

## STEM Map





## STEM

*Be the  
Best You  
Can Be.*

Our vision is to give children a STEM curriculum map which enables them to see the connections between science, technology, engineering and mathematics across their learning. We want children to explore, question, design, test and improve with confidence, understanding how the knowledge and skills they learn in one subject can be applied meaningfully in another. Through a carefully mapped, hands-on and progressive STEM curriculum, children of all abilities will experience opportunities to investigate, solve real-life problems, use technology purposefully, apply mathematical thinking and develop their creativity as designers and engineers. Our aim is that these stimulating and challenging experiences help children secure and extend their scientific, technical and mathematical knowledge, while building curiosity, resilience, collaboration and confidence. We believe that by making STEM visible across the curriculum, all children will recognise themselves as problem-solvers, innovators and life-long learners who are prepared to understand, shape and improve the world around them.

To recognise and explore meaningful connections between science, technology, engineering and mathematics, applying knowledge across subjects to investigate problems, design solutions, test ideas and improve outcomes through practical, real-life STEM experiences.

To apply creative thinking, digital skills and mathematical reasoning to real-world challenges, enabling pupils to design, make, programme, measure and evaluate purposeful outcomes across the curriculum.

To build confidence as problem-solvers by encouraging pupils to question, test, adapt and improve their ideas.

To inspire pupils to become curious, creative and resilient STEM learners.

### Integrity

To act with integrity by testing ideas fairly, using evidence honestly and taking responsibility for improving our work.

### Curiosity

To show curiosity by asking thoughtful questions, exploring new ideas and making connections across STEM learning.

### Courage

To show courage by trying new approaches, taking risks in our learning and learning positively from mistakes.

### Perseverance

To show perseverance by keeping going when challenges arise, improving ideas through testing and learning from setbacks.

### Collaboration

To collaborate by sharing ideas, listening to others and working together to solve problems.

### Community

To build community by using STEM learning to solve problems that matter to our school, local area and wider world.

## Threads across our whole curriculum

| School Values    | Community                                                                                                                                                                                                                  | Collaboration                                                                                                 | Curiosity                                                                                                                                           | Courage                                                                                                                                                | Perseverance                                                                                                                                                                       | Integrity                                                                                                                                                                     |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Threads          | Diversity                                                                                                                                                                                                                  | Leadership                                                                                                    | Changes                                                                                                                                             | Innovation                                                                                                                                             | Achievements                                                                                                                                                                       | Challenging stereotypes                                                                                                                                                       |
| <b>Rationale</b> | Blisworth pupils have a strong sense of school and village community; our curriculum widens their understanding to include the social, cultural and historical diversity of the global community and their role within it. | Blisworth pupils work well with others; our curriculum teaches them that leadership can be shown in many ways | Blisworth pupils are curious about their own interests; our curriculum encourages children to ask questions about changes in the world around them. | Blisworth pupils have resilience; our curriculum teaches them about role models across disciplines to inspire them to take risks to try something new. | Blisworth pupils work hard to be the best they can be and meet expectations; our curriculum teaches them that achievements can be measured and met in a variety of different ways. | Blisworth pupils are honest within their personal experiences; our curriculum challenges them to reflect on alternative perspectives and develop their own sense of morality. |

## How our curriculum is built

| <b>Substantive knowledge</b> (Content and context)                                                                                                                                                                                                                  | <b>Threads</b><br>(These that link to our school values and overall curriculum vision and inform our curriculum choices)                                                                                                                                                                                                                                                     | <b>Disciplinary knowledge</b><br>(What is needed to be successful as a practitioner of this subject discipline – it may include skills, concepts and application)                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>What is taught and when, how it builds upon prior learning across the school, depth, and breadth of knowledge, meeting statutory requirements of the NC, prescribed within each subject to make the most of learning opportunities and reflect our pedagogy.</p> | <p>Concepts that children will return to within and across subjects that will deepen their understanding, they will link into school values and our vision for what we want pupils to be when they leave in order that they can continue to be lifelong successful learners with positive mental health, aspiration, and the ability to contribute to their communities.</p> | <p>What they need to know how to be successful in each subject e.g., to be a good historian they need to know how to assess sources, make comparisons across periods, understanding historical chronology and so on.</p> |

## **STEM Map**

Our STEM map is not a separate curriculum. STEM is not an expectation for schools in the UK, but at Blisworth, we aspire to challenge our children and give them the best opportunities to develop themselves. It is a tool used to show where science, technology, engineering and mathematics already happen across our wider curriculum, and where stronger links can be made between subjects. It helps staff to see the bigger picture of STEM learning across the school, so that children can build on previous knowledge, make meaningful connections and apply their learning in real-life contexts.

The STEM map brings together key opportunities from science, design and technology, computing and mathematics. It highlights where children investigate, design, make, test, measure, programme, evaluate and improve. By mapping these areas together, we can ensure that STEM learning is progressive, purposeful and connected, rather than being seen as separate subjects taught in isolation.

Within the STEM map, the following terminology is used:

**Science** refers to children developing knowledge and understanding of the natural world through observation, enquiry, investigation and explanation.

**Technology** refers to children using digital tools, computing systems and programmed devices purposefully and safely to support learning, communication, design and problem-solving.

**Engineering** refers to children designing, making, testing and improving solutions to real problems, often through structures, mechanisms, materials, electrical systems and practical design challenges.

**Mathematics** refers to children applying number, measurement, shape, statistics and reasoning skills to solve problems, collect data, interpret results and make informed decisions.

Across this map, our school curriculum threads and values are used to show how STEM learning can broaden and deepen children's understanding of themselves, their school, their local community and the wider world. It supports children in becoming curious thinkers, resilient problem-solvers, creative designers and collaborative learners who can use their knowledge with purpose.

