COMPUTING AT OCEAN ACADEMY

Date of last review:	January 2023	**Review period:**	Yearly
Owner:	Ocean Academy		

Purpose of this document

The purpose of this document is to outline the planning intent and implementation of the Computing curriculum at Ocean Academy. In response to the Ofsted Research Review, our planning and approach has been reviewed to ensure that the computing curriculum offers the best education for our pupils. To ensure that all staff understand the high expectations agreed, whilst establishing and maintaining a consistent approach to the teaching and learning of computing across our school; ensuring that all learners have exposure to high quality computing teaching and learning opportunities. The effective teaching of computing requires not just a well-structured and progressive programme but its consistent implementation across the school. Consequently, this will ensure that excellent attainment and progress is achieved by all children, regardless of ability, gender or socio-economic backgrounds.

Underpinning evidence

1. Ofsted Research review: Computing
2. The forgetting curve, Ebbinghaus
3. Cognitive Load Theory, Sweller
4. Principles of Instruction, Rosenshine
5. Metacognition and Self-regulated Learning, EEF
6. Feedback, EEF Teaching and Learning Toolkit
7. Mastery Learning, EEF Teaching and Learning Toolkit

Intent

At Ocean Academy, we provide a comprehensive computing curriculum to enable pupils to use computational thinking to understand and change the world.

The core of computing is **computer science**, in which pupils are taught how to use technology to solve problems, how digital systems work and how to put this knowledge to use through programming. Pupils are equipped to use **information technology** to create and consume a broad range of digital content. This enables them to acquire the necessary skills to interact with technology in a safe and responsible manner, as well as be able to use it to their advantage in their academic, professional and personal lives. Our computing curriculum also ensures pupils become **digitally literate**, that they are able to access the digital world and develop and express themselves through technology. These skills are necessary for students to be able to use technology effectively in their future academic, professional, and personal pursuits.

Introduction and aims

It is our aim at Ocean Academy to ensure that all students have the opportunity to become competent and confident users of technology. We recognise the importance of developing digital literacy and fluency and as such, computing is an integrated part of our academy's culture.

Our computing curriculum has been designed by specialist teachers who are trained in the use of technology. We have a range of digital devices and software available to our students, as well as a secure network and online safety measures in place.

This Computing Policy outlines the expectations for the safe, responsible and effective use of technology, both in and out of the classroom. It is designed to help our students get the most out of their technology experience, while ensuring their safety and security in the digital world.

Computer Science

At Ocean Academy, we teach the fundamentals of computer science using programmable robots in the lower key stage and through block coding in the upper key stage. Block coding provides a visual and interactive way for students to explore coding concepts through a drag and drop interface and it provides an accessible and purposeful introduction to various programming concepts, such as sequencing, variables and loops to build a foundation of programming knowledge to enable them to become skilful programmers in Key Stage 3. We teach coding as part of our computing lessons and pupils apply their programming skills to other areas of the curriculum. For example, students use block coding to create a story or game with a historical context. This kind of cross-curricular teaching allows pupils to apply computational thinking whilst increasing students' engagement and understanding of a range of topics.

Our curriculum is rich in carefully sequenced computer science knowledge so that pupils can acquire new understanding and make secure links by building upon secure foundations of knowledge. Pupils become secure in this domain-specific knowledge, identified and sequenced in the curriculum, so they can apply computational thinking to problem solving opportunities. For example, in Year 6, because pupils have secured a strong understanding of computer science across Key Stage 2, they are now able to create their own programs.

Information Technology

Information Technology (IT) at Ocean Academy involves teaching students the practical application of computing and its associated technologies, as well as the more broader applications and implications of these technologies in everyday life and the future workplace.

The teaching of IT in Ocean Academy is planned explicitly and progressively so that pupils learn to create digital artefacts, underpinned by essential knowledge which builds upon prior learning. For example, in Year 3, pupils are taught to create a digital presentation. This understanding is built upon in subsequent years, where pupils are taught to use presentation software in more depth, with greater purpose and conduct meaningful research, discerning between the reliability of the sources of information.

The curriculum is designed to provide students with the knowledge and skills to effectively use computers and other technologies for a range of purposes. At a basic level, students are taught about the operation of computers, how to use the software, and how to produce and present work. Students learn how to identify, analyse, and solve problems using computing technologies, as well as how to use these technologies for communication, collaboration, creativity and research.

Our curriculum is designed so that pupils have repeated encounters with software and contexts so that, over time, they build a deep and broad understanding of that software. Repeated exposure, teaching and application of digital presentation software across Key Stage 2, ensures that all pupils become experts in this field, preparing them well for Key Stage 3 and beyond.

By teaching IT in a progressive and explicit manner, students build on their computing skills as they progress through the school. By the end of Year 6, pupils will gain the confidence and ability to use technology to become independent learners and problem solvers.

Digital Literacy

Digital literacy is an important component of our computing curriculum. Digital literacy is the ability to use digital technology, communication tools and/or networks to locate, evaluate, use, create and share information. At Ocean Academy, this includes teaching pupils how to use the internet in a safe, purposeful and ethical manner.

Pupils are taught what kind of information is available online, how to access it, how to evaluate it and how to use it. They are taught how to check sources to ensure the information is reliable and up to date. This links directly to online safety, which is taught in computing and PSHE lessons, which is sequenced to ensure that subject content is age-appropriate. Through these lessons, pupils are equipped with the skills and knowledge to navigate the current and future digital landscape safely, effectively and responsibly.

