Y8 KLAB Curriculum

KING'S LEADERSHIP
ACADEMY BOLTON

Y8 Computing Curriculum

Contents

1. LC1 – The Binary Number system 2

2. LC2 – Python Programming 2 3

Intent, Implementation and Impact

Students are able to solve complex real life problems through the use of technology. For example, harnessing technology to lower power pollution, next generation of Robotics, printable organs, smart clothing, AI, factory at your doorstep and many more. New invention and producing real life solutions is what the world needs, especially through the passing of a pandemic. The intent is that students on this course will help shape many of the problems in to scalable solutions.

The topics chosen will allow students to continue their learning from previous year and further develop their understanding and in to the world of technology.

Beginning with a unit on Binary, students will understand how computers communicate and execute complex instructions through the use of base 2, base 10 and base 16 number system. This will lead on to writing code to see how computers compile, run and display outcomes on digital devices. With this knowledge, students will learn how programs are used to develop advertising/marketing tools that drive businesses forward in society. And finally, students will become aware of how online businesses are run, managed and follow UK legislative law.

The final project in LC5 is designed to allow students to call upon all the knowledge from LC1-4 and produce their own product that meets a real-world need. Students will likely choose the project that best meets their intended future aspiration.

COMPUTING LC1

SUBJECT	Computer Science	YEAR	8	LEARNING CYCLE	1
Module	**The Binary Number System**				
Outline and Rationale	Why is this topic being taught? When studying Computer Science learning binary is important. The binary number system is an alternative to the decimal (10-base) number system that we use every day. Binary numbers are important because using them instead of the decimal system simplifies the design of computers and related technologies. Binary is fundamental to programming, but this has a lot more to do with logic than just with data storage. The differences between data and information are explored. Use of structuring tools are investigated and how data can be made meaningful is looked at. Heavy cross-curricular links with mathematics and physics skills in this module. Informs further exploration of associated programming development and data gathering through iMedia disciplines. Why is this topic being taught now? This module is being taught first because it bridges the gap between hardware and software systems covered in Y7. By investigating how computer architecture actually handles data, students will appreciate more how a computer handles images/audio/data etc. and sets the scene for future work in these areas.				

Learning Cycle Overview	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
	Introduction to Data Representation	Adding Binary Numbers	ASCII Character Codes and Code Breaking	Bitmaps and Cryptic Pictures	Representing Sound With Binary	Revision Assessment	Gap week (review of topics Week 1-5)

COMPUTING LC1

SUBJECT	Computing	YEAR	8	LEARNING CYCLE	2
Module(s)	Python Programming 2				
Outline and Rationale	The general ability to use computers, including using digital technology effectively and for a purpose when creating content is main core of what digital literacy is. Being digitally literate helps children to use technology safely and responsibly, and to know how to report inappropriate online behaviour and content. In this unit student will develop their programming skills on to basic level which a continuation from what they had learnt in year 7 (foundation level). The sequence of learning will eventually help students to grasp key knowledge to solve and write programmable code independently. To begin with, students will recall their knowledge from prior knowledge and then pursue to write programs that include selection, iteration and sequence Why is this topic being taught now? Beginning with skills development, students will attempt to solve a real-world problem. Project lifecycle model is investigated in relation to this technical module and evaluative skills are further refined in this context. Data is introduced through variables, If statements and loops. . How does it build on prior learning? • LC1 – The Binary Number system: To understand how computers communicate and store value provides key fundamental understanding to how computers can be used to drive high powered machinery as well automated instructions. The use of AI and IoT is now becoming ever more common in industry.				

Learning Cycle Overview	**Week 1**	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**
	Remembering inputs, outputs, variables, data types	Remembering IF statements	While loops	For loops	Fitting the bits together	Revision Assessment	Gap week (review of topics Week 1-5)