# Statutory Framework Outlook

| Statutory Framework and what this means for the Blisworth Primary STEM Map |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| What is this document for?                                                 | There is no separate statutory framework for STEM. Instead, our STEM map draws together the statutory requirements and learning opportunities within Science, Mathematics, Computing and Design and Technology. The map is used to show where these subjects connect across the school, helping staff identify opportunities for pupils to apply knowledge, solve problems, design, make, test, evaluate and use technology purposefully. In EYFS, STEM links are drawn from relevant areas of the Early Years Foundation Stage statutory framework, including mathematics, understanding the world, physical development and expressive arts and design. |

## Context within the National Curriculum: Linking the Subjects

| National Curriculum context |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Science                     | A high-quality science education provides the foundations for understanding the world through biology, chemistry and physics. Pupils should develop “scientific knowledge and conceptual understanding” and learn the “nature, processes and methods of science” through enquiry. They are encouraged to use mathematical skills when collecting, presenting and analysing data, and to carry out investigations using observing over time, pattern seeking, classifying, fair testing and research. |

| National Curriculum context |                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maths                       | The National Curriculum describes mathematics as a “creative and interconnected discipline” and highlights its importance for everyday life, science, technology and engineering. Its aims require pupils to become ‘fluent’ in mathematical fundamentals, “reason mathematically and solve problems”. Our curriculum expects pupils to “apply their mathematical knowledge to science and other subjects”. |

## Context within the National Curriculum: Linking the Subjects

| National Curriculum context |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Design and Technology       | DT is described as an “inspiring, rigorous and practical subject” in which pupils use creativity and imagination to design and make products that solve real problems. The subject aims to develop “creative, technical and practical expertise”, build and apply a “repertoire of knowledge and skills”, “critique and evaluate products”, and “understand nutrition and cooking”. Pupils must draw on Mathematics, Science, engineering and computing and apply computing to “program, monitor and control products”. |

| National Curriculum context |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Computing                   | The computing curriculum equips pupils to use “computational thinking and creativity” to understand and change the world. Computing has deep links with mathematics, science and DT and ensures that pupils become “digitally literate”. Its aims require children to understand "abstraction, logic, algorithms and data representation", to "design and debug programs", to "evaluate and apply information technology", and to become "responsible, competent and creative users of ICT". At key stage 2 pupils should design, write and debug programs that control physical systems and work with variables, showing clear connections with DT projects. |

## Vocabulary and oracy

### Vocabulary Usage and Oracy

Vocabulary is central to STEM learning because it gives children the language they need to explain ideas, make connections and communicate their thinking clearly. In STEM, pupils are often moving between everyday language and more precise subject-specific language, such as *force, material, algorithm, structure, data, variable, evaluate* or *prototype*. When children understand and use this vocabulary accurately, they are better able to explain what they notice, describe how something works, justify their choices and reflect on how their ideas could be improved.

Oracy is an important part of this process. STEM learning should provide regular opportunities for children to talk like scientists, designers, engineers, programmers and mathematicians. This includes asking questions, making predictions, explaining methods, comparing results, presenting ideas, challenging thinking respectfully and evaluating outcomes. The Education Endowment Foundation highlights oral language approaches as having a positive impact on pupil outcomes, particularly when talk is purposeful, curriculum-focused and linked to the content currently being studied. ([EEF](#))

Within this STEM map, vocabulary is not listed separately for pupils because the key vocabulary should already be identified and taught through the individual science, design and technology, computing and mathematics curriculum documents. Staff should use those subject documents to identify the intended vocabulary for each unit, ensuring that language is introduced, modelled, revisited and applied in meaningful contexts. The STEM map supports this by showing where vocabulary can be strengthened across subjects, for example when pupils use mathematical language to interpret science data, computing vocabulary to program a product, or design and technology vocabulary to evaluate a structure or mechanism.

Current research around science education also emphasises the importance of pupils learning both the products and practices of science, including the language needed to understand concepts and explain enquiry. Ofsted's science research review notes that EYFS provides rich contexts for developing vocabulary and that these words form the beginnings of scientific concepts built on in Year 1 and beyond. ([GOV.UK](#)) Therefore, this STEM map should be used alongside the wider curriculum documentation to support careful progression in vocabulary, talk and explanation across the school.

**STEM supporting SEND**

| SEND context |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <p>STEM supports pupils on the SEND register by providing practical, hands-on and engaging learning experiences. Children are given opportunities to learn through doing, talking, testing, building and improving, which can make abstract ideas more concrete and accessible.</p> <p>High-quality STEM teaching begins with Quality First Teaching. This includes clear explanations, careful modelling, strong subject knowledge, purposeful questioning, regular checking for understanding and appropriate scaffolding so that all pupils can access the learning.</p> <p>STEM teaching is adapted through visual prompts, practical resources, repeated vocabulary, mixed-ability collaboration, scaffolded recording sheets and flexible ways for pupils to show their understanding. Tasks can be broken into smaller steps, with adult support, peer discussion and purposeful questioning used to build confidence.</p> <p>Through STEM, pupils are encouraged to take risks, make mistakes, solve problems and experience success in different ways. This helps children develop independence, resilience, communication and confidence while accessing the same ambitious curriculum as their peers.</p> |

## Context within our area- West Northamptonshire (Correct as of June 2026)

### Our Context

Northamptonshire gives pupils a real local reason to understand STEM. In **West Northamptonshire**, there are **216,000 employee jobs**, including **18,000 in manufacturing**, **12,000 in construction**, **8,000 in financial and insurance activities**, and **20,000 in professional, scientific and technical activities**. These are not inflated STEM figures; they are official broad employment categories, so they should be used as local context rather than exact counts of “STEM jobs”.

