



## Hagley Primary School

# Subject team policy for STEM (Science, Design and Technology, Computing)

**Date:** October 2021

**Date of review:** July 2022

**Responsible member of staff:** Members of the subject team

**Signature:** .....

*(Chair of governors)*

**Signature:** .....

*(Head Teacher)*

## **Introduction**

This policy outlines the teaching, organisation and role of the Humanities (History, Geography and RE) subject team at Hagley Primary School. The policy has been drawn up as a result of staff discussion around the commonality and continuity across the subjects, with the aim of creating curriculum coherence. The policy has the full agreement of the Headteacher and has been shared with the Governing Body. The implementation of this policy is the responsibility of all teaching staff. The responsibility for monitoring and review rests with the Humanities team as part of the schools' review cycle.

## **Aims**

Through our teaching of these subjects we believe:

- STEM is important because it teaches critical thinking skills and instils a passion for innovation. Beyond the benefit of learning science, technology, engineering, and maths, STEM assists in the problem-solving, collaboration, communication and exploratory learning that promotes success across a variety of activities and encourages a culture of curiosity.
- STEM is important for children's futures because it equips them with a wide range of life-long transferrable skills and increases their opportunities for employment and future careers.
- Key concepts and skills include: Investigative, digital age, computational thinking, strategic decisions, sense of place, cause and effect, pushing the boundaries, challenging the status quo, an interest in natural phenomenon, classifying and comparing.
- We make our STEM learning relevant to children's lives by exposing children to different job roles within the STEM area (E.g. a KS2 STEM Fair), creating opportunities for enrichment and celebrating STEM innovators throughout the ages. We collaborate with families and visitors to showcase community links and role models within the STEM sector.
- We challenge preconceived ideas and stereotypes to ensure all children are aspirational regardless of race, cultural beliefs, circumstances or gender. This is promoted within lessons, through themed assemblies, educational visits/visitors and our school values.

Through the teaching of these subjects we can also:

- Incorporate technology and its use across a range of subjects
- Develop individual liberty through the ability to make their own choices and decisions
- Enhance cultural capital by studying inventors, scientists and individuals who have made a valuable contribution to the subject
- Provide a wider perspective and challenge previous stereotypes
- Encourage and foster a positive attitude to STEM subjects and the careers which utilise skills within these subjects
- Develop respect of individual ideas (and sometimes contrasting) through debate and discussion
- Create opportunities for mathematical cross curricular learning through: Data handling, enquiry, generalising, pattern seeking/finding patterns
- Develop speaking and listening skills
- Provide opportunities for collaborative working
- Develop an understanding of health and safety and how they can be part of the risk assessment process
- Provide opportunities for research
- Develop vocabulary
- Provide a range of rich reading material and use this to address misconceptions and find out more

## **Entitlement**

The subjects that form this team are set out in the National Curriculum. The fundamental knowledge, skills and understanding of the subject are set out in the National Curriculum programmes of study.

All pupils are entitled to access the curriculum at a level appropriate to their needs arising from race, gender, ability or disability. Educational visits or pupil activities will be adapted to meet individual requirements and to ensure that all pupils make progress to enjoy their learning. There may be a need to tailor content and teaching to meet the specific needs of pupils at different developmental stages and this can be done through the use of the progression documents which outlines objectives taught in a previous year group or Key Stage.

Where children show a passion for the subject, or elements of greater depth, teachers will provide additional challenges, discussion points or wider enrichment opportunities where available.

## **Curriculum**

Each year groups wider curriculum is mapped out using a yearly overview. These are evaluated and updated yearly and allow teachers to plan their curriculum based on reflections of the previous academic year; the current cohort; and current events both locally and nationally. Subjects are tied together under a loose topic title and also a series of key concepts. These have been identified, created and mapped out based on a series of curriculum discussions across the school and also to assist with the children's development of broad schema and long-term learning. The use of wider concepts provides 'stickability' for the children to hook their learning onto and allows for connections both within and across year groups and subjects.

Teachers plan lessons using progression grids created by the schools' curriculum lead or through a scheme purchased by the school which is first assessed for quality (see appendix 1). Our school progression grids have been taken from the National Curriculum statements and aims and enable the children to progress with both their knowledge and skills across the primary phase.

