



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Yr Athrofa
Centre for Education
Addysg i Gymru | Education for Wales

**Trawsnewid Addysg,
Trawsnewid Bywydau**

**Transforming Education,
Transforming Lives**

*Trawsnewid Addysg, Trawsnewid Bywydau
Transforming Education, Transforming Lives*

www.uwtsd.ac.uk

ECAD6008 BA

**Gwyddoniaeth a Thechnoleg
Darlith 2**

ECAD6008 BA

**Science and Technology
Lecture 2**

Helen Williams

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Following our last update, I'm delighted to share with you a short recorded presentation giving details of the Association for Science Education's free membership for Trainee Teachers.

From 1st September, trainee teachers will be able to access membership of ASE for **FREE** for their first two years of training (i.e - PGs+ECT1; UGs L6+ECT1; or equivalent).

This 5 minute presentation, which can be viewed or downloaded by clicking the link below outlines the main benefits of membership and contains weblinks and QR codes to the ASE events and membership pages.

Please do share with your students - we hope we can support you in supporting them throughout their training and beyond.

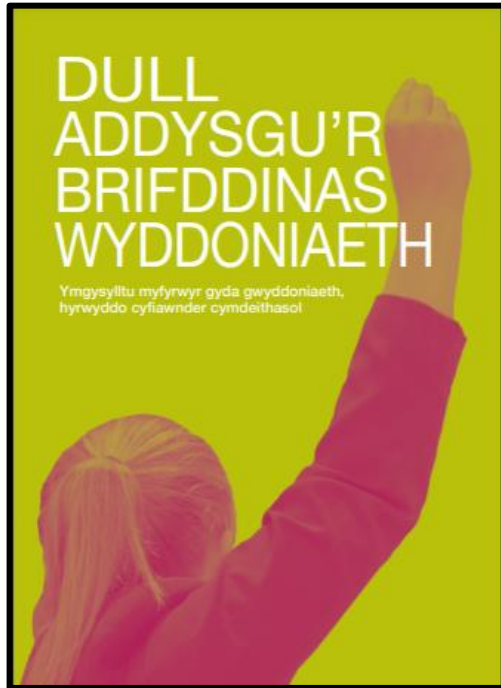
With best wishes from the Membership Team at ASE

ASE membership for Trainee Teachers - Video Download



Cyfalfaf Gwyddonol : Science Capital

“The Science Capital Teaching Approach is designed to support teachers in helping students find more meaning and relevance in science and, as a result, engage more with the subject.”



[the-science-capital-teaching-approach-pack-for-teachers-welsh.pdf \(ucl.ac.uk\)](https://discovery.ucl.ac.uk/id/eprint/10080166/1/the-science-capital-teaching-approach-pack-for-teachers-welsh.pdf)



<https://discovery.ucl.ac.uk/id/eprint/10080166/1/the-science-capital-teaching-approach-pack-for-teachers.pdf>



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Cyfalaf Gwyddonol- Beth ydyw?

Mae rhai dysgwyr yn cael trafferth gweld gwyddoniaeth fel rhywbeth sy'n berthnasol i'w bywydau ac fel rhywbeth sy'n addas iddyn nhw. Gall hyn wneud eu hymgysylltiad gyda gwyddoniaeth yn anodd.

Golyga cynnydd gwyddonol y bydd angen cynyddol i bobl ddeall pynciau STEM er mwyn bod yn ddinasyddion gweithredol sydd â dweud mewn cymdeithas.

I helpu mwy o bobl—a mwy o amrywiaeth o bobl—i ymgysylltu gyda gwyddoniaeth, mae dull addysgu cyfalaf gwyddoniaeth yn adeiladu ar arferion addysgu da.

Y gwahaniaeth allweddol yw ffocws penodol ar gydnabod a gwerthfawrogi cyfalaf gwyddonol cyfredol myfyrwyr, tra hefyd yn eu helpu i adeiladu ar gyfalaf gwyddonol newydd

Science Capital – What is it?

Some students struggle to see science as being relevant to their lives and as something that is for them. This can make their engagement with science difficult.

Scientific advances mean that people will need to be increasingly STEM-literate if they are to be active citizens who can have a say in society.