| Local Strength                      | Real Local Figures (as of June 2026)                         | Link to STEM Learning                                            |
|-------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------|
| Construction                        | 12,000 jobs                                                  | Structures, bridges, materials, strength, testing, safety        |
| Manufacture and Engineering         | 18,000 jobs                                                  | Design, making, mechanisms, materials, problem-solving           |
| Banking and Finance                 | 8,000 jobs (including insurance)                             | Budgeting, data, risk, value for money, decision-making          |
| Science, Maths and Technical Career | 20,000 jobs                                                  | Enquiry, data, analysis, research, innovation                    |
| Motorsport                          | Silverstone Park has over 90 businesses with over 1,500 jobs | Vehicles, aerodynamics, materials, electronics, sensors, testing |

## Context within our area- West Northamptonshire (Correct as of June 2026)

### Our Context

In West Northamptonshire, there are **216,000 employee jobs**. Of these, **18,000 are in manufacturing, 12,000 are in construction, 8,000 are in finance and insurance, and 20,000 are in professional, scientific and technical activities**. Together, these areas represent around **58,000 jobs, or 26.9% of employee jobs locally**. This shows pupils that STEM learning links directly to real opportunities in their local area, from engineering and construction to finance, data, science, technology and motorsport.

| Area of Work                        | Jobs   | % of 216,000 employee jobs | Local examples                                                                                                             |
|-------------------------------------|--------|----------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Construction                        | 12,000 | 5.5%                       | Winvic Construction, local housebuilding, roads, warehouses, schools and infrastructure projects                           |
| Manufacture and Engineering         | 18,000 | 8.3%                       | Silverstone engineering supply chain, Ilmor Engineering, Cosworth-related businesses, vehicle and specialist manufacturing |
| Banking and Finance                 | 8,000  | 3.7%                       | Barclaycard, Nationwide, local financial and insurance services                                                            |
| Science, Maths and Technical Career | 20,000 | 9.2%                       | Engineering consultancies, architects, surveyors, technical design, scientific and data-based roles                        |
| Motorsport                          | 1,500  | 0.7%                       | SantaPod, Mercades, Aston Martin and performance teams around the county                                                   |

## Cross-Curricular STEM Map- Whole School Events

## Drive to Design Day

| Year group / phase | Science links                                                                                                        | Design & Technology / Engineering links                                                       | Maths, Computing and wider curriculum links                                                                    |
|--------------------|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| EYFS / Reception   | Exploring materials, movement, floating/sinking, forces through play and observation.                                | Building, joining, selecting resources, making simple vehicles or structures.                 | Counting, comparing, describing shapes, speaking about ideas, working with others and imaginative design.      |
| Year 1             | Everyday materials; identifying, naming and comparing simple properties; simple observations and tests.              | Wheels and axles; choosing materials; making simple moving products.                          | Measuring and comparing distance; counting results; using technology to draw, write or record ideas.           |
| Year 2             | Uses of everyday materials; suitability of materials; changing shape by bending, twisting, stretching and squashing. | Mechanisms; moving models; purposeful design, making and evaluating.                          | Tally charts, pictograms, measuring, comparing results and presenting information.                             |
| Year 3             | Forces and magnets; movement on different surfaces; friction; fair testing and recording results.                    | Vehicle design; structures; pneumatics; testing and improving prototypes.                     | Measuring distance, comparing attempts, using tables, presenting designs and linking to Primary Engineer work. |
| Year 4             | Electricity; circuits, switches, conductors and insulators; sound and vibration links where relevant.                | Electrical systems, torches, slingshot cars, strengthening structures and evaluating designs. | Bar charts, tables, timing, distance, digital photos, data logging and presenting findings.                    |
| Year 5             | Forces including friction, air resistance and mechanisms; planning fair tests and using results.                     | More complex mechanisms such as gears, pulleys, cams and prototypes; refining designs.        | Converting units, calculating averages, line graphs, databases, video production and digital design.           |
| Year 6             | Electricity, circuits, voltage, light, mirrors and working scientifically with variables.                            | Complex structures, bridges, electrical systems, mechanical systems and detailed evaluation.  | Ratio, scale, speed, averages, spreadsheets, variables, inputs, outputs and presenting conclusions.            |
| Whole school       | Working scientifically: asking questions, observing, testing, measuring, recording and drawing conclusions.          | Design process: research, design, make, test, evaluate and improve.                           | Oracy, teamwork, resilience, careers, creativity, problem-solving, safe behaviour and community links.         |

## Cross-Curricular STEM Map- EYFS

| Term      | Science                                                                                                                                      | Maths                                                                                                                                                                    | DT/Engineering                                                                                                                                          | Computing                                                                                                                        | Links to other year groups                                                                                                   | STEM highlights                                                                                                                                   |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Full Year | <ul style="list-style-type: none"><li>• Seasonal change</li><li>• Properties of water/ice</li><li>• Plant growth</li><li>• Animals</li></ul> | <ul style="list-style-type: none"><li>• Counting</li><li>• Comparing quantities</li><li>• Length</li><li>• Capacity</li><li>• Time</li><li>• Shape recognition</li></ul> | <ul style="list-style-type: none"><li>• Simple construction (junk modelling)</li><li>• Basic cooking (fruit salads)</li><li>• Exploring tools</li></ul> | <ul style="list-style-type: none"><li>• Using tablets to take photos</li><li>• Draw</li><li>• Speak about observations</li></ul> | <ul style="list-style-type: none"><li>• Builds on nursery exploration</li><li>• Prepares for Year 1 classification</li></ul> | <ul style="list-style-type: none"><li>• Inquiry through play fosters curiosity</li><li>• Early measurement skills support later science</li></ul> |