Curriculum & Sequencing

At Ocean Academy, we ensure that our computing curriculum is mapped out in a progressive and intentional manner. Computing is valued highly within our curriculum. It is taught discreetly every week and applied often through cross-curricular learning, where appropriate. The National Curriculum is covered and the academy's planned curriculum ensures that pupils experience a breadth of knowledge and application opportunities to deepen their understanding within the three pillars of computing: computer science, information technology and digital literacy. The planning progression ensures that the essential declarative (knowing that) and procedural (knowing how) knowledge needed to be successful at Key Stage 2 is identified, sequenced and connected throughout the curriculum.

The knowledge and skills that pupils learn in Year 3, developmental from the Key Stage 1 curriculum, are revisited and built upon in subsequent years. This helps to equip our pupils with a deep understanding of the computing curriculum and ensures that they have the skills and knowledge to progress to the next level.

Progression of computing throughout Key Stage 2 is mapped out within the document below:

Computing Assessment 2022-23.xlsx

Where it is beneficial to pupils' learning, our computing curriculum is delivered in a cross-curricular manner. The subject leader and teaching staff work together to integrate the computing curriculum into other curriculum areas. This helps pupils to gain a holistic understanding of the computing curriculum, as they are able to apply the knowledge they are learning in computing to other areas of the curriculum. For example, in a Year 4 history topic, pupils have the opportunity to apply their understanding of information technology by creating a digital presentation, in line with the intended learning of KS1, Year 3 and 4.

Our computing curriculum is regularly reviewed and updated in order to ensure that our pupils are receiving the most up-to-date information and that they are being prepared for the ever-changing computing landscape.

Resources

Our school IT resources are an essential tool in providing our students with a fantastic learning experience and help us meet our curriculum aims. Resources such as BBC Micro:Bits, iPads, Chromebooks, Beebots and 3D printers allow our students to explore new and creative ways of learning, and develop their digital knowledge and skills. The use of these resources gives our students the opportunity to engage in a range of activities, from coding and robotics to 3D printing and engineering projects.

Pupils access the internet for research and to create digital portfolios. The academy's IT staff provide students with a safe and secure online environment, enabling them to access educational content and collaborate with peers. By providing students with the opportunity to use these resources, we can ensure that our students develop the skills and knowledge necessary to succeed in today's digital world.

Teacher Subject Knowledge & Professional Development

At Ocean Academy, the computing subject leader ensures that all teachers have a secure understanding of the aims, purpose and rationale of the computing curriculum. The subject leader attends training courses and good practice networks to develop and maintain their own subject knowledge, as well as providing resources, guidance and support for teachers. The computing subject leader is also responsible for monitoring the quality of teaching and learning in computing, ensuring that all teachers have the necessary skills and knowledge to deliver computing lessons effectively.

The computing subject leader works closely with the academy's senior leadership team, providing advice and guidance on the development of the computing curriculum, as well as monitoring and evaluating the teaching and learning of computing across the school. Clear, detailed systems and procedures have been designed and implemented by the subject leader to support teachers to teach computing successfully. The subject leader will also ensure that the school's computing curriculum and resources are up to date and in line with current best practice.

Assessment

'Well-designed assessment enables teachers to gather evidence to plan subsequent teaching that helps pupils to know and do more.' Ofsted, 2022

Assessment in computing is used to provide an accurate picture of pupils' attainment and progress. It is regular and often. Teachers' subject knowledge of each aspect of computing is secure and planning and resources support this to enable teachers to make effective assessments and provide specific feedback to move learning on, within and across lessons, blocks of learning and year groups. Pupils are assessed by teachers and this information is shared with the subject leader and the senior leadership team to identify areas where pupils need greater support and to identify areas where the curriculum and teaching methods may need to be adapted.

Teachers use an assessment grid to assess each individual pupil's understanding of the taught strand of the National Curriculum for computing. The assessment data enables teachers to adjust their teaching strategies and the subject leader to review the effectiveness of the computing curriculum. This helps to ensure that the needs of each individual pupil are catered for and that the computing curriculum is delivering the best possible outcomes for all pupils. This assessment system is progressive and builds year on year to enable teachers to plan from their pupils' current level of development

SEND and inclusion

Computing planning ensures that pupils with SEND or physical impairment can achieve just as well as their peers. The computing lead and teachers work closely with the SENCO to understand the specific needs, individual goals and incorporate these into the planning. All lessons are adapted to ensure that all children can access the learning and work with their peers.

Monitoring and Evaluation of Teaching and Learning

We regularly monitor teaching and learning across the school to make sure that all of our pupils make the best possible progress from their starting points.

Aims of monitoring and evaluation:

- To make secure judgements of teaching and learning across the school
- To monitor and evaluate the progress of students
- To evaluate the performance of individual teachers against the Teacher Standards and check that high standards of professional performance are established and maintained
- To identify training needs across the teaching and support staff and drive the CPD programme

SLT and subject leaders will monitor and evaluate the impact of teaching on student's learning through:

- Learning walks
- Work scrutiny
- Review of termly assessment data
- Gathering input from pupil voice and staff voice

Review

This policy is subject to yearly reviews by the subject leader and SLT.
Upon review, amendments will be made in line with the Academy Improvement Plan and shared with all staff.