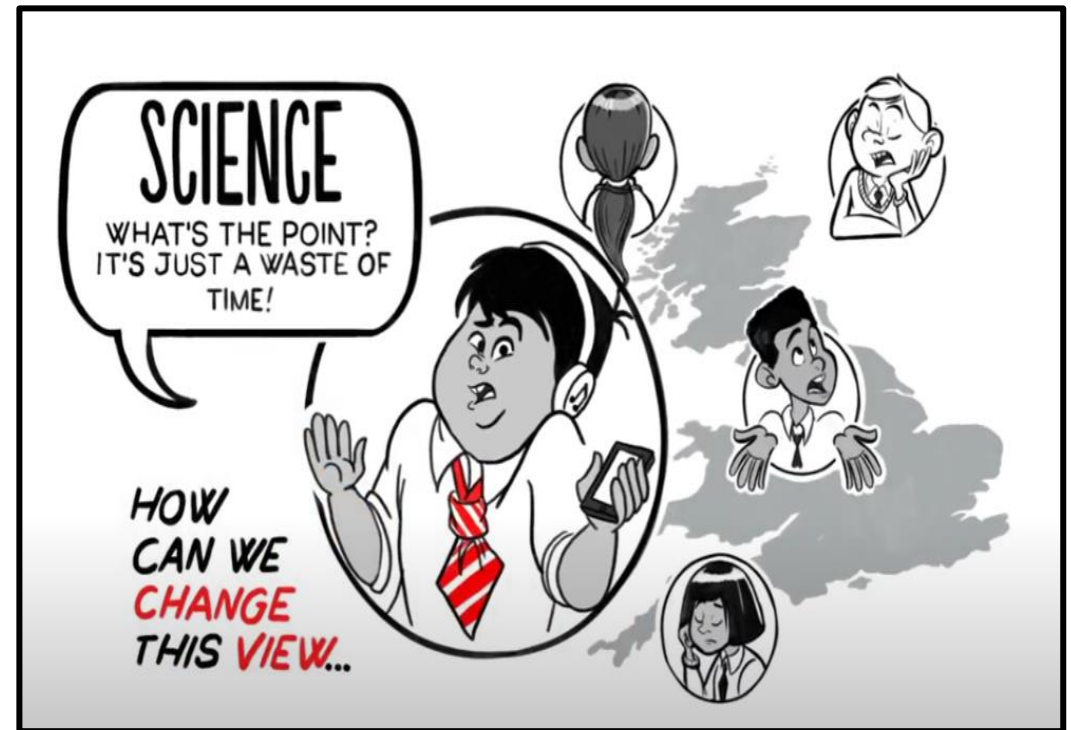
To help more—and more diverse—students engage with science, the science capital teaching approach builds on good teaching practice.

Its key distinction is an explicit focus on recognising and valuing students' existing science capital, whilst also helping them to build new science capital.

Cyfalaf Gwyddonol : Science Capital



<https://www.youtube.com/watch?v=A0t70bwPD6Y>



<https://www.youtube.com/watch?v=hWWPUK3xZ0>



A Scientist Just Like Me



<https://pstt.org.uk/unique-resources/a-scientist-just-like-me/>



Datganiadau o'r hyn sy'n bwysig

Statements of what matters



- Mae bod yn chwilfrydig a chwilio am atebion yn hanfodol i ddeall a rhagfynegi ffenomenau.
- Mae meddylfryd dylunio a pheirianeg yn cynnig ffyrdd technegol a chreadigol i ddiwallu anghenion a dymuniadau cymdeithas.
- Mae'r byd o'n cwmpas yn llawn pethau byw sy'n dibynnu ar ei gilydd i oroesi.
- Mae mater, a'r ffordd y mae'n ymddwyn, yn diffinio ein bydysawd ac yn ffurfio ein bywydau.
- Mae grymoedd ac egni yn gosod sail i ddeall ein bydysawd.
- Mae cyfrifiaduraeth yn gosod sail i'n byd digidol.

<https://hwb.gov.wales/cwricwlwm-i-gymru/gwyddoniaeth-a-thechnoleg/disgrifiadau-dysgu/>

- Being curious and searching for answers is essential to understanding and predicting phenomena.
- Design thinking and engineering offer technical and creative ways to meet society's needs and wants.
- The world around us is full of living things which depend on each other for survival.
- Matter and the way it behaves defines our universe and shapes our lives.
- Forces and energy provide a foundation for understanding our universe.
- Computation is the foundation for our digital world.