## Cross-Curricular STEM Map- Year 1

| Term          | Science                                                                                                             | Maths                                                                                                                                                                 | DT/Engineering                                                                                                                                | Computing                                                                                                       | Links to other year groups                                                                                                                                                         | STEM highlights                                                                                                                                                                 |
|---------------|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Autumn</b> | <ul style="list-style-type: none"> <li>• Everyday materials</li> <li>• Seasonal changes</li> </ul>                  | <ul style="list-style-type: none"> <li>• Place value</li> <li>• Addition &amp; subtraction</li> <li>• Measuring length/height</li> <li>• Recognising coins</li> </ul> | <ul style="list-style-type: none"> <li>• Design and make puppets</li> <li>• Explore different materials</li> <li>• Fruit smoothies</li> </ul> | <ul style="list-style-type: none"> <li>• Digital painting (selecting tools)</li> <li>• Mouse skills</li> </ul>  | <ul style="list-style-type: none"> <li>• Learns to sort materials → leads to Year 2 materials' suitability</li> <li>• Early DT skills feed into more complex mechanisms</li> </ul> | <ul style="list-style-type: none"> <li>• Children classify materials and present findings via digital artwork</li> <li>• Measure ingredients when cooking (Maths)</li> </ul>    |
| <b>Spring</b> | <ul style="list-style-type: none"> <li>• Animals including humans</li> <li>• Plants (parts &amp; growth)</li> </ul> | <ul style="list-style-type: none"> <li>• Fractions (halves/quarters)</li> <li>• Measurement (weight)</li> <li>• Position and direction</li> </ul>                     | <ul style="list-style-type: none"> <li>• Moving vehicles using wheels/axles</li> <li>• Evaluating materials for strength</li> </ul>           | <ul style="list-style-type: none"> <li>• Programming a floor robot to follow sequences</li> </ul>               | <ul style="list-style-type: none"> <li>• Builds on counting &amp; direction</li> <li>• Sets foundation for Year 2 robots and fair tests</li> </ul>                                 | <ul style="list-style-type: none"> <li>• Pupils design simple algorithms to move vehicles</li> <li>• Measure distances travelled, linking to maths and forces</li> </ul>        |
| <b>Summer</b> | <ul style="list-style-type: none"> <li>• Light</li> <li>• Seasonal change consolidation</li> </ul>                  | <ul style="list-style-type: none"> <li>• Numbers to 100</li> <li>• Time</li> <li>• Money</li> </ul>                                                                   | <ul style="list-style-type: none"> <li>• Healthy eating and nutrition</li> <li>• Evaluation of puppet designs</li> </ul>                      | <ul style="list-style-type: none"> <li>• Digital writing and editing</li> <li>• Simple data grouping</li> </ul> | <ul style="list-style-type: none"> <li>• Develops vocabulary and digital skills for Year 2 pictograms</li> </ul>                                                                   | <ul style="list-style-type: none"> <li>• Pupils create digital diaries of plant growth, combining writing and science</li> <li>• Grouping data introduces statistics</li> </ul> |

## Cross-Curricular STEM Map- Year 2

| Term          | Science                                                                                                                          | Maths                                                                                                                                                     | DT/Engineering                                                                                                                        | Computing                                                                                                                 | Links to other year groups                                                                                                                                                           | STEM highlights                                                                                                                                                                                           |
|---------------|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Autumn</b> | <ul style="list-style-type: none"> <li>• Living things &amp; habitats</li> <li>• Materials and their uses</li> </ul>             | <ul style="list-style-type: none"> <li>• Place value</li> <li>• Addition &amp; subtraction</li> <li>• Money</li> <li>• Statistics (pictograms)</li> </ul> | <ul style="list-style-type: none"> <li>• Fire engines with rotating wheels</li> <li>• Balanced wraps focusing on nutrition</li> </ul> | <ul style="list-style-type: none"> <li>• Digital photography</li> <li>• Grouping</li> <li>• Pictogram creation</li> </ul> | <ul style="list-style-type: none"> <li>• Builds on Year 1 classification</li> <li>• Prepares for Year 3 rocks &amp; soils</li> </ul>                                                 | <ul style="list-style-type: none"> <li>• Pupils design fire-engine models and photograph habitats</li> <li>• Record classification data in pictograms</li> <li>• Interpret results using Maths</li> </ul> |
| <b>Spring</b> | <ul style="list-style-type: none"> <li>• Animals including humans (needs &amp; growth)</li> <li>• Plants (life cycle)</li> </ul> | <ul style="list-style-type: none"> <li>• Multiplication &amp; division</li> <li>• Fractions</li> <li>• Measurements of mass</li> <li>• Volume</li> </ul>  | <ul style="list-style-type: none"> <li>• Pneumatic monsters (link to forces)</li> <li>• Stable chairs for teddy bears</li> </ul>      | <ul style="list-style-type: none"> <li>• Robot algorithms: predicting, sequencing and debugging</li> </ul>                | <ul style="list-style-type: none"> <li>• Progression from simple robot movement to algorithms</li> <li>• Leads to Year 3 magnets &amp; forces</li> </ul>                             | <ul style="list-style-type: none"> <li>• Children design and test pneumatics</li> <li>• Program robots to deliver “medicine”</li> <li>• Integrating science concepts of growth and human needs</li> </ul> |
| <b>Summer</b> | <ul style="list-style-type: none"> <li>• Consolidation &amp; scientific enquiry</li> </ul>                                       | <ul style="list-style-type: none"> <li>• Time</li> <li>• Properties of shapes</li> <li>• Statistics (block diagrams)</li> </ul>                           | <ul style="list-style-type: none"> <li>• Healthy wraps and fruit kebabs</li> <li>• Evaluating designs</li> </ul>                      | <ul style="list-style-type: none"> <li>• Digital music (composition)</li> <li>• Programming quizzes</li> </ul>            | <ul style="list-style-type: none"> <li>• Introduces creative computing for Year 3 sequencing sounds</li> <li>• Links to Year 3 forces through tempo and rhythm (patterns)</li> </ul> | <ul style="list-style-type: none"> <li>• Pupils compose digital music about plant growth</li> <li>• Quizzes reinforce science vocabulary</li> </ul>                                                       |