## **Teaching and learning**

Strategies we use to teach STEM include:

- research a key concept or question
- retrieve prior learning through quizzes, fast fours and informational organisers
- identifying gaps and then scaffolding tasks and use effective questioning
- mixed ability pairs and group work
- Ensuring we do not overwhelm working memory
- Providing feedback which can include verbal and written challenges, next steps,
- Individual and whole class discussions
- Opportunity to investigate and develop an investigation
- Discussion around a key question, idea or misconception
- Opportunities for trial, error and learning from mistakes
- An acceptance that we may not always find the answer
- The development of skills in investigation such as observing and being systematic
- Identifying and discussing the importance of accuracy and reliability
- Present findings through a range of ways (written and verbal)
- Utilise the local area and our school grounds for enquiry
- Enrich the curriculum through trips and visitors

## **Assessment and feedback**

We recognise that this can take many forms and will be dependent on the age of the child and also the nature of the activity/content within the subject. Formative assessment is used to guide the progress of individual pupils across all subjects. It involves identifying each child's progress, determining what each child has learned and what should therefore be the next step in their learning. Formative assessment is carried out informally by the teachers in the course of their teaching. Retrieval opportunities provide teachers with feedback on the children's long term learning rather than performance and are planned within a sequence of learning and also at later points in the year. This may also include the retrieval of learning from previous years in order to activate prior learning in preparation for new content. Retrieval activities may include: quizzes, brain dumps and fast fours at the beginning of lessons.

Throughout the year, at the end of a sequence of learning, teachers will make informal summative judgements which will then inform future planning where applicable. At the end of the year, teachers will provide a single summative judgement as to whether the child is Working Towards, Working At or showing elements of Great Depth for their year group. This will be based on the teachers' formative and summative activities throughout the year. A sample of work for each judgement will be collected and used to form a benchmark for the subsequent academic year.

Assessments in these subjects may include:

- Pre-assessments – KWL grids, brain dumps and quizzes.
- Formative assessments within class, including observations of children's work/investigations
- Formal written assessments to assess understanding of key ideas
- End of unit pieces of writing or work

- Retrieval activities e.g. fast fours and quizzes
- 1:1 conversation with children about their experiment or final product.
- Formal assessments
- Presentations and debates
- Self and Peer assessments

### **Equal opportunities and diversity**

We are committed to providing a teaching environment conducive to learning. Each child is valued, respected and challenged regardless of race, gender, religion, social background, culture or disability. In line with our equality and diversity strategy, resources, stories, content and visitors/visits are carefully chosen and reflected upon to ensure that our children experience and learn from a wide range of backgrounds and cultures.

### **Safeguarding**

Staff are aware that sometimes disclosures may be made when discussing curriculum content. Should this occur, safeguarding procedures must be followed immediately. Please refer to the Safeguarding Policy.

### **Health and safety**

When working with tools, equipment and materials in practical activities and in different environments, pupils should be taught:

- about risks to themselves and others;
- how to use, store and take care of tools and safety equipment appropriately;
- the dangers of using tools and materials incorrectly.

Good classroom management is essential. Risk assessments are accessible for specific pieces of equipment, such as glue guns, and should be read and followed during a curriculum activity.

### **The role of the subject team is to:**

- Support colleagues in the teaching of the subject content, particularly in a field of expertise or interest
- Identify how the subject fits within the core curriculum subjects
- Audit curriculum coverage and delivery through shared monitoring
- Discuss curriculum links across the subjects and feedback to staff
- Keep up to date with developments in the subject of interest/expertise
- Liaise across the subject team regarding resources, events, visits and visitors
- Conduct shared evaluation, impact and action planning for the subsequent academic year
- Provide support in leading events in school within the subject team
- With support from SLT and phase leaders, take part in wider monitoring such as pupil voice and learning walks

### **Roles and responsibilities**

The subject teams have been created based on the roles of staff within school and also their curriculum interests following a foundation subject audit. This allows staff with specialisms and wider interests to be part of a subject team. All teachers are allocated to a team to provide leadership development for the future. Core subject leaders are placed into teams to facilitate discussions as to how the wider curriculum can further enrich the development of reading, writing and mathematics. Individuals may be asked to lead on a specific subject, particularly where there is budget holder responsibility, curriculum development piece of work (e.g. gathering evidence for a quality mark) or whole school event (such as ARTS week). Where subjects are taught by a specialist, they may also lead the individual subject. In some cases, members of the curriculum team may be asked to take responsibility for a specific action, e.g. a whole school event or liaising with an external agency. This will be with the support of the wider curriculum team.

**Appendix 1:**

