



Yr hanner tymor hwn: Sgiliau, Gwybodaeth a Dealltwriaeth i'w ddatblygu;

During this half term: Skills, Information and Understanding to be developed;

SGILIAU / SKILLS –

GWYBODAETH / INFORMATION – *The nature of*

DEALLTWRIAETH / UNDERSTANDING – *learners will understand the different elements of a computer system and their purpose. Learners need to understand the nature of*

Geiriau / Termau Allweddol;

Key Terms / Words;

Practical programming – 2 lessons/week

Introduction exercises to Python

Python – Python shell, Hello world, Syntax errors, \n , Using variables, string, integer, eg name = "Bob"

Print ("Hello" + name)

Print command, user input, input() command, Python as calculator eg ==, !=

IF and ELSE – Conditional Statements (ELIF), loop (while number) < etc , data types, debug

Magic 8 Ball, random function (random.randint()), random integer, import random, eg if choice == 1:

Iteration (Magic 8 Ball), import random, import time (Dragon Realm Game)

Python libraries eg import math, pi=math.pi etc

Independent Python (Codecademy 'Programming with Python' 9 week exercise), Basics of Python 3 syntax. Variables, comments to document code.

Code Organization and Reuse, Sequences and Iteration, Text Manipulation, Key-Value Pairs, Object-Oriented Programming

Theory lessons – 1 lesson/week on average

Computer systems – computer, input and output, CPU, controller. ALU, internal memory, registers, buses, fetch-execute-decode. Cache, clock speed, single-core, dual-core, RISC, CISC, storage, Computer systems, PC component parts and hardware eg hard drive, processor, RAM, motherboard, power supply

Data types – char, boolean, int, double, string, data representation – hexadecimal, denary, binary eg 01100111 = 103 in binary,

Data Representation – sound. Sound waves, amplitude, frequency, digital audio, bits, bit rate, bit depth, sample rate

Deilliannau Dysgu / Learning Outcomes

Asesiad / Assessment

Meini Prawf Llwyddoant / Success Criteria

Gwaith Cartref / Homework

Deilliannau Dysgu Wythnos 2 / Week 2 Learning Outcomes

Ice-breaker – 2 truths and 1 lie (post-its) activity for students and teacher Course explanation (Powerpoint) – Specification requirements explained briefly with FAQs and distribution of course Revision notes. TEEP FAQs and distribution of main sheet for files.

Schoolology log-in codes and re-familiarisation lesson focusing on Computer Science content on school VLE. Demonstration how to send messages to teacher outside lesson time and expectations. Students undertake 'tour' online and FAQs. Students to respond electronically to the task in Schoolology VLE 'Reasons for choosing Computer Science'. Opportunities to respond to others with observations and comments.

Ice-breaker – If $X > Y$ 1, else If $x < 1 - 1$, else 0
Computational thinking exercise. Learners to decompose set problem (4,4) (0,-1) and combine. Eg Compare (4,4).
Creation of new student account online with Codecademy and navigate to 'Programming with Python' a new course.

Informal review of progress by teacher Q&A

-Basic understanding of 2 year course structure
-Successful access to VLE and navigation

A4 file for course notes
Codecademy weekly homework -

-Learners to break down complex problem into smaller parts so that they can more easily manage the problem and make it easier to understand

Deilliannau Dysgu Wythnos 3 / Week 3 Learning Outcomes

Theory = Introduction "Computer System" ppt. Post-it notes for input and output task. Information on input, processing, output (ppt Lesson 'Computer Systems')

- Learners to know and explain how a computer is made up of input, process and output. Some able to evaluate a range of output and input devices in school organisation