<https://hwb.gov.wales/curriculum-for-wales/science-and-technology/descriptions-of-learning/>

Cysylltiadau allweddol gyda MDaPh eraill?

Key links to other AoLE's?



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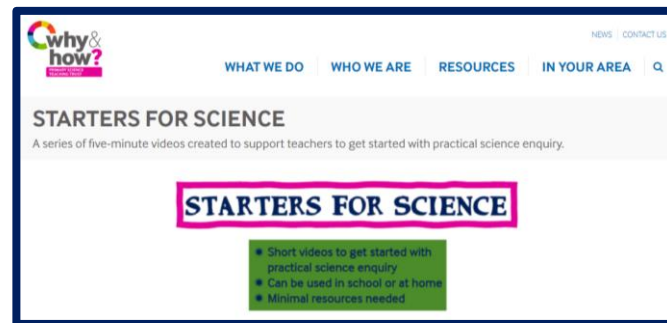
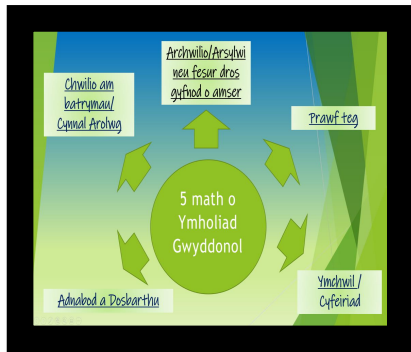
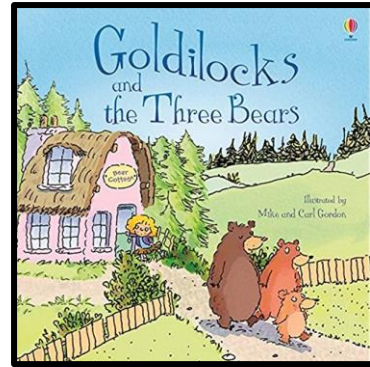
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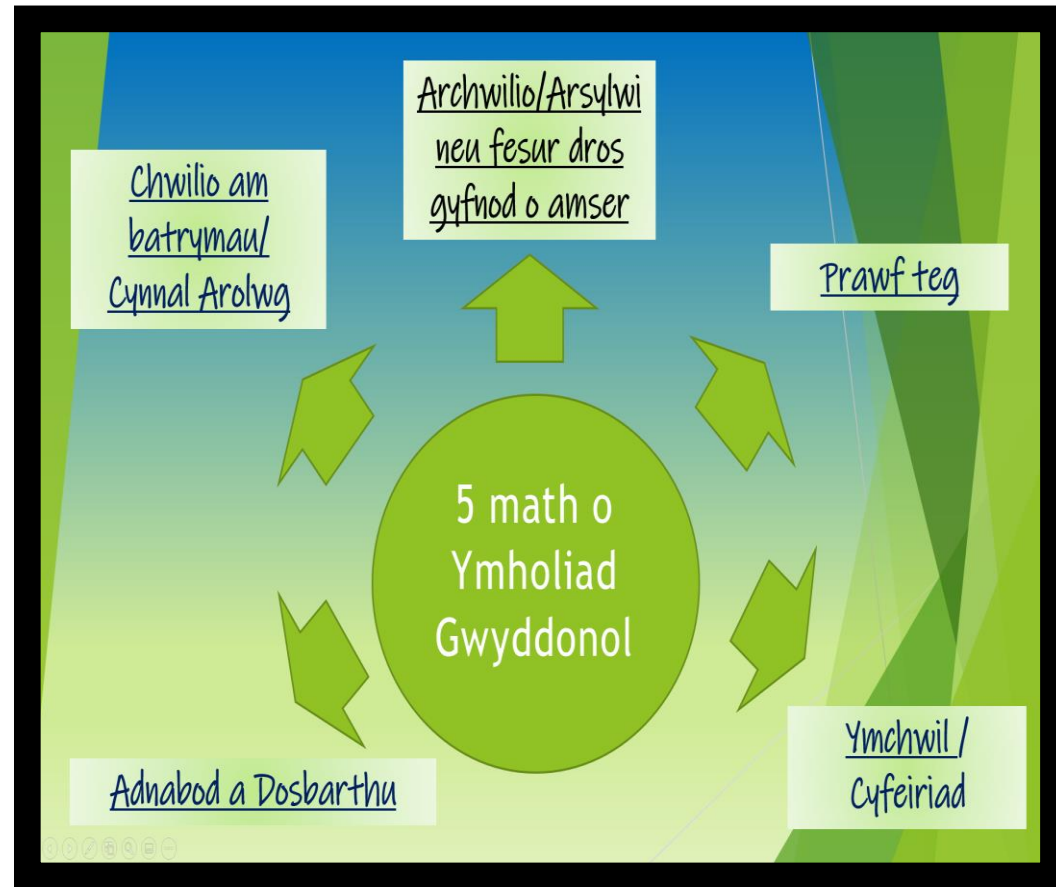
Trawsnewid Addysg, Trawsnewid Bywydau
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Beth a wnaethoch chi tra ar PAP 1 a 2 ?