## Cross-Curricular STEM Map- Year 3

| Term          | Science                                                                                                           | Maths                                                                                                                                               | DT/Engineering                                                                                                                                                                            | Computing                                                                                                                  | Links to other year groups                                                                                                                                                             | STEM highlights                                                                                                                                                                                                                                              |
|---------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Autumn</b> | <ul style="list-style-type: none"> <li>• Rocks, fossils &amp; soils</li> <li>• Forces &amp; magnets</li> </ul>    | <ul style="list-style-type: none"> <li>• Place value up to 1 000</li> <li>• Addition &amp; subtraction</li> <li>• Length &amp; perimeter</li> </ul> | <ul style="list-style-type: none"> <li>• Pneumatic toys</li> <li>• Bird feeders</li> <li>• “Primary Engineer project” begins with “What Would You Do If You Were an Engineer?”</li> </ul> | <ul style="list-style-type: none"> <li>• Connecting computers</li> <li>• Stop-frame animation</li> </ul>                   | <ul style="list-style-type: none"> <li>• Builds on Year 2 pneumatics and materials</li> <li>• Prepares for Year 4 electricity</li> </ul>                                               | <ul style="list-style-type: none"> <li>• Measure magnetic force effects and perimeter of fossils</li> <li>• Design pneumatic toys and animate rock cycle processes</li> <li>• Engineer project introduces design briefs and emphasises evaluation</li> </ul> |
| <b>Spring</b> | <ul style="list-style-type: none"> <li>• Plants (requirements for life)</li> <li>• Light &amp; shadows</li> </ul> | <ul style="list-style-type: none"> <li>• Multiplication &amp; division</li> <li>• Fractions</li> <li>• Measurement (mass &amp; capacity)</li> </ul> | <ul style="list-style-type: none"> <li>• Torches incorporating basic circuits</li> <li>• Christmas biscuits (nutritional science)</li> </ul>                                              | <ul style="list-style-type: none"> <li>• Sequencing sounds (scratch programming)</li> <li>• Branching databases</li> </ul> | <ul style="list-style-type: none"> <li>• Extends Year 2 plant life-cycle</li> <li>• Sets up Year 4 states of matter &amp; sound</li> </ul>                                             | <ul style="list-style-type: none"> <li>• Torches link science and DT</li> <li>• Program musical patterns to represent plant growth</li> <li>• Branching databases classify plant features, applying Maths classification skills</li> </ul>                   |
| <b>Summer</b> | <ul style="list-style-type: none"> <li>• Animals including humans (skeletons &amp; muscles)</li> </ul>            | <ul style="list-style-type: none"> <li>• Money</li> <li>• Time</li> <li>• Shapes</li> <li>• Statistics (bar charts)</li> </ul>                      | <ul style="list-style-type: none"> <li>• Bird feeders evaluation</li> <li>• Extension of vehicle design through “Primary Engineer vehicle program” (designing model cars)</li> </ul>      | <ul style="list-style-type: none"> <li>• Desktop publishing</li> <li>• Events and actions in programs</li> </ul>           | <ul style="list-style-type: none"> <li>• Provides foundation for Year 4 digestion &amp; circuits</li> <li>• Mathematics informs graphing skills used later for data logging</li> </ul> | <ul style="list-style-type: none"> <li>• Pupils design vehicles using knowledge of muscles and forces</li> <li>• Present designs in digital posters and program animations demonstrating muscle movement</li> </ul>                                          |

## Cross-Curricular STEM Map- Year 4

| Term          | Science                                                                                                                              | Maths                                                                                                                     | DT/Engineering                                                                                                             | Computing                                                                                                         | Links to other year groups                                                                                                                          | STEM highlights                                                                                                                                                                                                                                                              |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Autumn</b> | <ul style="list-style-type: none"> <li>States of matter (solids, liquids, gases)</li> <li>Sound</li> </ul>                           | <ul style="list-style-type: none"> <li>Place value to 10 000</li> <li>Addition &amp; subtraction</li> <li>Area</li> </ul> | <ul style="list-style-type: none"> <li>Slingshot cars</li> <li>Pavilions exploring structures</li> </ul>                   | <ul style="list-style-type: none"> <li>The internet (networks)</li> <li>Audio production</li> </ul>               | <ul style="list-style-type: none"> <li>Builds on Year 3 light &amp; forces</li> <li>Anticipates Year 5 materials &amp; Earth/space</li> </ul>       | <ul style="list-style-type: none"> <li>Pupils measure melting rates of ice</li> <li>Plotting data and presenting audio explanations.</li> <li>Design pavilions</li> <li>Investigate resonance using different materials, recording sound with digital audio tools</li> </ul> |
| <b>Spring</b> | <ul style="list-style-type: none"> <li>Electricity (simple circuits &amp; switches)</li> <li>Living things &amp; habitats</li> </ul> | <ul style="list-style-type: none"> <li>Multiplication &amp; division</li> <li>Fractions</li> <li>Decimals</li> </ul>      | <ul style="list-style-type: none"> <li>Torches with more complex circuits</li> <li>Seasonal cooking (nutrition)</li> </ul> | <ul style="list-style-type: none"> <li>Repetition in shapes (turtle programming)</li> <li>Data logging</li> </ul> | <ul style="list-style-type: none"> <li>Extends Year 3 torches</li> <li>Sets stage for Year 6 electricity &amp; classification</li> </ul>            | <ul style="list-style-type: none"> <li>Pupils design and test circuits for torches</li> <li>Use turtle programming to draw circuit diagrams</li> <li>Log data on bulb brightness and create graphs</li> </ul>                                                                |
| <b>Summer</b> | <ul style="list-style-type: none"> <li>Animals including humans (digestive system &amp; teeth)</li> </ul>                            | <ul style="list-style-type: none"> <li>Money</li> <li>Time</li> <li>Symmetry</li> <li>Statistics (line graphs)</li> </ul> | <ul style="list-style-type: none"> <li>Pop-up books explaining digestion</li> <li>Evaluation of slingshot cars</li> </ul>  | <ul style="list-style-type: none"> <li>Photo editing</li> <li>Repetition in games</li> </ul>                      | <ul style="list-style-type: none"> <li>Prepares for Year 5 forces &amp; changes of materials</li> <li>Draws on Year 3 skeleton knowledge</li> </ul> | <ul style="list-style-type: none"> <li>Pupils write interactive pop-up books with moving parts to explain digestion</li> <li>Edit photos to illustrate healthy diets</li> <li>Program games about food groups using repetition</li> </ul>                                    |

