The Bearsden Primary Computing Science programme of work will cover the following skills in the progression framework:





**The key significant aspects of learning covered are:**

**Understanding how technological products work and how they affect people.**

* Critical thinking through exploration and discovery within a range of learning contexts
* Problem solving skills through exploration.

**Planning and organising technological activities.**

 • Planning and organisational skills in a range of contexts

 • Skills in using tools, equipment, software and materials

 • Creativity and innovation, for example through ICT, computer-aided design and manufacturing approaches

• Making connections between specialist skills developed within learning and skills for work evaluating products, applications, systems and presentation skills.

A programme of work which has been designed to teach pupils programming from the menu driven basics of primary 1 to full Java coding in Primary 7 and beyond.

**Progression:**

The suggested activities for stages are a guideline. As pupils become more competent, work should be differentiated to challenge all pupils. There is no limit as to what pupils can achieve which is why the ‘Beyond P7’ section is so extensive.

This is a guideline which will ensure clear progression through the skill of programming and will ensure pupils develop both programming and computational thinking skills throughout their Primary experience.

**Assessment:**

Both Code.org and Khan Academy provide excellent tracking, diagnostic tools and assessment resources. This identifies where pupils are excelling and where they require support.

All assessments on code.org are circled in blue on the overview page.

The off-line activities provide full detailed lesson plans which ensure pupils are learning the correct skills and vocabulary to progress in the following lessons.

## Computing Science Goals

While there are many course-specific goals that address CS content learned at different levels, there are also sweeping philosophical goals that stretch across all curriculum programs.

### Students should understand that computer science...

* is for everyone
* is fun, engaging, and more approachable than traditionally portrayed
* is an outlet for creative personal expression
* plays an important role as a distinct discipline of study, but also stands to augment the study of other domains
* involves more than just programming
* is important to their lives, regardless of their interests or career path they choose
* work involves collaborating in an equitable learning environment where they support their peers so all can flourish
* can be effectively taught using both computer-based and non-computer activities, which reinforce one another
* can be used as a tool for helping others through socially relevant learning experiences
* involves problem solving that can be challenging. It is not always easy but like any difficult puzzle, the challenge makes it fun and teaches perseverance.

**This Computing Science programme will help to develop the 4 capacities through Computing Science because:**

#### It is organized and clear making it accessible to all by being:

* Easily navigable in print and online, with straightforward and clear organization of the essential information about lessons
* Presented in such a way that situational customizations can be made (for example, modifications for different schedule needs, etc).
* Presented in such a way to support customizations based on a variety of school situations (for example, modifications for different schedule needs, etc.)
* Provides educative supports that help to clarify and structure classroom implementation and instructional practices

#### It includes materials that

* promote teacher autonomy and agency in the process of classroom delivery
* are written by practiced teachers and reflect the practical limits on preparation and implementation challenges of the classroom teacher
* have a learning progression that is developmentally appropriate, and where possible informed by research
* build transferable problem solving and computational practices
* are differentiated so students of all skill levels can engage with the material in multiple ways, especially students who are new to computer science
* make connections to other fields of study and parts of our lives that are not traditionally seen as impacted by computer science, including subject standards from other disciplines
* highlight the impact of computer science on students’ lives in a culturally relevant context
* provide opportunities for authentic experimentation, giving context for concepts and deepening understanding
* leverage accessible tools that fit naturally with the curriculum
* are driven by clear computer science learning outcomes and, where possible, align to well known and recognized standards
* are supported by a variety of professional development options tuned to teachers’ needs and situations

#### It stretches the limits of what’s possible by blending traditional/online formats by:

* being free and easily accessible (open source, no install, runs on all modern browsers and mobile devices, facilitates sharing of artifacts)
* pushing the limits on being genuinely enjoyable, the ultimate accomplishment being that students are self-motivated and think of it as a “fun game” just as much as they think of it as “school work”
* including student-driven activities that are self-guided, self-paced, and available on a wide range of platforms to allow for learning in a variety of environments
* empowering teachers through a classroom dashboard that allows supervision of student progress and proactively alerts teachers to learning issues
* exhibiting high production value such as the use of branded characters, high quality artwork, and diverse role models as video lecturers
* protecting student privacy at all times in abidance with our privacy policy (this goes without saying)
* providing opportunities for students to create work that is personally relevant to them - for example personalizing projects and activities to reflect their interests and values
* merging content delivery with guided, self-grading exercises and computational tools (such as a programming environment)
	+ merging the programming environment with the “lectures” and problems
	+ as much as possible, make problems/puzzles that are self-grading
	+ when possible, give automated personalized feedback to help students learn from their mistakes
	+ when possible, adapt the pace of learning or methodology of teaching to the student’s performance. (Note: we’re not doing this yet)
	+ when possible, allow teachers to customize the course flow for students (Note: we’re not doing this yet)
* allowing for both structured and unstructured approaches to learning
	+ teacher-facilitated classroom activities
	+ structured skill development and practice, solving specific puzzles
	+ unstructured discovery and open-ended creation related to authentic tasks

**This programme of work has been designed to provide pupils with the skills in both programming and computational thinking which will allow them to tackle problem solving questions in a more logical and systematic way.**

**Both problem solving and programming skills have been highlighted as national priorities in Education at the moment and the pupils of Bearsden Primary will leave Primary 7 with the skills required to understand programming at a far deeper level in Secondary school.**