OATs Primary Curriculum

Computing

Oasis Academy Temple

Computing in the Primary Curriculum

Intent

The Curriculum Statement of Intent has been carefully considered for each curriculum area to ensure the content designed meets this at every opportunity.

The context that our children and young people live in:

- Our children live in a world where they require the skills and qualifications, flexibility, emotional intelligence and expertise to be leaders and to thrive as human beings.
- Our children live in world where accepting themselves as individuals and celebrating who they are is key in navigating a complex and ever-changing environment.
- Our children live in a world where they need to feel a sense of ability to change things for the better and have self efficacy.
- Our children live in a world where they need a network of relationships and a network of support to thrive and excel.
- Our children live in a world where early development of vocabulary skills is the single most important factor to get right as early as possible.

We want our children and young people to:

- Be inspired to improve the world around them.
- Have the ambition, skills and expertise to thrive in a fast changing, interconnected and communication rich world, with the confidence and technical expertise to thrive.
- Have a network that supports them.
- Be comfortable in who they are and able to continuously explore who they are becoming.
- Be rich in language with a passion for learning.
- Seek to include others, be other-centred and celebrate difference.
- Have a values approach to life and a sense of what is right and wrong through the lived experience of the 9 habits.

Therefore, we focus on developing character, competence and community. The Computing curriculum specifically meets the statement of intent by focussing on character, competence and community in the following areas:

	Character: All children will have a positive, growth mindset towards computing and technology, understanding its importance in everyday life and within our world.
	Competence: Children will be able to use technology safely, efficiently and be able to learn how to use new software quickly. They will understand the core principles of coding and be able to apply these across a range of situations.
	Community: Children will understand how to stay safe online and apply this to their lives and within their communities. They will understand the interconnectedness of computing and logical thinking across subjects as well as understand its importance in everyday life.

Implementation

To ensure our intent transfers into everyday classroom practice, we use current research in cognitive science to develop pedagogy and specific CPD to ensure subject content is expertly delivered. This is alongside individualised coaching in constantly striving to continually improve practice. Responsive feedback approaches, delivered through out highly effective one-to-one horizons approach, ensure each adult knows the relevant next steps to maximise learning opportunities.

Using research from Dan Williamson's Models of Memory, Sweller's Cognitive Load Theory, Rosenshine's Principles of Instruction and the thinking behind Ebbinghaus' Forgetting Curve, the curriculum is implemented effectively through a set of core concepts, developed for each curriculum area. This enables children to assimilate new information into growing schema as they move through the academy. By presenting new information to students as another example of these core concepts it allows them to process information in relation to previously learned knowledge and make connections.

The core concepts and 12 pedagogy principles for Computing:

Core Concepts in Computing				
Digital Literacy (eSafety)			Information Technology	Computer Science
1. Managing information online 2. Copyright & ownership	3. Privacy and security 4. Online relationships 5. Self-image and identity	6. Online reputation 7. Health, well-being & lifestyle 8. Online bullying	Using technology	Coding

The curriculum is mapped using these core concepts. We plan for progression using the key points outlined in the impact section below. Lesson content is planned towards these progression points and follows the model of direct instruction, shared and modelled practice before culminating in independent practice and mastery. Specific knowledge is acquired through the knowledge organisers in each curriculum area and unit of study to ensure broad and balanced coverage and as a tool for children to add to, revise and structure that knowledge.

Subject Delivery

Lesson Timings	Type of delivery
Computing is taught in a discrete way, weekly for 45 minutes per lesson and these sessions mainly focus on: • Understanding algorithms(including how they are implemented) • Creating and debugging simple programs • Use logical reasoning • Using Technology purposefully (to create organise, store, manipulate and retrieve digital content) • Recognising common uses of IT beyond school(including online safety) • Privacy • Online identity E- Safety is taught nationally in discrete units in the chunked weeks agreed by Oasis, however it can be proactive & reactive based on academy need by easily adapting the flexibility structure/sequence.	The order in which to teach units within a school year is not prescribed, other than for the two 'Programming' units for each year group, which build on each other. It is recommended that the 'Programming' and 'Creating media' units be revisited in two different terms within the school year, so that the concepts and skills can be revisited and consolidated. Otherwise, schools can choose the order in which they teach the units, based on the needs of their pupils and other topics or events that are happening throughout the school year, to make use of cross-curricular links wherever possible. All children and staff are part of the Horizons Project (all having personal ipads to support learning).

