Wider projects

Locomotive project

Children learn about the steam locomotive, including its history, when constructing their own locomotive vehicle. This can be tailored to both key stage 1(apprentice level) and key stage 2 (engineer level) pupils. This can then be tested by pulling carts and weights, evaluating and adjusting as they develop their ideas. Pupils can then express themselves and their creativity by customising their locomotive to fit a given brief.

Become an Engineer

If given the opportunity to be an engineer for a day, what would your pupils do? What ideas would they formulate? What problems would they solve? What ingenious items would they create? This project aims to to raise the awareness of engineering and engineers, developing creative problem-solving skills in pupils, whilst widening their views on the world and current affairs. Interviewing engineers, watch recordings and researching different types of engineering.

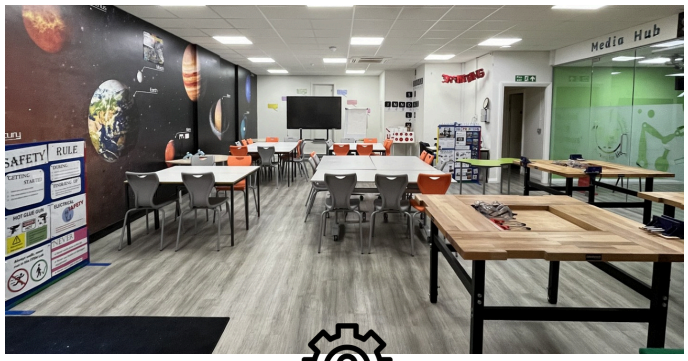
Robot Wars

Are you ready to lead your team into battle? Here, children design a combat robot, which they then build and create through the use of 3D printers. These are then put through a series of tests and battles to determine who is the strongest! Pupils will explore circuits and ways to power and manoeuvre their vehicle, as well as materials and mechanisms to design weapons for their mini-bot.

Wider STEM Clubs

Our school offers wider STEM clubs, which can be run as singular projects and lessons. These include a wider variety of areas and topics, ranging from focussing on the weather and the elements, looking ahead to the future and theorising new foods and modes of transport, and exploring sound through music. These clubs focus on both practical and digital essential skills, whilst also measuring impact.

Have you heard? Excelsior have their own podcast! Hear our leaders and pupils discuss, debate and share their thoughts. You can listen to us on Spotify or follow the QR code below.



A starting price of £250 includes full use of our STEM Lab (including wood work area, 3D printing zone and Media Hub. This also includes a planning consultation with our STEM Lead to discuss your visit and your intended outcomes. Additional resources and materials can be sourced and provided at an additional cost.

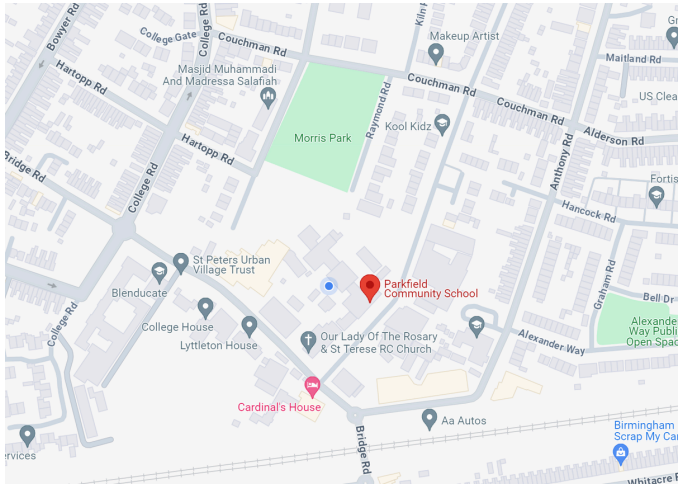
High quality professional development is one of the biggest positive influences on student outcomes. At the Excelsior STEM Lab, our Accredited *STEM Learning* and *NCETM PD Lead* offer a variety of CPD opportunities for every member of a school community, be this more general, or bespoke, we can provide something to suit your requirements.

Transport to and and from Parkfield Community School can be arranged using our minibuses. We have two minibuses, which can easily transport full class of pupils and their adults.

