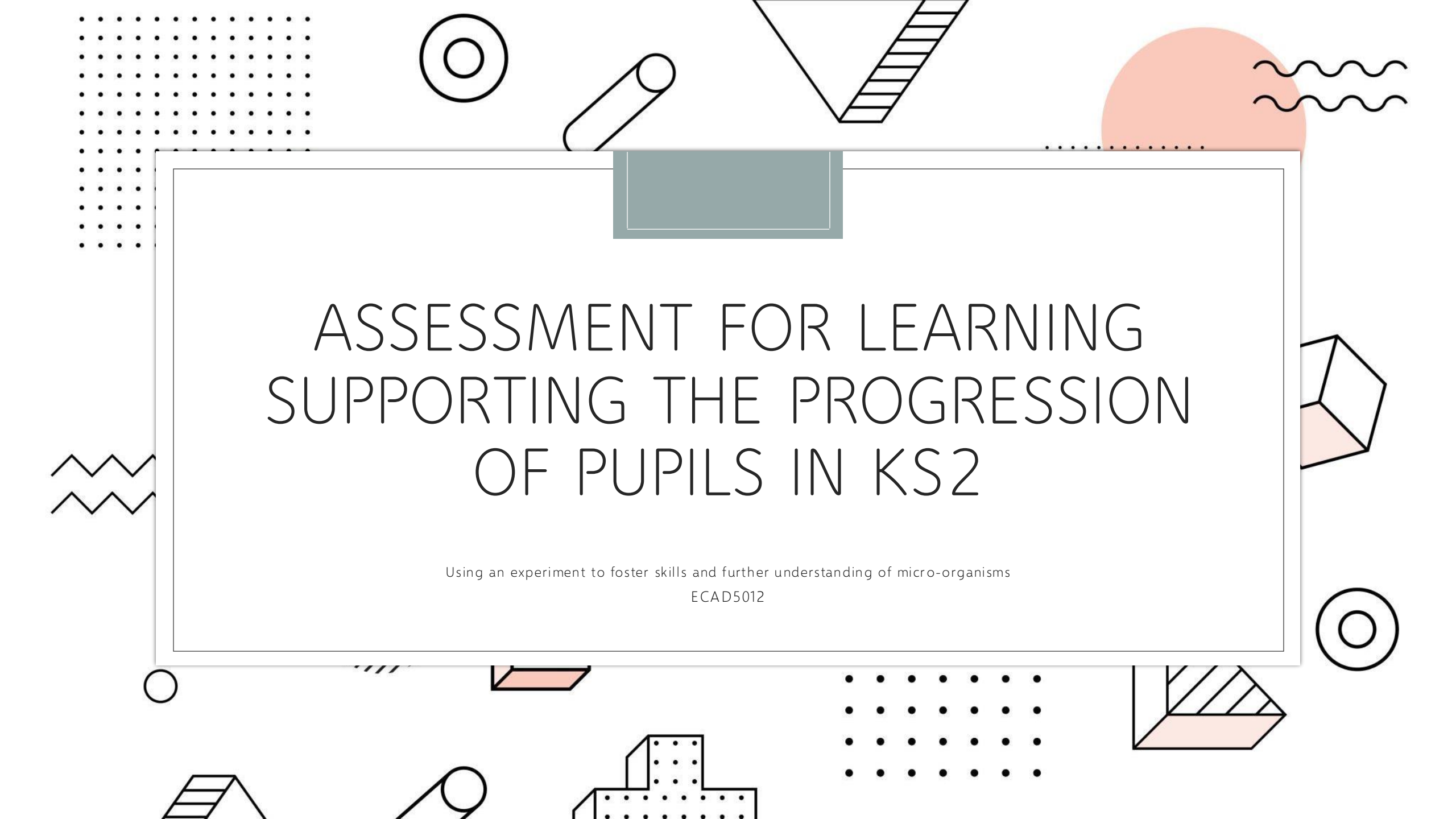


The background is a white canvas decorated with various geometric patterns and shapes. In the top left, there is a grid of small black dots. To its right is a circle with a smaller circle inside. Further right is a pencil-like shape. In the top right, there is a large orange semi-circle with wavy lines to its right. On the left side, there are two wavy lines. At the bottom, there are several geometric shapes including a circle, a rectangle, a trapezoid, a cross-like shape with a dotted pattern, and a 3D cube-like shape with a dotted pattern. A large, light purple rectangular frame is centered on the page, containing the main title and subtitle.