Deilliannau Dysgu Wythnos 3 / Week 3 Learning Outcomes (continuation)	Asesiad / Assessment	Meini Prawf Llwyddoant / Success Criteria	Gwaith Cartref / Homework
<p>Practical = My First Python Program worksheet – Python Shell introduction. Learners to work independently with assistance when needed on: Print(“hello World”), Syntax errors (colons, brackets, speech marks, apostrophes and spelling) – self assessment as progressions made., Using Variables worksheet exercise Using variables – name = “Bob” Print (“Hello “+name)</p> <p>Practical = getting user input, input() command. Learners to write a program that asks the user for their name and then responds by asking for their favourite food. Using Python as a calculator tool – eg == and != commands</p>	<p>Teacher review of progress and student self-evaluation (worksheets)</p>	<ul style="list-style-type: none"> - Learners can write commands in Python - Can identify syntax errors - Can develop and try own instructions when writing a program - Independently write and debug a short program 	<p>Codeacademy weekly homework - progress update and check</p>
<p>Deilliannau Dysgu Wythnos 4 / Week 4 Learning Outcomes</p> <p>Practical = Getting user input Challenges in Python IF and ELSE Conditional Statements – Calculator program creation 'Now try this' exercises – how long on computer a day, extend program using ELSE and ELSE IF. Loop exercise – “I am learning to code” x 50</p>	<p>Teacher review of progress and student self-evaluation (worksheets)</p>	<ul style="list-style-type: none"> - Can use conditional statements, use loops, correctly use variables and different data types, independently write and debug program 	<p>Learners to create diagram to explain 2 different computer systems eg desktop computer, mobile phone or cash machine. Learners to identify on diagram the input, output and storage device.</p> <p>Codeacademy weekly homework - progress update and check</p>
<p>Deilliannau Dysgu Wythnos 5 / Week 5 Learning Outcomes</p> <p>Theory x 3 = Continuation Lesson 1 'A Computer System' ppt Task 2 hardware review of prior learning and discussion.</p> <p>Identify internal and external hardware on worksheet. Class to use stand-alone computer to open and disassemble component parts.</p> <p>A3 worksheet for students to note acquired learning. Students in teams to problem solve identifying hardware and prioritising for ease or removal. Students to document stages using smartphone / cameras. For precise information students also to work as a group to research specific component parts. Teacher oversees and provides guidance to problem solving activity and to ensure progression made.</p>	<p>Team problem solving exercise and discussion feedback on activity</p>	<ul style="list-style-type: none"> - Learners to know and explain how a computer is made up of input, process and output. Some able to evaluate a range of output and input devices in school organisation 	<p>Students to undertake necessary research (e.g. YouTube videos) to assist with taking a pc apart.</p>

Deilliannau Dysgu Wythnos 6 / Week 6 Learning Outcomes	Asesiad / Assessment	Meini Prawf Llwyddoant / Success Criteria	Gwaith Cartref / Homework
<p>Theory x 3 – Continuation wk 6:</p> <p>Complete A3 components worksheet. Class to use stand-alone computer to reassemble to working condition so as to assist in this exercise</p> <p>A3 worksheet for students to note acquired learning. Students in teams to problem solve identifying hardware and prioritising for ease or removal. Students to reassemble using previous evidence from smartphone / cameras. Students to test PC with power. Teacher oversees and provides guidance to problem solving activity and to ensure progression made under safe conditions.</p>		<ul style="list-style-type: none"> - Reassemble PC hardware - Identify component parts on motherboard and in PC - Solve issues as arise 	<p>Students to read WJEC theory notes 'GCSE Computer Science' booklet, section1. Computer Systems, pages 4-17 to prepare for Assessment Task test</p>
<p>Deilliannau Dysgu Wythnos 7 / Week 7 Learning Outcomes</p> <p>Students to undertake first exam paper practice on relevant questions relating to Parts of a Computer.</p> <p>Practical = My Magic 8 Ball – Aim is to ask program for advice. Use of built in Python 'Random' module functions. Follow instructions and replace 'hints' with code</p>	<p>Formal Assessment 1 (test)</p> <p>Student self-assessment with progression</p>	<p>Use of Python rand functions and independent code exercises</p>	<p>Codeacademy weekly homework - progress update and check</p>
<p>Deilliannau Dysgu Wythnos 8 / Week 8 Learning Outcomes</p> <p>Theory = DIRT explanation – Annotation explanation.</p> <p>ppt Data types introduction</p> <p>Binary – Flippy Do icebreaker and introduction exercises to binary. Brief introduction to denary and hexadecimal/ 'back to Binary' and Secret message task. Students to create own binary message from supplied table (not Internet)</p>	<p>DIRT time for reflect & Revise on previous work (test)</p>	<ul style="list-style-type: none"> -Understand how to convert binary and hexadecimal to denary -Be able to convert data using binary, denary and hexadecimal -Use conditional statements, correctly use variables and different data types, independently debug 	<p>Codeacademy weekly homework - progress update and check</p>