## Cross-Curricular STEM Map- Year 5

| Term          | Science                                                                                                                                                                 | Maths                                                                                                                                                                                       | DT/Engineering                                                                                                                                                      | Computing                                                                                                                             | Links to other year groups                                                                                                                                           | STEM highlights                                                                                                                                                                                      |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Autumn</b> | <ul style="list-style-type: none"> <li>• Properties &amp; changes of materials</li> <li>• Earth &amp; space</li> </ul>                                                  | <ul style="list-style-type: none"> <li>• Place value to 1 000 000</li> <li>• Addition &amp; subtraction</li> <li>• Multiplication &amp; division</li> <li>• Perimeter &amp; area</li> </ul> | <ul style="list-style-type: none"> <li>• Bridges (structures &amp; forces)</li> <li>• Cams and automata</li> </ul>                                                  | <ul style="list-style-type: none"> <li>• Systems &amp; searching (internet)</li> <li>• Video production</li> </ul>                    | <ul style="list-style-type: none"> <li>• Builds on Year 4 states of matter</li> <li>• Leads to Year 6 electricity &amp; light</li> </ul>                             | Pupils experiment with dissolving and filtering and use spreadsheets to record results. They design bridge models applying force knowledge and create documentaries about space using video editing. |
| <b>Spring</b> | <ul style="list-style-type: none"> <li>• Forces (gravity, air &amp; water resistance)</li> <li>• Living things &amp; habitats (lifecycle &amp; reproduction)</li> </ul> | <ul style="list-style-type: none"> <li>• Fractions</li> <li>• Decimals &amp; percentages</li> <li>• Multiplication &amp; division</li> </ul>                                                | <ul style="list-style-type: none"> <li>• Stuffed toys (textiles)</li> <li>• Recipe innovation focusing on healthy ingredients</li> </ul>                            | <ul style="list-style-type: none"> <li>• Selection in physical computing (microcontrollers)</li> <li>• Flat-file databases</li> </ul> | <ul style="list-style-type: none"> <li>• Connects to Year 3 magnets &amp; Year 4 circuits</li> <li>• Prepares for Year 6 classification &amp; inheritance</li> </ul> | Pupils program micro:bits to control motors for moving toys, linking forces with code. They build databases of reproduction data (e.g., gestation periods) and analyse patterns.                     |
| <b>Summer</b> | <ul style="list-style-type: none"> <li>• Animals including humans (circulatory system)</li> <li>• Consolidating materials &amp; forces</li> </ul>                       | <ul style="list-style-type: none"> <li>• Position &amp; direction</li> <li>• Measurement (volume)</li> <li>• Statistics (line graphs)</li> </ul>                                            | <ul style="list-style-type: none"> <li>• Healthy menus and food packaging</li> <li>• Design &amp; make a “stuffed heart model” to understand circulation</li> </ul> | <ul style="list-style-type: none"> <li>• Vector graphics</li> <li>• Selection in quizzes</li> </ul>                                   | <ul style="list-style-type: none"> <li>• Prepares for Year 6 evolution &amp; inheritance</li> <li>• Builds on Year 4 digestion</li> </ul>                            | Pupils design vector-graphic diagrams of the circulatory system; they program quizzes to assess peers’ understanding of body systems; they analyse heart-rate data collected during PE lessons.      |