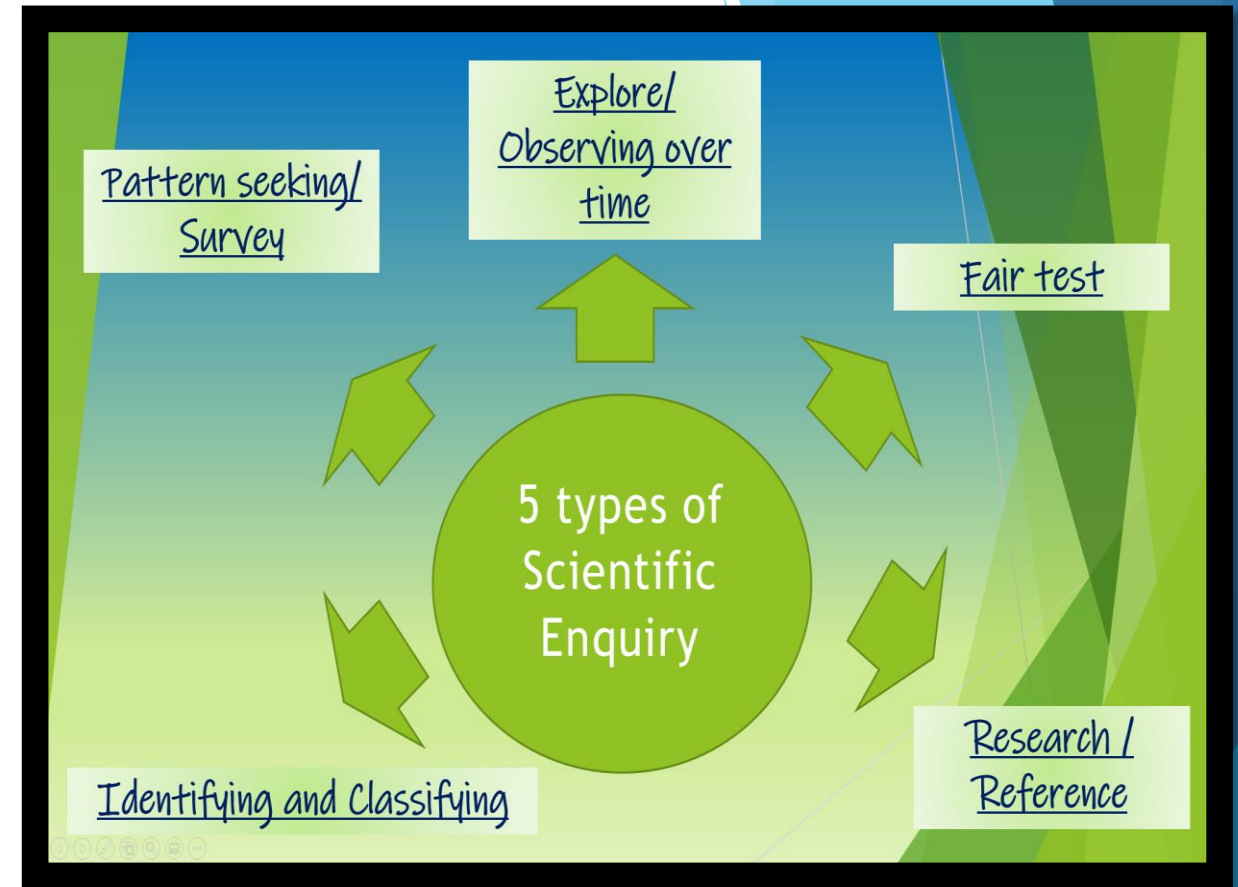
What did you do during PTE 1 & 2 ?



