

Disciplinary literacy in Computer Science

Disciplinary literacy in computer science has many strands. This is a five-year journey in which students are provided with the opportunity to become fluent readers and writers of code, our main language is Python. This begins with a well-structured, spiralized curriculum that revisits the absolute embryonic schema from which students learn, centring around our documented key words. E.g.



Key word	My understanding at the start of the topic: 1 – Never seen the word before 2 – I have heard the word but do not know what it means 3 - I recognise the word as having something to do with... 4 – I know the word well	Definition	Understanding at the end of the unit. 1 - 4
Variable	4	You can spot a variable when you see a SINGLE = . It is somewhere we store stuff like lives, score, etc... a memory location .	4
Data types	2	We can make the data entered be a whole number or string of text or decimal or a true/false i.e. a data type .	4
int	4	Short for 'integer'; a whole number.	4
str	2	A string of text like 'abc123'.	4

Every unit of work has well-chosen keywords which are rated by students, defined and then re-rated for their understanding at the end of every unit, just before a progress check or end of unit test. Definitions are added at a timely teaching point.

Throughout most units, where applicable, students are exposed to word searches, crosswords and other tasks like deciphering anagrams, identifying these keywords.

Starter

Across

- To display information on the screen
- An issue or challenge that needs to be solved
- Combining two or more strings or values
- The set of rules governing the structure and format of a program
- A collection of items or elements

Down

- A randomly generated number or value
- A sequence of instructions executed by a computer
- An unintended mistake or issue in a program
- A named storage location in a program
- A high-level programming language

Python Starter

G	T	U	E	H	R	N	N	N	V	G	R	N	R
T	C	N	L	X	A	T	N	Y	S	O	N	E	E
N	R	O	B	V	N	N	O	H	T	Y	P	U	A
E	M	R	A	T	D	E	P	U	I	T	T	L	B
T	E	B	I	L	O	T	Y	T	R	P	U	A	S
L	R	E	R	T	M	N	T	O	T	O	P	V	G
P	R	S	A	U	S	I	P	I	P	P	T	T	G
T	O	S	V	T	O	R	R	N	R	Y	U	M	T
P	R	N	R	T	C	P	O	P	O	T	O	T	A
I	A	I	O	E	I	O	B	U	G	T	E	P	E
T	N	P	I	I	O	T	L	T	R	R	V	R	R
G	N	O	I	T	A	N	E	T	A	C	N	O	C
R	L	T	S	I	L	Y	M	S	M	O	R	G	E
V	T	O	N	I	X	T	O	A	A	I	N	H	N

PYTHON
STRING
OUTPUT
RANDOM
PROBLEM
PROBLEM
ERROR
CONCATENATION
PRINT
LIST
VALUE
SYNTAX
VARIABLE
PROGRAM
INPUT



The department has embraced a national strategy called PRIM. Students are expected to **P**redict what a piece of code might do, **R**un the code, **I**nvestigate the code and **M**odify the code. This is a regular feature of coding units and runs from Y7 to 11.

1 I Do 
I model the skill

2 WE Do 
We practise together

Getting started with Python

PRIM 1

- We are going to extend our learning using a coding approach called **PRIM**
- **Predict** what will happen (if we run this code)
 - It will
- **Run it**- to see if you were correct
- **Investigate** - trace back through the code and check you get it
- **Modify it**:
 - So that it asks the user for their favourite sport. Print a message that uses their input

```
name = input("What is your name?")  
colour = input("What is your favourite colour?")  
  
print("Greetings", name)  
print("I hear that you like the colour", colour)
```

[Online Python](#)



A reading lesson! Look for clues in the next challenges.

We know you can all read! When you are reading a book, you have been trained to look for clues. Capital letters mean the beginning of a sentence or a proper noun, full stops, the end of a sentence; question marks, exclamation marks all give us clues. Speech marks usually means there is somebody speaking.

There are lots of clues like that in python as well. So, we thought we would stop you and give you a lesson in reading code...point out some clues to look for, so you can read python more fluently in the future.



= defines a variable...where data is stored

input is used to put data into a variable

```
netflix=input("Do you have a netflix? Please answer yes or no.")
```

```
if netflix == "yes":  
    print("That's nice.")
```

```
elif netflix == "no":  
    print("It is a quite expensive")
```

```
else:  
    print("Try again, that wasn't an option")
```

If you see **if, elif else** expect options and indents ...

Indents mean, do this, if that condition is met.

print...outputs or prints on the screen

■ read this as "**then**"
if netflix== " yes" **then**...do what is in the indent.

Words in "**speech marks**" are printed to the screen..."said", like in English



Furthermore, students are given "reading lessons" in code where they are reminded that we are always looking for clues, just as we are when we read any language.

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input is used to put data into a variable

, a comma can suggest that the value in the variable is joined with the text.

```
name = input("What is your name?")
colour = input("What is your favourite colour?")
print("Greetings", name)
print("I hear that you like the colour", colour)
```

print...outputs or prints on the screen

Words in "Greetings" are printed to the screen..."said", like in English



Students are given many opportunities to put their developing skills into practise throughout our schemes of work as they move up the school. For example, in Y7 they code a chat bot, in Y8, an E -Safety quiz and in Y9 they are faced with many independent challenges which gives them the opportunity to practice their confidence, skills and coding fluency.

	Project 1	Project 2	Project 3	Project 4	Project 5
Y7	E-safety Scratch quiz.	Physical coding using BBC microbits.	Coding with Python.		
Y8	E-Safety Python Quiz.	Computer Control.	HTML Website.		
Y9	E-safety film.	Advanced Computer control.	Python Coding.	My Phone My PC.	BIG event HTML interface.



In addition, we're applicable, some units have a topical computer science related reading exercise with comprehension questions.

In both CS1 and CS2 there is a computer science library called RAM= Reading Assists Memory. This range of reading material is well-chosen, building up our subject specific library.



To help students **summarise** and to consolidate their learning in preparation for an end of unit test they create a mind map.

Homework-End of unit test revision

* look at my calculator code
or get familiar with
def (parameters)
call up
a look at how
I edited it
to make
add
subtract
divided etc

parameters are the inputs in the subp.
e.g.
def add (num1, num2):
 ↑ ↑
 inputs

reusable blocks of code
• saves time as they can be
"called up" to be used
whenever is needed.

must be defined first,
def is used to do
this.

def add e.g.
is called up using
name ↓ add

• Subprograms
• Functions
• Subroutines

STOP
cyberbullying

Activate Windows