E-Safety Annual Organisation per year group

Term	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn 1	To identify rules that keep us safe online	To identify ways which information can be put online	To understand the impact of technology on wellbeing	To analyse online information	To understand age ratings.	To know that everyone has an online reputation
Autumn 2	To identify what online bullying is	To identify where to go for help and support if concerned about online content.	To identify and describe ways of online bullying	To discuss how information about people can be shared online	E-Safety: Online bullying	To understand how to manage personal information online.
Spring 1	n/a	n/a	n/a	n/a	n/a	n/a
Spring 2	To know what to do if someone tells me to do something online that makes me feel sad, embarrassed, or upset	To Identify that objects and work belong to an owner	To explain how people can represent themselves in different ways online	To demonstrate ways of recognising who might own online content.	To identify and critically evaluate online content relating to gender, race, religion, disability, culture, and other groups	To know that even copyrighted work can be used and discuss if this use is fair
Summer 1	To understand how I can communicate online	To identify examples of personal information	To understand how to communicate safely using technology	To say how to keep information private	To describe what it feels like to be safe online	To suggest some reasons as to why apps/companies request access to personal data.
Summer 2	n/a	n/a	n/a	n/a	n/a	n/a

More information can be found on the e-Safety resources here: https://oasisit.sharepoint.com/sites/OCL-EDU-SG/SitePages/eSafety.aspx

Structure of Units of Overviews for KS1 and KS2

Every unit of work in the Teach Computing Curriculum contains: a unit overview; a learning graph, to show the progression of skills and concepts in a unit and lesson content — including a detailed lesson plan, slides for learners, and a range of resources needed; including formative and summative assessment opportunities.

Year group	Aut A	Aut B	Spring A	Spring B	Sum A	Sum B
1	Lesson 2: Click, drag, and drop items on screen Lesson 3: Write instructions using directions	Lesson 4: Sequencing with Scrat Lesson 5: Programming with Scrat	Lesson 6- Programming with Rey and BB-8 Lesson 7 – Happy Loops	Lesson 8 – Loops with Scrat Lesson 9 - Loops with Laurel	Lesson 10 – Ocean Scene With Loops Lesson 11 – The Big Event Jr	Lesson 12 – Mini Project Lesson 13 – End Of Course Project
2	Lesson 2: Move It, Move It Lesson 3: Sequencing with Angry Birds	Lesson 4: Programming with Angry Birds Lesson 5: Programming with Harvester	Lesson 6: Getting Loopy Lesson 7: Loops with Harvester	Lesson 8: Loops with Laurel Lesson 9: Drawing Gardens with Loops	Lesson 10: The Right App Lesson 11: The Big Event Jr	Lesson 12: Mini Project – A Royal Battle Lesson 13: End of Course Project
3	Lesson 2: My Robotic Friends JR Lesson 3: Programming with Angry Birds	Lesson 4: Debugging in a maze Lesson 5: Collecting Treasure with Laurel	Lesson 6: Creating Art With Code Lesson 7: My Loopy Robotic Friends JR Lesson 8: Loops with Rey and BB	Lesson 10: Mini-Project - Sticker Art Lesson 11: The Big Event	Lesson 12: Build a Flappy Game Lesson 13: Mini Project – Chase Game	Lesson 14: Picturing Data Lesson 15: Binary Bracelets Lesson 16: End of Course Project
4	Lesson 2: Graph Paper Programming Lesson 3: Instruction to Online Puzzles	Lesson 5: Debugging with Laurel Lesson 6: Events in Bounce	Lesson 7: Build A Star Wars Game Lesson 8: Dance Party Lesson 9: Loops in Ice Age	Lesson 11: Nested Loops in Maze Lesson 12: Conditionals with Cards	Lesson 13: Looking Ahead with Minecraft Lesson 14: If/Else with Bee	Lesson 15: While Loops in Farmer Lesson 16: Until Loops in Maze Lesson 17: End of Course Project
5	Lesson 3: Swimming Fish with Sprite Lab Lesson 4: Hello World	Lesson 8: Mini-Project: Design a Snowflake Lesson 9: Songwriting	Lesson 10: Functions in Minecraft Lesson 11: Functions with Artist Unplugged: TBC	Lesson 12: Conditionals in Minecraft Lesson 13: Conditionals with the Farmer	Lesson 14: Functions with Harvester Lesson 15: Designing for Accessibility	Unplugged: TBC Lesson 16: Digital Sharing Lesson 17: End of Course Project
6	Lesson 2: Introducing Sprite Lab Lesson 3: Making Sprites	Lesson 4: Sprites in Action Lesson 5: Mini-Project: Virtual Pet	Lesson 6: Blank Space Stories Lesson 7: Text and Prompts Lesson 8: Mini Project – User Input Programs	Lesson 9: Lots of Sprites Lesson 10: Counting with Variables	Lesson 11: Mini-Project: Make Collector Game Lesson 12: Simulating Experiments	Lesson 14: AI For Oceans Lesson 15: The Internet Lesson 16: End of Course Project