ASSESSMENT FOR LEARNING SUPPORTING THE PROGRESSION OF PUPILS IN KS2

Using an experiment to foster skills and further understanding of micro-organisms
ECAD5012

Class Context

- School is in the heart of Port Talbot
- Whole school Free School Meals ratio is 25.4% vs 33.3% in my class.
- Attendance is poor
- Year 6 (Aged 10-11)
- Seven Pupils with Additional Learning Needs (ALN)
- No AoLE MAT pupils within the class relating to science and technology.
- Week AoLE plan focusing on micro-organisms.



Wikimedia Commons (n.d.) X *Primary School, Port Talbot*. Available at:

<https://commons.wikimedia.org/wiki/X>

Primary_School,_Port_Talbot.jpg (Accessed: 16 January 2025).



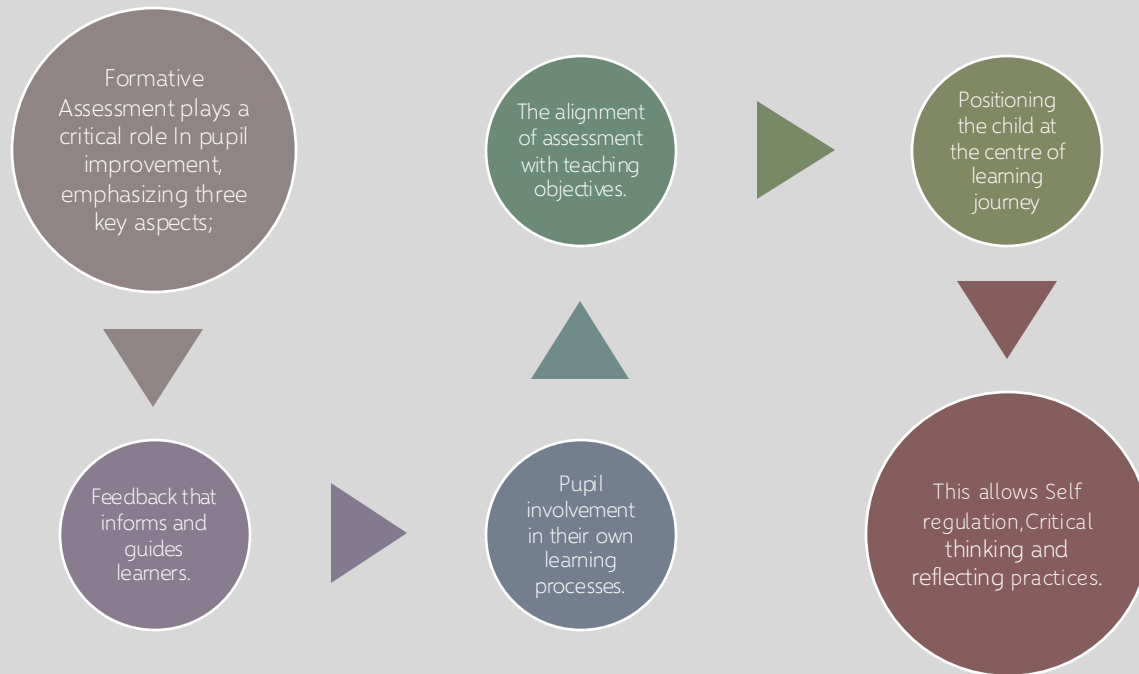
Stockart (n.d.) *Aims graphic illustration*. Available at: [<https://www.stockvault.net/photo/224483/lib/utis/common>] (Accessed: 10 January 2025).

What I aim to do throughout this presentation

- To critically evaluate the use of Assessment for Learning (AfL) strategies in a KS2 classroom.
- To explore the impact of these strategies on pupil progression within the Science and Technology AoLE, focusing on a lesson about microorganisms. - What does progression actually look like?
- To connect these strategies to the Curriculum for Wales and QTS standards.
- To reflect on the effectiveness of the strategies and suggest areas for improvement, supported by research.

Foundation theories of AFL

Dylan Wiliam and Paul Black - (1998) Inside the black box



Teacherhead (2022) *Working inside the black box: 20 years on – another classic paper.* Available at: <https://teacherhead.com/2022/04/24/working-inside-the-black-box-20-years-on-another-classic-paper/> (Accessed: 09 January 2025).