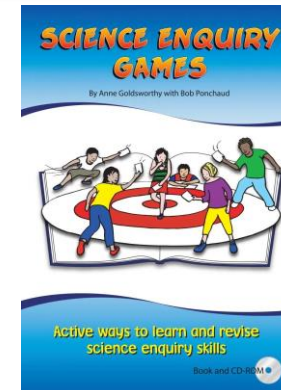
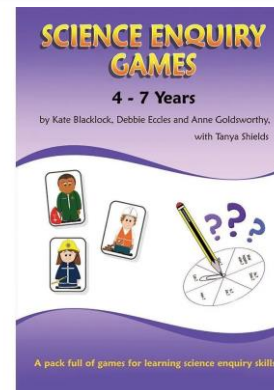
5 math o Ymholiad Gwyddonol



5 Types of Scientific Enquiry



<https://moodle.uwtsd.ac.uk/mod/folder/view.php?id=384852>



<https://moodle.uwtsd.ac.uk/mod/folder/view.php?id=464805>

Prawf Teg Newidynnau

Newid
(Newidyn annibynnol)

Mesur
(Newidyn dibynnol)

Cadw'r un fath
(newidynnau rheoli)

Fair Test Variables

Change
(Independent variable)

Measure
(Dependent variable)

Keep the same
(control variables)

Fframwaith Cymhwysedd Digidol ?

Dinasyddiaeth	Rhyngweithio a chydweithredu	Cynhyrchu	Data a meddwl cyfrifiadurol
- Hunaniaeth, delwedd ac enw da - Iechyd a llesiant - Trwyddedu a pherchenogaeth hawliau digidol - Ymddygiad ar-lein a seiberfwlio	- Cyfathrebu - Cydweithio - Storio a rhannu	- Cynllunio, cyrchu a chwilio - Creu - Gwerthuso a gwella	- Datrys problemau a modelu - Llythrennedd gwybodaeth a data

Fframwaith Cymhwysedd Digidol - Hwb
(gov.wales)

Cam Cynnydd 2 :
Rwy'n gallu creu, golygu a threfnu cydrannau aml-gyfrwng (testun, delweddau, sain, animeiddiad a fideo) mewn meddalwedd benodol fel sy'n briodol

Cam Cynnydd 2:
Rwy'n gallu casglu, cofnodi a threfnu data yn wahanol grwpiau neu fformatau, e.e. tablau, siartiau, cronfeydd data a thaenlenni.

Digital Competence Framework?

Citizenship	Interacting and collaborating	Producing	Data and computational thinking
• Identity, image and reputation • Health and well-being • Digital rights licensing and ownership • Online behaviour and cyberbullying	• Communication • Collaboration • Storing and sharing	• Planning, sourcing and searching Creating • Evaluating and improving	• Problem solving and modelling • Data and information literacy

<https://hwb.gov.wales/curriculum-for-wales/cross-curricular-skills-frameworks/digital-competence-framework>

Progression Step 2:
I can create, edit and organise multimedia components (text, images, sound, animation and video) in selected software as appropriate

Progression Step 2:
I can collect, enter, organise and analyse data into different groups or formats, *e.g. tables, charts, databases and spreadsheets.*

YHSB 3

Syniadau Mawr?

- Rydyn ni'n rhannu ein hamgylchedd gyda'r anifeiliaid a'r planhigion o'n cwmpas.
- Mae organebau gwahanol yn rhyngweithio â'i gilydd yn ogystal â phobl.
- Mae rhywogaethau a'u cynefinoedd yn newid dros amser, weithiau o ganlyniad i weithgarwch dynol.
- Mae bioamrywiaeth yn bwysig i iechyd y blaned.

SOWM 3

Big Ideas?

- We share our environment with the animals and plants around us.
- Different organisms interact with each other as well as with people.
- Species and their habitats change over time, sometimes as a result of human activity.
- Biodiversity is important for the health of the planet.