Impact

The ultimate test of the impact of the curriculum is in whether the students know what you want them to know, and what you think they should know. This has been carefully mapped against the core concepts for Computing in the tables on the following pages.

To determine this, we check and monitor children's learning, providing teachers and students with information about progress and analysis of deliberate retrieval practice. We need to be able to fluidly use 'checking for understanding' techniques in the moment as well as being able to know what has been learnt and retained over time and the depth of that learning:

Formative assessment

Every lesson includes formative assessment opportunities for teachers to use. These opportunities are listed in the lesson plan and are included to ensure that misconceptions are recognised and addressed if they occur. They vary from teacher observation or questioning, to marked activities. These assessments are vital to ensure that teachers are adapting their teaching to suit the needs of the pupils that they are working with, and you are encouraged to change parts of the lesson, such as how much time you spend on a specific activity, in response to these assessments. At the end of every lesson, pupils will be invited to assess how well they feel they have met the learning objective using thumbs up, thumbs sideways, or thumbs down. This gives pupils a reminder of the content of the lesson that has been covered, lending itself to being readily retrievable in future lessons. Teachers will then be better informed about ways they can make changes to subsequent lessons.

Summative assessment

Pedagogically, when we assess, we want to ensure that we are assessing a pupil's understanding of computing concepts and skills, as opposed to their reading and writing skills. Therefore, we encourage observational assessment while pupils are still developing their literacy skills.

- At Oasis Academy Temple, we use checking for understanding techniques through Socrative quizzes and hinge questions to ensure we are aware of all students learning during the lesson and adapt the pace as necessary.
- Retrieval practice is built in where most impactful to interrupt the forgetting curve and secure constructs in long term memory.
- Depth of knowledge is then assessed through spaced quizzing, end of unit assessment quizzes and Student Portfolios in Showbie.
- Proficiency in Computing will be summarised through the gathering of views from staff and pupils termly using Microsoft Forms surveys created by the Computing Lead(s). This will enable further development and the identification of CPD needs of staff.

Approach to Recording

In Computing, the understanding of core concepts by pupils at the end of a unit, is assessed through quizzing in order to analyse the extent to which knowledge has been consolidated into long-term memory. Retrieval practice tasks throughout lessons also interrupt the 'forgetting curve' to enable faster access to prior learning. POP tasks at the end of each academic year consolidate the learning for the subject under the core concept areas and prepare children to make links to the future learning in subsequent years.

In addition to this, the Horizons project will give us an additional set of metrics to be able to evaluate and improve the curriculum, such as:

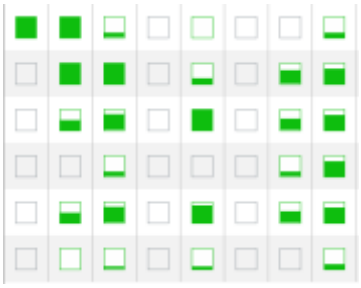
- Online tracking (Safer Schools app)
- Teach Computing
- CPOMs instances (DL)
- Usage of iPads (IT) through MS Teams, Socrative and Showbie Analytics and Home Apps such as SeeSaw in EYFS

Assessment is carried out through the Code.org website which automatically assesses the progress and learning of each child or groups of children.