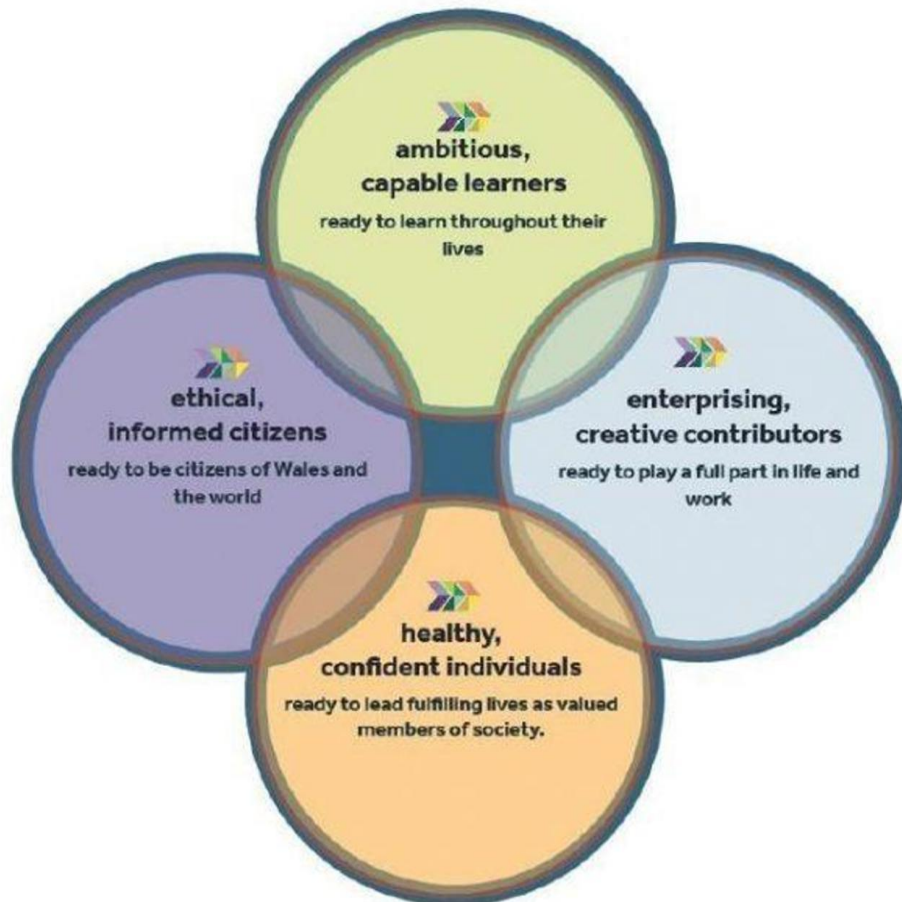
Foundation theories of AFL

Hattie, J (2012) - Visible Learning for Teachers: Maximizing Impact on Learning

Formative strategies (Used to monitor during the learning process) have significant impact on learning outcomes of pupils.

- Where am I going now?, Where am I going to next? How am I going to get there
- Learning intentions
- Self Regulation – Cross over with William and Black 1998

Should be used continuously.



Welsh Government (n.d.) *Curriculum for Wales Overview*. Available at: <https://hwb.gov.wales> (Accessed: 11 January 2025).

Why do we implement AFL in a classroom in Wales?

- Influenced by Successful Futures (Donaldson, 2015) and the emphasis on Pupil progression and a formative, skills-based approach.

Key principles aligned with AfL:

- Ambitious, capable learners: Reflect, improve, take ownership.
- Meaningful assessment: Integrated into the learning process.

So how is it implemented in schools?

Placement school used character-based system to reflect Four Purposes:

- Ethical Eleri – Peer and self-assessment.
- Ambitious Arwen – Reflection.
- Healthy Hywel – Life approach.
- Creative Catrin – Tackling challenges.

Personalized learning strategy replacing traditional methods.

Why do we use AFL in Science and Technology

Focus on Progression Step 3:

Emphasizing the following key skills in my classroom;

- Planning and conducting investigations.
- Analyzing evidence and drawing conclusions.
- Communicating findings.

Why AfL is Important in Science and Technology

- Supports inquiry-based, step-by-step learning.
- Avoids misconceptions (*Black & William, 1998*).
- Encourages questioning, hypothesizing, and evaluating.
- Aligns with Welsh Government's learner-centered ethos.