YHSB 3/ SOWM 3 : Wildfoul and Wetlands Trust Elusen Cadwraeth Gwlyptir

Canolfan Wlyptir Llanelli : Llanelli Wetlands Centre

<https://www.wwt.org.uk/>



Quiz: Climate Champions

For children aged 7-11 years

Round 1: Picture round
These animals are all affected by climate change.
Q Can you name them?



1



2



3



4



5

Round 2: Effects of climate change
Each of the pictures below shows an effect of climate change or something that might be affected by climate change.
Q Which single word could be used to describe each?



6



7



8



9



10

YHSB 4

Syniadau Mawr?

- Mae holl fater y Ddaear wedi'i wneud o ronynnau bach ac mae'n bodoli mewn un o dri chyflwr gwahanol: solid, hylif neu nwy
- Mae solidau yn dal eu siâp ac mae ganddynt gyfaint sefydlog
- Gellir arllwys hylifau, newid siâp yn dibynnu ar y cynhwysydd y maent ynddo a chael cyfaint sefydlog
- Mae nwyon yn lledaenu ac yn newid eu siâp a'u cyfaint i lenwi'r cynhwysydd y maent ynddo

SOWM 4

Big Ideas?

- All matter on Earth is made of tiny particles and exists in one of three different states: solid, liquid or gas
- Solids hold their shape and have a fixed volume
- Liquids can be poured, change shape depending on the container they are in and have a fixed volume
- Gases spread out and change their shape and volume to fill the container they are in

Adnoddau :Cam cynnydd 1,2 a 3

Resources:Progression Step 1,2 & 3

Ymchwilio, Arbrofi, Creu, Darganfod

Cam Cynnydd 1&2



<https://primarylibrary.crestawards.org/all-star-challenges-in-welsh/64363075>

Cam Cynnydd 2&3



<https://primarylibrary.crestawards.org/all-superstar-challenges-in-welsh/64363180>

Investigate, Experiment, Create, Discover

Progression steps 1&2



<https://primarylibrary.crestawards.org/all-star-challenges/61746949>

Progression Steps 2&3



<https://primarylibrary.crestawards.org/all-superstar-challenges/61747644>

YHSB 2



<https://hwb.gov.wales/api/storage/960ea21d-b304-4b8c-af31-9faf2d53de0d/Cardiau%20Her%200Ardal%20Adeiladu%20Wal%20Fawr%20Tsieina.pdf>



[Repository - Hwb \(gov.wales\)](https://hwb.gov.wales/)

SOWM 2



<https://hwb.gov.wales/repository/resource/589007d7-48bc-46b9-9ea6-99f049e36e17>



Houses and homes

<https://hwb.gov.wales/repository/resource/3e344fb7-0d42-4c80-8faa-2d2b27e6cd7d>

YHSB 3 - Camau cynnydd 1-3



Adnoddau Dysgu yn yr Awyr Agored -
Lleihau Gwastraff

<https://hwb.gov.wales/repository/resource/2b591435-5fd1-40d1-8d8c-8cf3ad370d77>



Adnoddau Dysgu yn yr Awyr Agored - Tir
yr Ysgol

<https://hwb.gov.wales/repository/resource/656686a2-386c-4b66-87e6-fec940db4241>

SOWM 3 - Progression steps 1-3

Eco-Schools



Eco-Sgolion



Eco-Schools Outdoor Learning
Resources - Waste Minimisation

[Repository - Hwb \(gov.wales\)](https://gov.wales/hwb)



Eco-Schools Outdoor Learning Resource
- School Grounds

[Repository - Hwb \(gov.wales\)](https://gov.wales/hwb)

YHSB/SOWM 4 & 5 :

Camau cynnydd/Progression steps 1-3



Cardiff
Metropolitan
University



Prifysgol
Metropolitan
Caerdydd



why&
how?
PRIMARY SCIENCE
TEACHING TRUST



BATH
SPA
UNIVERSITY

TAPS Cymru cynllunio ar gyfer Asesiad Ffocws



[Repository - Hwb \(gov.wales\)](https://gov.wales/hwb)



Cardiff
Metropolitan
University



Prifysgol
Metropolitan
Caerdydd



why&
how?
PRIMARY SCIENCE
TEACHING TRUST



BATH
SPA
UNIVERSITY

TAPS Cymru plans for Focused Assessment



[Repository - Hwb \(gov.wales\)](https://gov.wales/hwb)