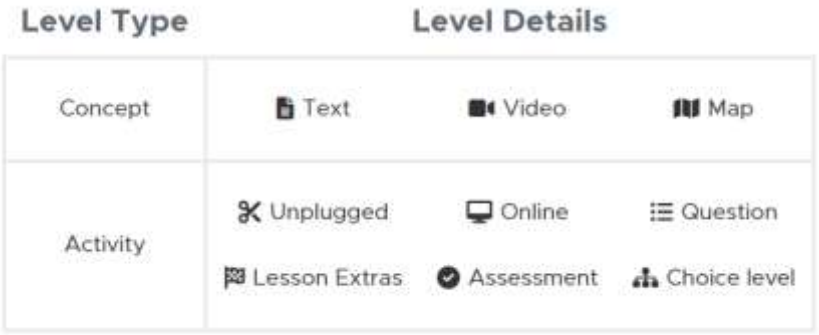
The Assessment Tool

The interface for assessment is set out in blocks:

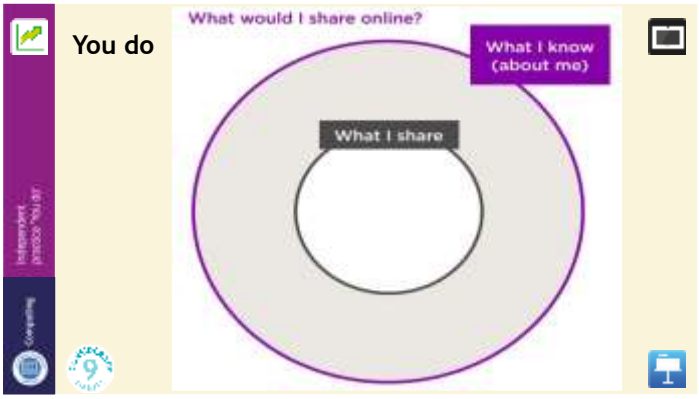
Lesson assessment and summary:

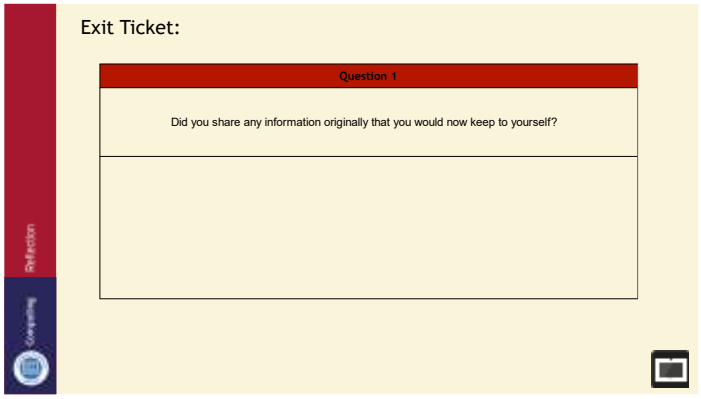


Assessment by 'Proficiency Level'



Online Safety lessons are completed on Showbie:





Computing in EYFS with links to KS1

What does the EYFS curriculum say?

Development Matters			
Birth to Three	*Physical Development*		Develop manipulation and control
Three to Four	*Personal, Social and Emotional Development*		Remember rules without needing an adult to remind them.
	Physical Development		Match their developing physical skills to tasks and activities in the setting.
	Understanding the World		Explore how things work.
Reception	*Personal, Social and Emotional Development*		Show resilience and perseverance in the face of a challenge. Know and talk about the different factors that support their overall health and wellbeing: – sensible amounts of 'screen time'.
	Physical Development		Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
	Expressive Arts and Design		Explore, use and refine a variety of artistic effects to express their ideas and feelings.
ELG	*Personal, Social and Emotional Development*	*Managing Self*	Be confident to try new activities and show independence, resilience, and perseverance in the face of challenge. Explain the reasons for rules, know right from wrong and try to behave accordingly.
	Expressive Arts and Design	*Creating with Materials*	Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

How do we do this in Early Years:

We do this through:

- Horizons project – every child in Reception has access to an iPad
- Building in the use of technology through enhancements e.g., QR codes
- Engaging in apps through discrete lessons
- Coding apps
- Beebots
- Links to apps and technology on the Knowledge Organisers
- Interactive whiteboards
- Sound buttons
- Reception Horizons Progression:

Autumn	Spring	Summer
I know how to carry my iPad safely I know how to store my iPad safely I can switch on and off an iPad	I can scan a QR code using the camera app I know how to type my own name and find familiar letters on a keyboard	I can bring my iPad in each day, fully charged I can upload a photo to Showbie I can add a voice note to Showbie
I can click and drag using my fingers on an iPad I can use the home button to return to the main screen I can swipe to find an app of my choice I can take a safe photo and know the importance of asking permission beforehand	I know the purpose of a backspace button I can delete a photograph I know how to adjust the volume on an iPad I know how to close apps and swipe them away I know how to download from the Self-Service app (with support) I can upload a photo to Seesaw I can open an "activity" in Seesaw	I can open a document on Showbie I can listen to feedback on Showbie

Computing in the Early Years Foundation Stage (EYFS)

Despite Computing not being explicitly mentioned within the Early Years Foundation Stage (EYFS) statutory framework, which focuses on the learning and development of children from birth to age five, there are many opportunities for young children to use technology to solve problems and produce creative outcomes. In particular, many areas of the framework provide opportunities for pupils to develop their ability to use computational thinking effectively.

Our children grow up surrounded by technology. Their everyday interactions and experiences involve it, whether that is inside their homes, at school, out shopping or playing. Much of computing as a subject can be learned without using computers at all. Early Years and Primary aged pupils are perfectly capable of understanding and executing algorithms. They do so every day: they use algorithms to solve problems in mathematics, learn letter sounds, spell and use grammar rules.

The best practice for Computing in the Early Years (EYFS computing) is where activities:

- are imaginative and fun
- challenge
- involve being creative
- require collaboration and sharing
- involve listening, understanding, following and giving instructions
- encourage describing, explaining and elaborating

- encourage investigation
- involve problem solving
- include lots of 'unplugged' activities: computing without computers

Opportunities for Computing in the EYFS:

Area of Learning	Opportunities
Understanding the World	**Building things** – **construction**: the computing competence here is decomposition and this centres around reducing a big problem into smaller parts: Organising and sorting equipment into compartments – grouping items in a particular way based on set criteria. Teacher models constructing an object and provides the parts/pieces to do this but includes a problem-solving element, which piece isn't needed? Can you build with fewer pieces? **Small world** Here, the computing competence centres around logic and developing their logical reasoning. This allows children to make accurate predications based on the information they know and have been given. This builds understanding of systems, lists and possible rules. If the small world is a Zoo, in this activity, children use a picture checklist to ensure that each animal gets the right food, makes sure that each enclosure has the correct home, facilities and equipment e.g. penguins- water, giraffe- tall trees. The teacher can put everything in a box and the activity would be to set up the zoo following the instructions on the checklist. Many other small world activities can be organised in a similar way
Literacy	***See Communication & Language**
Physical Development	During **physical activity**, the children could use iPads to time themselves carrying-out modelled tasks. Accessing dance and music videos to practise movement activities and record themselves reciting songs, rhymes and parts of the body e.g. Head, shoulders, knees and toes.
***Communication and Language**	**Role Play Area –** If the role play area is set up as a Post Office – planning could centre around the computing competence of developing algorithmic thinking because an algorithm is essentially a sequence of steps that solves a problem: writing instructions for posting a letter, following instructions needed for wrapping a present for posting, devising an algorithm design for wrapping paper.
Personal, Social & Emotional Development	
Expressive Art and Design	**Camera apps** can be used to: organise open ended task that supports active learning and builds understanding about what a digital image is. This activity covers the area of computing that is about using technology purposefully e.g. photos that children might see on a visit to the dentist or on a display at the park. This sees children working collaboratively to take their own photos, edit them, save them and then print. The editing that the children will do includes decision making around which photos should be kept or deleted, which should be altered, cropped, screen shot. Practitioners can lead by modelling concepts such as how to take good a photo, focus on subject matter or a close up. Topics could be based on any area of learning.
Mathematics	**Use of a drawing or painting app** to create an algorithm design for wrapping paper or wallpaper. An algorithm can also be set of rules. Example Algorithm is: 1 Draw lines: straight, thick lines, thin lines, use three colours. 2. Draw circles: big circles, small circles, over lapping, use four colours.