## Cross-Curricular STEM Map- Year 6

| Term          | Science                                                                                                                                                   | Maths                                                                                                                                                                                                 | DT/Engineering                                                                                                                                   | Computing                                                                                                                            | Links to other year groups                                                                                                                           | STEM highlights                                                                                                                                                                              |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Autumn</b> | <ul style="list-style-type: none"> <li>• Living things &amp; habitats (classification)</li> <li>• Evolution &amp; inheritance</li> </ul>                  | <ul style="list-style-type: none"> <li>• Place value</li> <li>• Addition &amp; subtraction</li> <li>• Multiplication &amp; division</li> <li>• Fractions</li> <li>• Ratio &amp; proportion</li> </ul> | <ul style="list-style-type: none"> <li>• Waistcoats (textiles, pattern design)</li> <li>• Complex bridges/3D products</li> </ul>                 | <ul style="list-style-type: none"> <li>• Communication &amp; collaboration (internet safety)</li> <li>• Web-page creation</li> </ul> | <ul style="list-style-type: none"> <li>• Builds on Year 5 reproduction &amp; vector graphics</li> <li>• Leads to secondary-school biology</li> </ul> | Pupils classify organisms using dichotomous keys and present the information on a website. They explore heredity by simulating genetic crosses with spreadsheets and discuss ethical issues. |
| <b>Spring</b> | <ul style="list-style-type: none"> <li>• Light</li> <li>• Electricity</li> </ul>                                                                          | <ul style="list-style-type: none"> <li>• Decimals</li> <li>• Percentages</li> <li>• Algebra</li> <li>• Measurement (area &amp; volume)</li> </ul>                                                     | <ul style="list-style-type: none"> <li>• Fairground rides incorporating gears and motors</li> <li>• Recipe design for global foods</li> </ul>    | <ul style="list-style-type: none"> <li>• Variables in games (programming)</li> <li>• Spreadsheets</li> </ul>                         | <ul style="list-style-type: none"> <li>• Extends Year 4 sound &amp; electricity</li> <li>• Prepares for secondary physics</li> </ul>                 | Pupils design games that simulate light reflection/refraction; they programme variables to score and control brightness; spreadsheets model fairground ride budgets and energy consumption.  |
| <b>Summer</b> | <ul style="list-style-type: none"> <li>• Animals including humans (circulatory system)</li> <li>• Consolidating evolution &amp; classification</li> </ul> | <ul style="list-style-type: none"> <li>• Statistics (pie charts, line graphs)</li> <li>• Geometry (properties of shape)</li> </ul>                                                                    | <ul style="list-style-type: none"> <li>• 3D modelling &amp; printing</li> <li>• Final enterprise project (market stalls/Make £5 Grow)</li> </ul> | <ul style="list-style-type: none"> <li>• 3D modelling; sensing movement (physical computing)</li> </ul>                              | <ul style="list-style-type: none"> <li>• Summarises primary science</li> <li>• Sets foundation for secondary computing and engineering</li> </ul>    | Pupils design wearable technology (e.g., pedometers) using micro:bit sensors; they model and 3D-print components; they run a mini-enterprise fair, budgeting and marketing their products.   |

## Alternating Year Group Projects/Experiences

### Projects within Year Group

By placing key STEM projects in **alternating year groups**, our curriculum creates a clear and purposeful pathway that builds children's confidence, curiosity and ambition over time without overwhelming every year group with large-scale enrichment.

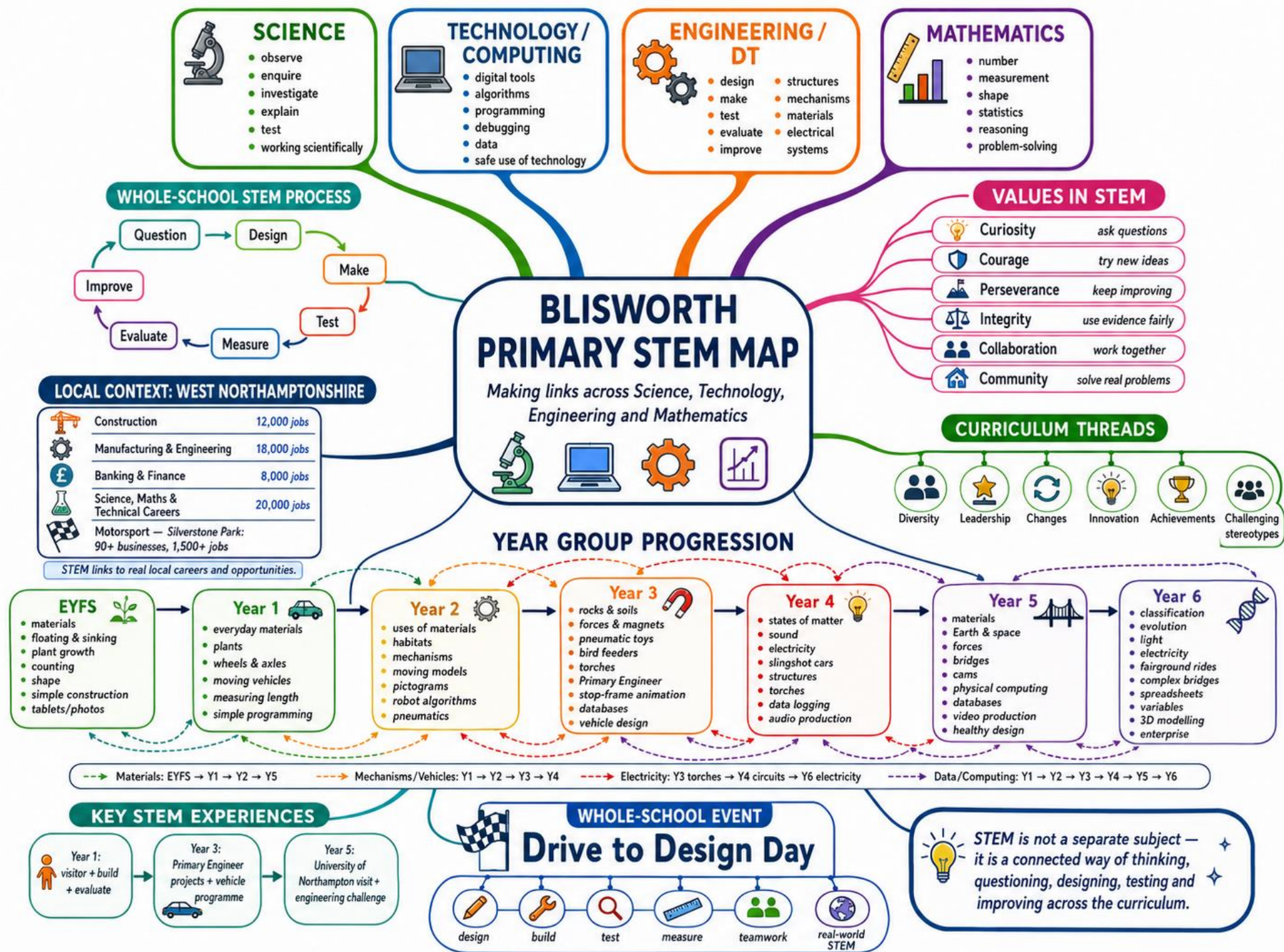
In **Year 1**, pupils are introduced to STEM through a practical, accessible experience where they meet a visitor, build something simple and evaluate what they have made. This helps children see STEM as hands-on, creative and achievable from an early age.