Lesson plan

  			
Student-teacher:	Lara Curtis	Class / Group:	Year 4/5/6
AoLE or Subject:	Science and Technology	Date (please note that this may be a continuous session):	W/C 25.11.24
Meaningful links to Curriculum (What Matters Statements, Descriptions of learning, 'previous' curriculum...)	What matters statement S&T - Being curious and searching for answers is essential to understanding and predicting phenomena. Progression Step 3 1. I can identify questions that can be investigated scientifically and suggest suitable methods of inquiry. 2. I can suggest conclusions as a result of carrying out my inquiries. 3. I can evaluate methods to suggest improvements		
Meaningful links across the curriculum Links to other AoLEs or the Cross-curricular skills frameworks	Maths and Numeracy - Measuring, using time, recording in a table Literacy and Language - Describing the experiment. Predicting the experiment DCF - Use of iPad to video and time, researching skills.		
Personal Targets (targets and consequent impact on learning - refer to any targets that have been identified in learning journal or weekly reflection meeting and describe the desired impact on learning)			
Learning Intention 'This should focus on the pupils' learning during the lesson, rather than what they will be doing, and should be short, achievable and measurable.' (Crichton, H., and Mcdaid, A. 2016 p. 196) I know what the term 'fair test' is.			
Success Criteria What the pupils need to demonstrate to successfully meet the Learning Intention. Show correct understanding of what is needed for an experiment to be a fair test. Be able to demonstrate fair testing whilst completing an experiment. Be able to explain what 'variables' are and how they affect a 'fair test'			
Planning for misconceptions: Use this section to anticipate pupil errors and misunderstandings and your planned responses to them. Prior Knowledge - Misinterpreting the 'fair test'			
Strategies to support learners' Welsh language development Dyddiad - Ensure that the class understands what the day is in Welsh Incidental Welsh - Inputting numbers and checking if the children understand the meaning.			

SEQUENCE OF TEACHING & LEARNING

(Add or remove rows below as appropriate)

Timing: <i>Break down timings into groups if appropriate, ensure pupils are 'doing' quality and that transitions are taken into account</i>	Role of the teacher & support staff: <i>e.g., key questions, retrieval of prior learning, modelling and explanations, checking understanding, planned use of additional adults.</i> <i>Choice of pedagogical model or of the 12 pedagogical principles</i>	Pupils' learning and activities: <i>What will the pupils be learning to do and what activities / resources will facilitate this?</i> <i>Please refer to Foundation Learning planning document for details of continuous provision.</i>	Inclusive Strategies (including differentiation): <i>Reasons for and details of scaffolding.</i> <i>Types of representation in tasks.</i>	Check what pupils know, understand, and can do: <i>Key questions, types of retrieval practices, self and peer assessment opportunities, purposeful AfL strategies, live marking opportunities, planned feedback.</i>
Starter Activity (10 mins)	Facilitate the Kahoot by posing questions and discussing responses to assess baseline knowledge about fair testing.	Participate in a Kahoot quiz to establish baseline knowledge about fair testing.	Provide a range of question types in Kahoot (e.g., multiple choice, true/false) to accommodate varied abilities.	Analyze Kahoot results to identify pupils' initial understanding and knowledge gaps.
Research Task (15 mins)	Guide group discussions and ensure students stay on task; provide scaffolding as needed to support understanding of fair testing and sequencing.	Work in groups of 7 to complete a research task on fair testing and the sequencing of testing.	Use mixed-ability groups to encourage collaboration; provide templates or prompts for guidance.	Observe group discussions and check understanding through questioning during the activity.
Success Criteria (10 mins)	Lead class discussion to create success criteria for the experiment; model expectations and steps for fair testing.	Contribute to the class discussion to collaboratively develop the steps for a fair testing experiment.	Represent success criteria visually (e.g., on a board or chart) for clarity and accessibility.	Assess understanding by asking key questions (e.g., "Why is this step important for fair testing?").

List steps with correct fair testing and scientific language (30 minutes)	Provide instructions and examples for listing the steps of the experiment in the correct order; circulate and offer support to ensure accuracy.	List the steps for conducting the experiment in their books in the correct order based on the success criteria.	Use visual aids or prompts to help pupils structure their lists; provide one-on-one support as needed. Simplified language for those who need support in literacy and language.	Check pupils' written steps to ensure accuracy and alignment with the success criteria; provide feedback for corrections.
Peer Assessment (15 mins)	Facilitate peer assessment by modeling constructive feedback and guiding students to critically reflect on their peers' results.	Assess peers' experiment results and provide constructive feedback.	Provide sentence starters or prompts to help structure feedback (e.g., "One strength is...", "An improvement could be...").	Collect peer assessment results to analyze the depth of pupils' understanding and feedback skills.
Closing Activity (10 mins)	Facilitate a second round of Kahoot to review progress and highlight key learning points; analyze results to plan next steps and group pupils by ability for the next lesson.	Revisit Kahoot to compare initial and final knowledge, reflecting on progress made during the lesson.	Ensure all pupils can access and engage with Kahoot (e.g., provide verbal alternatives if needed).	Use Kahoot results to measure learning progress and identify pupils needing further support; adapt next lesson based on results.