Links to the existing OCL Curriculum as covered in the PSHE and Personal Development Curriculum Programme:

Links to OCL Curriculum for Computing

This section outlines how EYFS can provide a preparation for future learning in Computing. For more information about the Computing curriculum, please follow this link Computing in the OCL Primary Curriculum.docx (sharepoint.com)

OCL Computing Core Concepts	Vocabulary	Key texts and activities
Digital Literacy E-Safety	• Safety • E-safety • iPad, laptop, phone, games	• Whole school e-safety activities • E-Safety week • Teaching children how to use their iPads safely in school e.g. not taking photo's of each other (follow the Reception progression) • Know who to go to when they need help *Text: Unplugged by Steve Antony* 
Information Technology Using Technology	• Horizons • iPad • App	• Using apps as enhancements • QR codes • Reception horizon progression activities • Taking photo's • Apps for home use

Approach to Environment

Approach to Inclusion

PRACTICES TO SUPPORT ACADEMIC PROGRESS For SEND PUPILS – SUBJECT SPECIFIC

The research underpinning the EEF's guidance report 'Special Educational Needs in Mainstream Schools' indicates that supporting high quality teaching improves outcomes for pupils with SEND. Five specific approaches—the 'Five-a-day' indicated below—are particularly well-evidenced as having a positive impact. At OATs, we develop a repertoire of these strategies, which can use daily and flexibly in response to individual needs. These are used as the starting point for classroom teaching for all pupils, including those with SEND.

At OATS, we incorporate the 'Five a day' principle within our pedagogical model of teaching. The "I do, we do, you do" is a teaching strategy that involves a gradual release of responsibility from the teacher to the students. The three phases are:

- I do: In this phase, the teacher models how to complete a task or solve a problem. The teacher may use think-alouds, demonstrations, or other methods to show the students how to do the task.
- We do: In this phase, the teacher and the students work together to complete the same task or solve the same problem. The teacher provides support and guidance as needed, but the students actively participate in the task.
- You do: In this phase, the students work independently to complete a similar task or solve a similar problem. The teacher provides feedback and support as needed, but the students are responsible for completing the task independently.

The goal of the "I do, we do, you do" strategy is to gradually shift the responsibility for learning from the teacher to the students. Students can build their skills and confidence over time by starting with explicit instruction and modelling, moving to guided practice, and finally to independent practice.

Area of SEND	I Do	We DO	You DO
Physical/ Sensory	• Ensure there is limited glare on screens (e.g. lower blinds). • Checking dimness/ brightness of iPad screens. • Enlarged pictures on the screen • Repeating key vocabulary with gesture/actions.	• Fonts clear enough on screens. • Relevant slides made available through Showbie. • Snipped resource/ questions clearly added. • Provide a pair of headphones so pupil(s) can listen to instructions separately.	• Children to be able to use on-screen keyboards. • Pupils to set relevant screen brightness/ coloured backlight and contrast which is comfortable for access. • To use an adaptable wireless keyboard – larger keys or braille for identified SEND with visual needs.

SEMH			
Cognition and Learning	• Use of mixed ability pairs • Visual vocabulary using actions • Mixed pairing (using code.org)	• Step-by-step provided on Showbie to reference. • Repetition of vocabulary in context. • Opportunities for partner talk/ partner work • Additional time to complete the steps. • Widgit instructions	• Pupils working significantly outside of ARE will be assigned to lower year group learning tasks through code.org. • Where possible/ appropriate use physical hardware (e.g. Beebots for programming).
Speech, Language and communication need	• Snipped steps on slides, step-by-step to follow along to solve problem/ complete a task.	• Modelled vocabulary throughout lessons. • Knowledge Organisers available through Showbie to allow access to all pupils.	• Verbal instructions provided through the code.org web activities. On-screen features included. • Provide a pair of headphones so pupil(s) can listen to instructions separately.