Parkfield Community School
Parkfield Road
Alum Rock
Birmingham
B8 3AX

0121 464 1131

Kyle Lewis - STEM Lead k.lewis@parkfield.excelsiormat.org



Excelsior Multi Academy Trust

STEM LAB

Ignite Curiosity, spark innovation

Aspiring from the start

Succeeding together

Ensuring equality for all

Engaging learning

Wood Work

Our STEM Lab has a dedicated wood work area, complete with work benches and tools to ensure that pupils get that authentic workshop feel when they are crafting. Equipment such as vices, saws, drills and planers are all on hand and ready to use for our creative carpenters and crafts people.

Food & Nutrition

• As a multifunctional space, our STEM lab can transform into a kitchen, enabling children to prepare and cook meals. Pupils are encouraged to plan and evaluate their prepared cuisine, whilst considering additional, factors such as cost and availability. Our young chefs practice food health and safety guidance, such as proper handwashing, avoiding cross-contamination, and cooking foods to the correct temperature, whilst also learning about different culinary history and practices.

3D Printing Zone

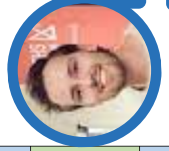
With access to two 3D printers, pupils can actualise their designs through 3D printing. A variety of software can be used, including Tinkercad, Shapr3D and Cura. After designing their product, pupils are able to bring it to life through 3D printing. This enables them to actualise their designs, but also put the product through physical testing as a proto-type with hands-on evaluation.

Design & Technology Curriculum

The DT curriculum at Parkfield is comprised of five main areas: Mechanical Systems, Structures, Textiles, Electrical Systems and Food. Incorporating the six principles of good practice, lessons and projects focus on user-centred designs to create solutions that meet real needs. Our program emphasises creativity and critical thinking, encouraging innovative problem-solving. Through well-structured projects, pupils develop technical skills and apply mathematical and scientific knowledge, reinforcing their understanding of cross-curricular STEM concepts. Students work both independently and collaboratively on projects, mirroring professional STEM environments, whilst continually evaluating and reflecting to refine their work, fostering continuous improvement and resilience.

The delivery of your DT lessons with our bespoke planning clinic service; designed to support teachers in delivering bespoke and effective lessons through personalised guidance, resources, and strategies tailored to your specific needs. ensuring your students receive a comprehensive and engaging DT education that prepares them for the wider world of STEM.

Visits will also be supported by our dedicated STEM HLTA, who will aid in the delivery of lessons and supporting of pupils in reaching high quality outcomes.



Year 1	**Mechanisms** Sliders and Levers	**Food** Preparing fruits and vegetables	**Structures** Freestanding Structures Bridge building
Year 2	**Food** Preparing fruit and veg Pizza linked to diet and health	**Textiles** Templated and joining techniques Coat for Scott	**Mechanisms** Wheels and Axles
Year 3	**Mechanical Systems** Levers & Linkages	**Food**	**Textiles** 2D Shape to 3D product Linked to art
Year 4	**Structures** Shell Structures using CAD	**Mechanical Systems** Pneumatics	**Electrical Systems** Circuits and Switches Linked to electricity
Year 5	**Textiles** Fabric shapes Linked to Early Islamic Civilisation	**Electrical Systems** More complex switches & circuits	**Structures** Frame structures linked to Industrial Revolution
Year 6	**Textiles** Using CAD in textiles	**Mechanical systems** Pulleys & Gears	**Electrical Systems** Monitoring and Control

Media Hub

Utilising our state-of-the-art TriCaster system, pupils can take on the role of producer, publisher and content creator, to give a voice to their design process. Why not create a podcast, discussing the real-life issues linked to your sustainability project, or a video evaluation of their constructed project. Film and share a debate, retell a classic story for others, or even, create helpful 'how-to' videos for parents.

Robotics

Developing key programming and coding skills, which are essential as our world becomes more advanced and technology driven, pupils enhance their creativity, critical thinking and problem solving skills. Students have access to a range of robotic equipment, ranging from BeeBots to Lego Creative Brick Boxes and more!

Creative Space

The modular layout of our STEM Lab allows for a learning space to meet the many diverse requirements: with the use of easels and canvasses, the space has been transformed into an art studio; the space can easily be adapted to hold rehearsals for performances, or open spaces for yoga. The possibilities are endless!