Assessment for learning in action

Kahoot: Immediate feedback



Co-Constructed Success Criteria: Clear expectations, pupil ownership.



Peer Assessment: Traffic lights for self-regulation.



Revisiting Kahoot: progression tracking and feedback.

Reinforces AfL principles (Black & Wiliam, 1998).

Kahoot

Strengths

- Engaging and motivational (*Wang, 2015; Plump & LaRosa, 2017*).
- Instant feedback for teacher and pupils.
- The children just absolutely love it! - As soon as I say the word ka --- the children are instantly engaged.
- Bloom's taxonomy – Remembering understanding.
- Promotes the four purposes
- Aligns with QTS standards.2,3,4

Weakness

- Focuses on recall over critical thinking (*Torrance, 2012*).
- Timed nature can pressure ALN pupils (*Clarke, 2014*).
- Frustration from pupils also embarrassment from incorrect answers.

Improvements

Paired with other strategies to promote deeper thinking.

BEFORE THE LESSON ON FAIR TESTING - DIAGNOSTIC TESTING

Year 6 - Fair Test AFL

Summary Players (30) Questions (15) Feedback

Well played!

59% correct

Play again and let the same group improve their score or see if new players can beat this result.

Play again

Players 30

Questions 15

Time 18 min

Rorywiggins	1	87%	—	10 898
kingbobbies	2	80%	—	9827
Cheese 🧀	4	73%	—	8946
Kean	7	72%	—	8814
hart cheese	8	73%	—	8801
Layla & Holly	3	72%	—	907%
signa boy mo	5	67%	—	8912
E and L BERT	6	67%	—	8834
olaf	10	60%	—	7386

Mr T	11	60%	1	7043
Quandale Dingle	13	53%	1	6352
FIB	14	53%	1	6334
rizzlerhilbilly	17	33%	1	3638

AFTER THE LESSON ON FAIR TESTING - FORMATIVE TESTING

Year 6 - Fair Test AFL

Summary Players (20) Questions (15) Feedback



Well played!

Play again and let the same group improve their score or see if new players can beat this result.

Play again

Players 20
Questions 15
Time 11 min

plykikah@huckl	1	98%	—	12 848
Spongelob	3	98%	—	12 436
Secret partner2	2	98%	—	12 403
Honyuskibid	4	87%	—	12 364
Mr. Bean	6	87%	—	11 489
Secretpartner1	5	87%	—	11 052
Rapidhorse56	7	80%	—	10 120
Im back	11	80%	—	10 484
Buddiesssssss	10	80%	—	10 738
I'm a celebrity	9	80%	—	10 990

BlueStar0	19	0%	15	0
Sillysuk42	20	0%	15	0
btchindyoumias	18	60%	—	7700
evishad@erksen	16	87%	1	8240
central police	17	87%	—	884
evkm	15	87%	—	9270
It is timeeeee	13	73%	—	9436
SIAN + eldi @	12	73%	—	9726
PEOPLETHESESDAYS	14	73%	—	9428
Rapidhorse56	7	80%	—	10 120

Co-constructed Success Criteria

Strengths

- Engages pupils, increases motivation (*Clarke, 2014*).
- Clear understanding of expectations.
- Encourages self-regulation (*Nicol & Macfarlane-Dick, 2006*).

Weakness

- Time-consuming and needs scaffolding for ALN pupils.
- Avoid becoming restrictive or a "tick-box" task (*Torrance, 2012*)

Improvements

More effective in other AOLES rather than science and technology

Peer Assessment

Strengths

- Encourages reflection and collaboration (*Black & Wiliam, 2009*).
- Helps identify gaps in understanding.
- Aligns with four purposes
- Using cups made learners more comfortable in pointing out areas of improvement.
- QTS Standard 3

Weakness

- Confidence in giving meaningful feedback (*Torrance, 2012*).
- Teacher feedback still crucial (*Clarke, 2014*).
- Shallow assessment - Not enough details

Improvements

- Specific prompts
- Better Modelling

Peer Assessment

What I need to do to be successful	How I think I did	How my peers think I did

Conclusion.

Benefits for pupils:

- Greater ownership and motivation (*Black & Wiliam, 1998*).
- Improved confidence and collaboration

Benefits for teaching:

- Enables differentiation and targeted support (*Wiliam, 2011*).
- Aligns with Curriculum for Wales and QTS Standards 2, 3, and 4.

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