Computing Policy

Introduction

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Intent

The aim of our Computing curriculum is to prepare the children for the future, both in education and in life. We want children to be masters of technology and not slaves to it. Our curriculum has deep and broad coverage and content and is brought to life through rich and vibrant cultural experiences – the cultural capital.

We use the strap-line, "Small Village, Big Horizons" to articulate our vision for the school. This is because Lincolnshire is an isolated area in terms of transport, culture and location. We want our curriculum to expand the experiences and ambitions of our pupils.

At the Emmaus Federation the principal aim of Computing is to prepare our learners for their future by giving them the opportunities to gain knowledge and develop skills that will equip them for an ever-changing digital world. Knowledge and understanding of Computing is of increasing importance for children's future both at home and for employment.

Our computing curriculum focuses on a progression of skills in digital literacy, computer science, information technology and online safety to ensure that children become competent in safely using, as well as understanding, technology.

The intent of our computing curriculum is to deliver a curriculum which is accessible to all to ensure that all children have a deeper understanding of the importance of information technology; from where it is within our own lives to being able to program a micro-controller to perform a variety of functions.

The ambitions for our curriculum:

- High aspirations permeate across the school

- The school offers a host of cultural experiences and enrichment opportunities
- Our pupils develop a love of life-long reading
- British Values are an intrinsic part of the school

Aims of the Computing Curriculum

The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology.

Teaching and Learning

The computing curriculum is carefully structured and sequenced to ensure coverage and progression as the children move through the school. The curriculum is broken down into knowledge building blocks as the knowledge is sequenced and the built upon over time: what has been taught before and what the pupils' need to know to reach their end point – **spiral progression**. This is set out in more detail in our termly plans. The enquiry questions and the key vocabulary are implemented in our knowledge organisers and brought to life on working walls and within learning objectives for the lesson.

There are specific curriculum areas of knowledge that build together to enable our children to become successful masters of technology. These are:

1. Computing systems and impact of Technology
Understand what a computer is and how its constituent parts function together as a whole. Also, to understand how individuals, systems and society as a whole interact with computer systems.

2. Networks
Understand how networks can be used to retrieve and share information and how they come with associated risks.

2. Creating Media
Select and create a range of media including text, images, sounds and video.

3. Data and Information
Understand how data is stored, organised and used to represent real-world artefacts and scenarios.

4. Programming

Create software to allow computers to solve problems.

5. Coding
The process or activity of writing computer programs.

Implementation

The computing curriculum is carefully structured and sequenced to ensure coverage and progression as the children move through the school. The curriculum is broken down into knowledge building blocks and the knowledge is sequenced and then built upon over time: what has been taught before and what the pupils' need to know to reach their end point - spiral progression. The application of knowledge for each area of the computing curriculum is identified and how the knowledge is applied across the whole of the curriculum so our children leave our school 'knowing more and being able to do more'.

Our computing curriculum follows the National Centre for Computing Education Teaching Computing scheme. Through this curriculum the children are given opportunities to explore computing not just through a laptop but through other technological equipment: Beebots, data loggers, crumble microcontrollers and micro-bits.

We have identified the application of knowledge that we will implement to enable our pupils to become successful masters of technology. This is set out in more detail in our termly plans.

- **Investigation**
- **Expression**
- **Interpretation**
- **Reflection**
- **Commitment**
- **Application**
- **Discernment**
- **Analysis**
- **Synthesis**
- **Evaluation**

The Application of Knowledge:
To enable our children to become successful masters of technology, we have identified the application of knowledge that will be needed. The application of knowledge for each area of computing studied is identified and this knowledge can then be applied across the whole curriculum so our children leave our school 'knowing more and being able to do more'. This is set out in more detail in our termly plans.

- **Investigation**
- **Expression**
- **Interpretation**
- **Application**

- **Analysis;**
- **Synthesis**
- **Evaluation**

INVESTIGATION – in computing this includes:
- asking relevant questions;
- using different approaches to problem solving, how something can be created or works debugging.

EXPRESSION – in computing this includes:
- the ability to explain processes, concepts and practice, rituals and practices;
- the ability to identify and articulate computational thinking.

