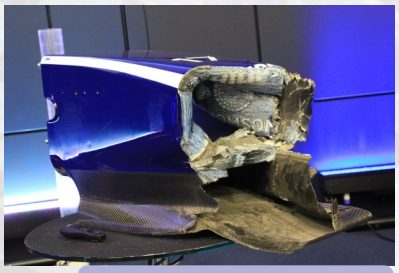
YouTube:

F1 in Schools™ Primary STEM Project: Drawing The Chassis

F1 in Schools™ Primary STEM Project: Sketching The Body



Success: Winning Constructor trophy at the Grand Prix of Europe 'Nürburgring' 1996 .



Kazuki Nakajima car nose cone.

Would you like to know more about Williams Racing?

Atlassian Williams Racing have produced the following short clips which are accessible via YouTube. The first three are narrated by Nigel Mansell (1992 World Champion) and Jenson Button (2009 World Champion).

- *Why Did Our F1 Car Get Banned? Ft. Jenson Button (FW14b)*
- *Why This F1 Car Had SIX Wheels! Ft. Jenson Button*
- *Why Slowing Down Makes You Faster in Racing! Ft. Nigel Mansell*
- *Introducing the Atlassian Williams*
- *How We Restored the Legendary FW11! | No Place Like Grove*

"At Williams, we have always been guided by one ambition: to race"

Sir Frank Williams