

STEAM profile at Nishkam.

At Nishkam High School students have had the opportunity to explore **STEAM education, which incorporates DT (DT falls under the Technology umbrella), Maths, Science, Technology, Engineering and Arts.**

STEAM Education is embedded with key fundamental skills such as:

- ✓ Problem-solving
- ✓ Critical thinking
- ✓ Teamwork
- ✓ Digital literacy
- ✓ Creativity
- ✓ Critical analysis
- ✓ Collaboration
- ✓ Maths and science skills
- ✓ Engineering- design thinking

STEAM Club

- Lego workshop looks at students working as a group to **design and create models**; they look at how they can **improve** those models created.
- Students are designing and **creating/building** robots using specialist computing software.
- Students are learning coding where they are **designing, creating and testing** their codes to see if it **solves the problem given**.
- Students work in **groups** to **solve** 'engineering' problems for example learning structural engineering, for example building a bridge with 6 sheets of A4 paper, and 1-meter sticky tape. The bridge must be free-standing and hold two chocolate Mars bars for 1 minute.
- Students will have the opportunity to develop links with Jewellery Quarter and make jewellery using soldering and metal.

STEAM Across the Curriculum:

- Every term students across science, maths and computer science disciplines have an embedded lesson which looks at STEAM skills which are key aims of DT program of study:
 - **Develop the creative, technical and practical expertise** needed to perform everyday tasks confidently and to participate successfully in an **increasingly technological world**
 - **Build and apply** a repertoire of **knowledge, understanding and skills** in order to **design and make high-quality prototypes and products for a wide range of users** (An area which we can work on in the future using STEAM Room)
 - **In Computing- use of CAD software and then making the products via 3D software**
 - **Computing curriculum at KS3 where students will be part of the physical computing curriculum using Arduino's to: build and program. Students will be learning electronics using bread boards and LED lights.**
 - **Critique, evaluate and test** their **ideas and products** and the work of others.

STEAM as drop-down days.

Students have been involved in a range of STEAM drop down days:

- Whole school year 8 drop down where students took part in:
 - **Structural engineering:** students worked in groups to provide a solution to a problem, they all **designed and created** and then **tested** their models. At the end the students **evaluated** what worked and what didn't and what they would do differently next time.
 - **Wind turbines-** worked on **designing, creating and testing** their Wind turbines out. Students created their wind turbines, by following instructions.
 - **Codebreaking:** students worked on how to crack a code developing **critical thinking and problem solving**.
- Year 7 students took part in Robotics:
 - **Working in groups** where they **designed, created and tested** their robots based on a problem given to them. After students **evaluated** if the robot met the objectives.
- RAF Youth workshop for year 7s on robotic coding.
 - **Students worked in groups to design** their Lego Spike robots and **created them**. Students then **tested and evaluated the robot**.
- RAF Youth workshop for year 9s on Drone coding.
 - Students worked in groups to code their drone. Students were given scenarios of scenarios where they planned out their drone design, then they coded and tested out the drone.

STEAM Lab

- Students will have the opportunity through STEAM club and curriculum to use the STEAM classroom.
- The classroom has:
 - ✓ 3D printer
 - ✓ Computers
 - ✓ Soldering units
 - ✓ Lego design and building
 - ✓ Lego robotics
- Students will take part in designing and creating products across the school using the 3D printer.
- Access curriculum time, subjects can use the STEAM Lab.

STEAM Trips

- #GirlsThatGeek- Art and Computing department took 42, year 10 and 11 girls to 'Girls That Geek', Art & Technology Event at Midlands Art Centre in Birmingham. Included industry providers who spoke about different careers within STEAM.
- GirlTechWM: Girl Tech West Midlands at Millennium Point, where 29 girls from years 8 and 9 went to Millennium point. The girls interacted with different businesses from West Midlands and took part in workshops.
- The year 8s went to the National Space Centre in Leicester. Students went around the space centre exploring:
 - Rocket Tower which is 42 meters tall! We climbed the stairs to the top of the tower! The iconic Rocket Tower at the National Space Centre is home to Blue Streak and Thor Able rockets, as well as the Gagarin Experience, Apollo Lunar Lander and real Moon Rock.

- The Home Plant gallery examines how satellites monitor the health of our planet and play an increasingly important part in modern life.
- Walk through the gallery and stop off at Mercury, Venus, Mars, Jupiter, Saturn, Uranus and Neptune. Take time out of your journey to drive a Martian rover on the red planet, take a bath with Saturn and even see Venus in 3D.
- We went on a 'Tour of the Night Sky' in the Sir Patrick Moore Planetarium we looked at the stars, visit planets and explore the mysteries of Space!
- Year 7 went on a STEM science trip to Sandwell Valley Country Park, where they employed:
 - A variety of scientific investigation skills, from observations, scientific drawings and sampling
 - To investigate the biodiversity in the park
 - The data they collected on the trip was taken to their Maths and Computer Science lessons to be analysed and represented.