INTERPRETATION – in computing this includes:
- the ability to understand computing theories;
- the ability to suggest meanings.

REFLECTION – in computing this includes:
- the ability to reflect on why their process may not have worked and use resilience to problem solve.

APPLICATION – in computing this includes:
- making the association between computing, maths, technology and science.
- the ability to apply a range of computational knowledge and skills in a variety of contexts and subjects.

DISCERNMENT - in computing this includes:
- seeing clearly for themselves how they use computing in their daily lives and in future employment.

ANALYSIS – in computing this includes:
- distinguishing between prediction and fact;
- distinguishing between the feature's methods of different investigations.

SYNTHESIS – in computing this includes:
- linking digital literacy, computer science and information technology together to deepen understanding of a variety of processes.

EVALUATION – in computing this includes:
- the ability to evaluate how a computing system works.
- understand what can be done differently and what impact this may have on the outcome.

Processes for Effective Learning in computing

1. Identify questions
These covers identifying questions and defining enquiries, using a range of methods, media and
sources. It includes the skill of investigation.

2. Plan and carry out enquiries
This includes carrying out and developing enquiries by gathering, comparing, interpreting
and analysing a range of information, ideas and viewpoints.

3. Present and explain findings
This involves expressing and explaining ideas and feelings, suggesting interpretations of findings and analysing the range of information.

4. Empathise and reflect
This involves using empathy, critical thought and reflection to consider their learning and how they feel about it.

5. Evaluate
This involves evaluating their learning and considering how it might apply to their own lives.

Personal Qualities for Effective Learning in computing

- **Independent enquirers**
- **Creative thinkers**
- **Team workers**
- **Reflective learners**
- **Self-managers**
- **Effective participators**

The Daily Implementation of computing at the Emmaus Federation

- Knowledge Organisers: Children have access to key knowledge, language and meanings to understand computing and to use these skills across the curriculum.
- Subject specific vocabulary: Identified through knowledge organisers and highlighted to the children at the beginning of and during lessons.
- Use of information technology: A range of technological equipment is available to specific year groups for the children to apply their knowledge of different operating systems to new technology.
- Teachers assess children's work in computing by making formative and summative assessments throughout the school year. All pupils are encouraged to evaluate their own learning and to suggest ways to progress further with their declarative and process knowledge.
- Teachers record the progress made by the children against the learning outcome for each unit: below expected for age, at expected, or greater depth. Teachers record this information on our bespoke assessment tracker on OTrack. These records also enable the teacher to make an annual assessment of progress for each child, and to pass this assessment information on to the child's next teacher at the end of the year.
- Progress in computing is reported to parents.

Health and Safety

At the Emmaus Federation, teachers will plan and organise their lessons carefully, evaluating the risks of sites, monitoring the access of pupils to online sites, and encouraging pupils to work safely with electrical equipment. Pupils will also be taught how to keep themselves and others safe online, protecting their personal information, not interacting with strangers, being responsible for their digital footprint as well as recognising false and unsafe content/pop ups. Pupils will also be taught about how to be aware of their mental wellbeing when online, thinking about how long they are on for and reminders that images are not always, what they seem.

Equal Opportunities

We teach Computing to all children across KS1 and KS2, whatever their ability and individual needs. Computing forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our Computing teaching, we provide learning opportunities that enable all pupils to make good progress. Computing can make a significant contribution to the progress made by children with barriers to learning.

Role of the Computing Coordinator

- Endeavour to promote a dynamic approach to the development of computing ensuring that it has a high profile.
- To evaluate the standards of computing teaching through the analysis of assessment data, book looks and learning journeys.
- To update the computing curriculum and oversee its implementation by other staff.
- Keep up to date with developments in computing.
- Report back on training attended.
- Advise and support staff with the teaching and learning of computing.
- Be responsible for overall auditing and upkeep of all school computing resources and facilities. To organise any budgets made available from various funds and to ensure money is used to its best advantage.
- Regularly review and update the school policy statement and guidelines as required.
- To work closely with the lead governor for computing.

Signed By: D Turjung and S Lacey

Position: Computing Co-ordinator

Date: February 2022