YHSB 6 : Mae cyfrifiaduraeth yn gosod sail i'n byd digidol



[About Us - Technocamps - What We Do at Technocamps](#)



[Repository - Hwb \(gov.wales\)](#)



[Repository - Hwb \(gov.wales\)](#)



[Repository - Hwb \(gov.wales\)](#)

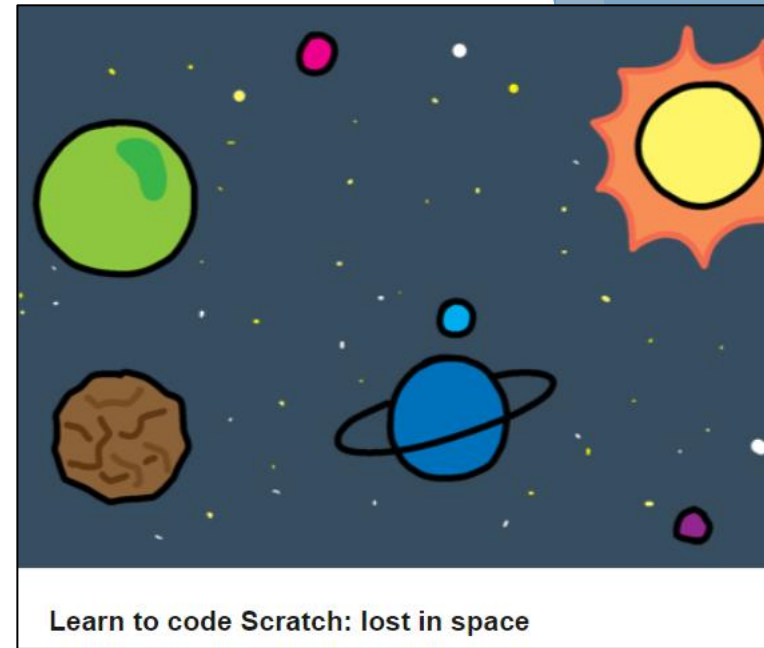
SOWM 6 :



[About Us - Technocamps -](#)
[What We Do at Technocamps](#)



[Download | Minecraft Education](#)



[Repository - Hwb \(gov.wales\)](#)

Crazy Character Algorithms

An introduction to sequences of instructions

<https://www.barefootcomputing.org/resources/crazy-character-algorithms>



“Rydym yn cynnig ystod o gynhyrchion a gwasanaethau sy'n cefnogi addysgu a dysgu pynciau STEM yng Nghymru yng nghydestun y byd go iawn.”

<https://www.gweld-gwyddoniaeth.co.uk/>



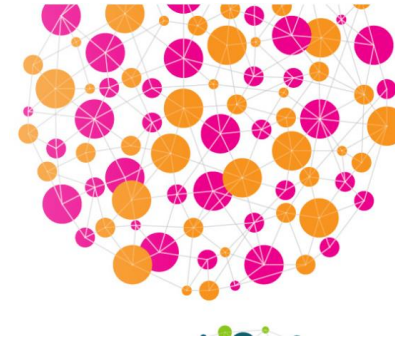
“We offer a range of products and services that support the teaching and learning of STEM subjects in Wales within a real world context.”

<https://www.see-science.co.uk/>

British Science Week 2024

March 8th – 17th

'Time'.



<https://www.britishtscienceweek.org/app/uploads/2023/09/British-Science-Week-2023-Taster-pack-Early-years.pdf>



<https://www.britishtscienceweek.org/app/uploads/2023/09/British-Science-Week-2023-Taster-pack-Primary.pdf>



Syniadau ac Adnoddau?



[Adnoddau - Hwb \(gov.wales\)](https://www.gov.wales/adnoddau)

Resources and Ideas?



[Resources - Hwb \(gov.wales\)](https://www.gov.wales/resources)

Cysylltiadau defnyddiol

Useful links

- ▶ <https://www.stem.org.uk/resources/collection/3485/teaching-primary-science>
- ▶ <https://www.ase.org.uk/resources/primary-science>
- ▶ <https://wowscience.co.uk/>
- ▶ <https://www.tes.com/teaching-resources>
- ▶ <https://explorify.wellcome.ac.uk/>