In **Year 3**, pupils then revisit STEM in a more structured way through Primary Engineer projects, including *If You Were an Engineer, What Would You Do?* and the Vehicle Programme, where they begin to think like real engineers by identifying problems, designing solutions and explaining their ideas.

By **Year 5**, pupils are ready for a more aspirational experience through visiting the University of Northampton, speaking to engineers and taking part in a STEM event that connects their classroom learning to future study, careers and local industries. This alternating approach gives children meaningful STEM milestones across their primary journey, allowing knowledge and skills from science, design and technology, computing and mathematics to be applied in memorable real-world contexts. It also strengthens cultural capital, raises aspirations and helps pupils understand that STEM is not a separate subject, but a way of thinking, questioning, designing, testing and improving that can support them in school, in their local community and in future careers.

## Alternating Year Group Projects/Experiences

| Projects within Year Group                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Year 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Year 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p>Some ideas of how to implement STEM within your year group...</p> <p><b>Visitor-</b><br/>A visitor to the class would be fantastic for the children, giving them the opportunity to plan some questions and give them the chance to show their collaboration skills, understand their community and deepen their understanding of the professional setting. This could be:</p> <ul style="list-style-type: none"> <li>• <b>Engineer-</b> Civil would be amazing to link to their understanding of other professions and the community around them. This also links the Maths and Science skills to a practical application</li> <li>• <b>Doctor/Nurse</b></li> <li>• <b>Computing Field Professional</b></li> <li>• <b>Mechanic</b></li> <li>• <b>Banker</b></li> </ul> <p><b>Trip-</b><br/>A trip to a <u>local</u> STEM related workplace or experience would be outstanding to give the children the opportunity to see professionals working in their field, using the skills we develop in school.</p> <p><b>Build-</b><br/>Car build from DT but link into the STEM concepts and talk about this to a visitor.</p> <p><b>Evaluate-</b><br/>Evaluation from DT sessions about design and the build.</p> | <p><b>Primary Engineer Opportunities</b><br/>Children will take part in Primary Engineer projects that promote creativity, problem-solving and real-world STEM thinking. This could include <b>“If You Were an Engineer, What Would You Do?”</b>, supported by <b>3–6 whole-class visitors</b> across the year to help children understand different engineering and STEM careers.</p> <p>They could also complete the <b>vehicle design project</b>, where they design, build, test and evaluate their ideas. Where possible, some children could visit the <b>University of Northampton</b> to experience engineering in a real-world setting and raise aspirations for future STEM learning.</p> | <p><b>Engineering for the Future</b><br/>Year 5 will complete a STEM project focused on <b>real-world engineering and problem-solving</b>. Children will explore how engineers use Science, Maths, Computing and Design Technology to solve problems in the community and improve everyday life.</p> <p>As part of the project, children will visit the <b>University of Northampton</b> to meet engineers, ask questions and take part in a practical STEM activity. This will help raise aspirations and show children how the skills they learn in school link to future careers.</p> <p>Back in school, children will design and build their own solution to a real-world problem. This could be linked to <b>transport, structures, sustainability, motorsport, accessibility or the local environment</b>. They will work in teams to plan, build, test and improve their ideas.</p> <p>The project will finish with children evaluating their final design and presenting it to others, explaining what they made, how it works, what they changed and how it could be improved further.</p> |



# STEM Monitoring

Reflective questions for teachers



## Monitoring is not about grading STEM as a separate subject.

It is about asking whether pupils are making meaningful links between Science, Technology, Engineering and Mathematics: questioning, designing, testing, measuring, explaining and improving.

### 1 Make STEM links explicit

- Have I shown how this learning links to Science, DT, Computing or Maths?
- Can pupils explain how one subject helped them in another?

### 2 Use purposeful problems

- Is there a real problem, challenge or question to investigate?
- Are pupils thinking about who the solution is for?

### 3 Follow a STEM process

- Do pupils question, design, make/programme, test, measure and evaluate?
- Is there time to improve after testing?

### 4 Use evidence to improve

- Are pupils making decisions from evidence, results or feedback?
- Do they explain why something worked or did not work?

### 5 Apply Maths purposefully

- Are pupils measuring, comparing, recording or graphing in a meaningful way?
- Does Maths help them make decisions?

### 6 Use technology purposefully

- Are digital tools, algorithms, data or programming supporting the learning?
- Can pupils explain how technology helped?

### 7 Build vocabulary and oracy

- Are pupils using precise STEM words to explain predictions and evidence?
- Do they discuss, justify, challenge and present ideas?

### 8 Include and challenge all pupils

- Are practical resources, visuals and clear steps supporting access?
- Are pupils challenged to justify, adapt and improve further?

Useful monitoring lens:

Question



Design



Make



Test



Measure



Evaluate



Improve

# Additional Reading

- [Evidence on enrichment in schools and colleges](#)
- DfE, June 2026
- [Evaluation & Impact – NUSTEM](#)
- NUSTEM- Research showing positive on children, especially girls, when choosing a job in STEM
- [Improving Primary Science | EEF](#)
- EEF, November 2023