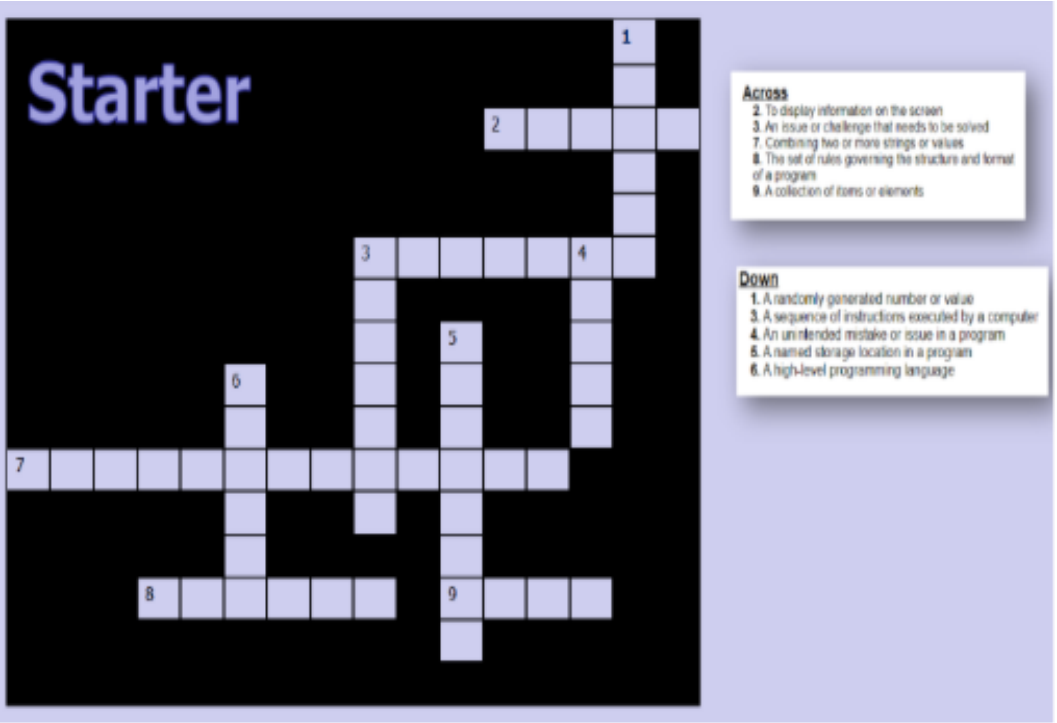
Disciplinary literacy in Computer Science

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	3	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.



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

Getting started with Python

2 WE Do
We practise together

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

In Python

Online Python

```
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)
```

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.

input is used to put data into a variable

= defines a variable...where data is stored

```
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")
```

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

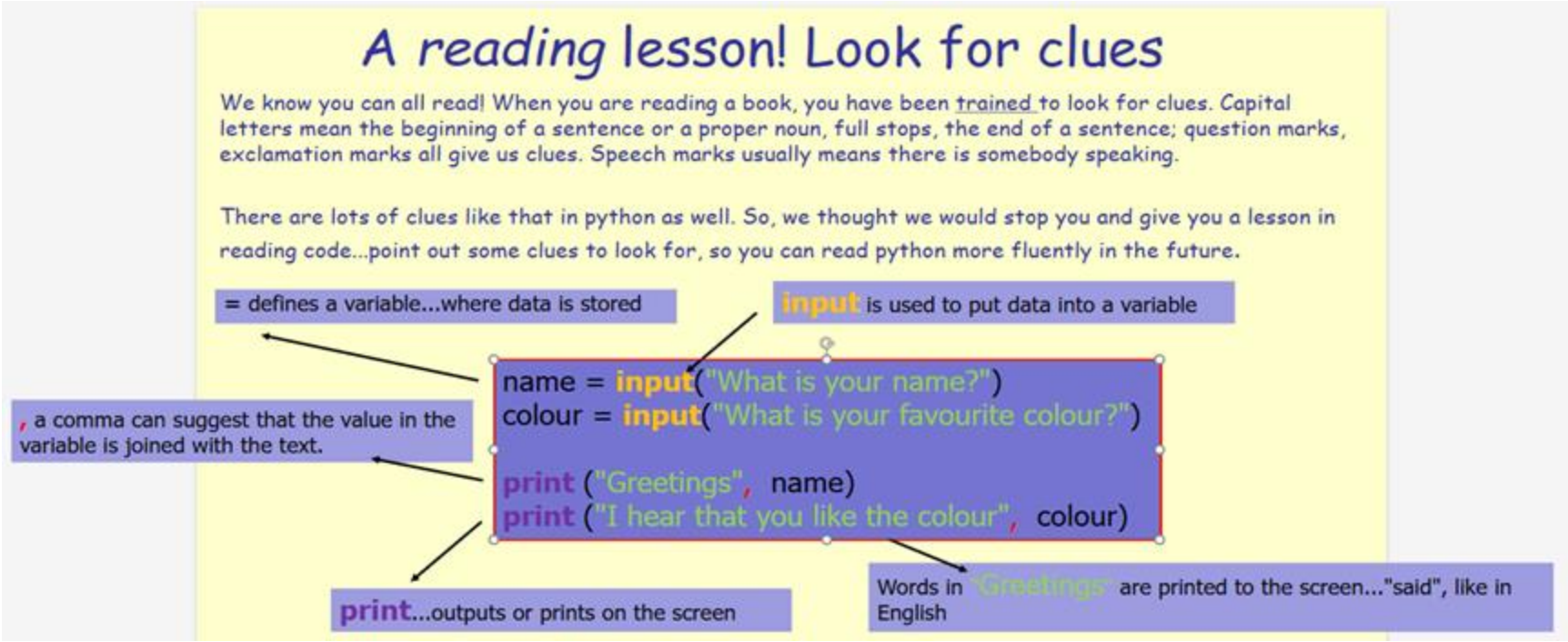
If you see **if, elif else** expect options and indents ...

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

print...outputs or prints on the screen

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.



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. This is modelled by their teacher.