St Edmund's and St Benet's Roman Catholic Primary Schools
Policy for Computing

Purpose
The purpose of this policy is to ensure that both schools have a clear understanding of the Computing Curriculum requirements and content. The Computing Curriculum comprises three main areas: **computer science**, where the pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming; **information technology**, where the pupils build upon their knowledge to create programs, systems and content; **digital literacy**, where pupil are 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, they are also literate in the safety and responsibility that comes with using digital data.

Content
Computing is an essential part of modern life and our schools are committed to ensuring that our pupils are fully equipped with strong computing skills by the time they leave us. This policy shows how we aim to meet the four main objectives of the national curriculum 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.

Understanding and applying the fundamental principles and concepts of Computer Science:

Abstraction
Is where we are only focused on the details relevant to the task, this may be achieved by using a database to handle data. In doing this the data can be looked at in specific groups. An example of this is using Pupil Asset to show the progress of pupils on Pupil Premium.

Abstraction can be taught cross-curricular where excel can be used in Mathematics or Science and only data relevant to the point being made is selected to produce a table or graph. For example children may collect data regarding the weather such as rainfall, temperature, wind speed and one group wanted to show that there is more rainfall on Mondays rather than Thursday's. They would then only select the rainfall data and only on Monday's and Thursday's to show whether their hypothesis was correct or not.

Logic

Is the non-arithmetic operations performed by a computer, such as sorting, comparing, and matching, that involve yes-no decisions. This might be taught through Science using dichotymous keys to show how computer programs use yes-no technology to make choices. This can also be shown using the If – Then option in scratch where the program has to say yes or no and follow that decision. Programs such as flowol, flowgrid and logicator show the yes-no element and can be used with an interface which allow the programs to be seen in action.

Algorithms

The step-by-step procedure for a machine or mimic to complete a task, for example the instructions put into a bee-bot to guide it through a maze or the instructions inputted into scratch to move the sprite. This is the part of computer science which we will be concerned with most at primary level although the other parts need to be taught at the level of the children as well.

Data Representation

This means the way in which information is presented. In its simplest form this could be representing a data set as a graph.   However it is also about using the appropriate software for the task. Not everything has to be done in Word or PowerPoint. We should be thinking in terms of blogs, webpages, shared documents, publisher, movie maker and animation as ways in which children represent the data they have discovered.

Analysing problems in computational terms:

Create a program:

Pupils are given, or come up with, their own ideas for a computer program. They then write the algorithm required to produce that outcome. For example they might be asked to design a moveable toy. They would need to consider the parts they would like to move and then using a program such as they would need to create the algorithm (code) for it to work. Hour of code and bee-bot in early years also allows children to write algorithms.

De-bugging:

Pupils have to ask themselves why their mimic or bee-bot is not working the way they thought it should. They have to re-read their algorithms and discover where they have gone wrong. They then correct it and try again. This is developing their understanding of logic and logical reasoning.

Evaluating and applying information technology:

Pupils learn to evaluate the effectiveness of the technology they use including search engines and software. As they progress through our schools they should be able to suggest improvements to current software to make it more efficient and user friendly.

Pupils have plenty of opportunities to apply information technology across the curriculum. They use search engines to aid research, they are encouraged to present information in a variety of formats such as creating animations to explain how the moon moves round the earth or creating a blog to share information about Ancient Egypt.

It is important that our pupils have frequent opportunities to apply information technology and evaluate their choices. These need to be planned in so that every class is using technology weekly. (Our current resources do not allow every class to use them daily).

Becoming responsible, competent, confident and creative users:

E-safety is a fundamental part of our computing lessons and teachers plan into every computer lesson an aspect of e-safety. SMART (Safe, Meeting, Accepting, Reliable and Tell) is used to ensure that the children ask themselves appropriate questions every time they use technology. CEOP is introduced and taught from early years up so that children know how to report inappropriate online content or if they feel upset by something.

It is our aim that we enable our pupils to be competent and confident users of technology. We aim for our pupils to have access to ipads, laptops and desktops so that they are familiar with a range of interfaces. They are encouraged to use search engines responsibly and to question the information they find by asking themselves is it reliable. As the pupils move through the school we expect them to work collaboratively using technology to help them; through the creation of wiki pages, blogs and shared documents. We expect all our pupils to have high expectations both in terms of their behaviour and in the content they produce.

We plan in opportunities for children to be creative in the way that they produce tasks throughout the curriculum ensuring that we provide them with opportunities to use technology in the presentation of their work. For example they might use Paint ™ to create a Christmas card instead of hand drawing it or choose to create a bar chart or line graph with excel instead of by hand.

Teachers model technology use as a tool through displaying tasks on the IWB and by modelling using it to enhance learning. For example using talk-typer or clicker with children with SEND, using internet search engines for research, communicating with parents and children through the website, using talking books in reading circle lessons and by showing that we are always learning too as technology develops and advances.

Ensuring that our pupils, in both schools, see technology as a tool to enhance their work in other areas of the curriculum will guarantee that we have enabled our pupils to be high school ready.