Karakia tīmatanga **Tō mai te aronui, te aroroa, te arowhāiti,** **kia ngātahi ai te** **whakaaro.** **Mānawa mai. Tākina** Mānawa mai te mauri o ēnei mahi. Mānawa mai te mauri o tēnei kaupapa. Mānawa mai te mauri o tēnei wānanga. Kia kā te hinengaro, te tinana, te wairua. Toua ki te rangi, toua ki te whenua, toua ki te manawa o te tangata. **Tūturu ōwhiti whakamaua kia tina** Tina **Whano, whano, haramai te toki** Haumi e **Hui e** Tāiki e	**Allow our thoughts to focus,** **to polestar and** **connect though a** **unified consciousness.** **Commence** Observe the essence of the task at hand. Observe the essence of the environment you are in. Observe the essence of the situation you are in. Allow that energy to ignite the mind, the body and the spirit. Allow the energy to flow above, below and within. **Let this energy settle within us.** **Join, in unified acceptance.** **Coming together.** **We are together.**

Formative Assessment

Learning Intention: To build up a kete of strategies to monitor student engagement with learning.

From Dylan Wiliam:

A principle and an uncomfortable fact about the world

- The principle:
  - "If I had to reduce all of educational psychology to just one principle, I would say this: The most important single factor influencing learning is what the learner already knows. Ascertain this and teach him [or her] accordingly" (Ausubel, 1968 p. vi)
- The uncomfortable fact:
  - Students do not (necessarily) learn what we teach.

Assessment is the bridge between teaching and learning

- What is learning?
  - Learning is a change in long-term memory (Kirschner, Sweller, & Clark, 2006).
  - The fact that someone can do something now does not mean they will be able to do it in six weeks, but …
  - If they cannot do something now, it is highly unlikely they will be able to do it in six weeks.

Recap: Science of Learning (Memory)

- Storage strength and retrieval strength are increased by:
  - Re-studying an item
  - Retrieving it from memory
- Retrieval has a greater impact than re-study.

1. Retrieval and re-study increase storage strength more when retrieval strength is *low*.
2. Retrieval and restudy increase retrieval strength more when
   - storage strength is high
   - retrieval strength is low

Key Point 1

- **Retrieval and re-study increase *storage strength more* when retrieval strength is *low*.**
- If something is **hard to remember**, but you *try* to recall it (even if you get it wrong), your **long-term memory improves a lot**.
- Struggle = signal to the brain that this is important.
- **Example:**
  You try to remember a Māori vocabulary word you learned last week. You pause, think hard, and finally recall it → **big long-term learning gain**.
- This is why **testing yourself is more powerful when it feels effortful**.

Key Point 2

- **Retrieval and re-study increase *retrieval strength more* when storage strength is high and retrieval strength is low.**
- If you **understand something well (high storage strength)** but you **haven't used it recently (low retrieval strength)**, *practicing recall quickly boosts your ability to retrieve it again*.
- **Example:**
  You learned a science concept well last term. You haven't thought about it since. A quick quiz now makes it *much easier* to recall next time.

Strategies *(click on a strategy to take you directly to it, then click the home icon to return here)*

Learning Intentions and Success Criteria

Eliciting Evidence of Learning

Feedback

Reviewing Learning

Retrieval Practice

Key Takeaways

Learning Intentions and Success Criteria

Learning intentions are descriptions of the learning intended as a result of completing tasks. The purpose is for ***planning*** and is mostly useful for teachers.

Success criteria are descriptions of the desired performance in those tasks. The purpose is to evaluate the effectiveness of the teaching and is useful to ***both*** teachers and students.

Learning Intentions	Success Criteria
To be able to describe and explain the adaptations of animals to cold climates.	• *To be able to state three adaptations that polar bears have that help them to survive in cold climates.* • *To be able to explain how these adaptations help polar bears to survive in cold climates.*
To be able to describe what happens during photosynthesis.	• *To be able to state the two reactants and two products of photosynthesis.* • *To be able to describe at least one thing that happens to each of the products of photosynthesis.*

Considerations

- When to share learning intentions and success criteria: think about the appropriate timing (not necessarily at the beginning, if it gives something away)
- Use planning and writing frames *judiciously*
- Start with exemplars rather than rubrics/marking schedules
  - Give at least two examples of the best work
  - Don’t conflate intended and unintended features
- Ask students to assess the work of anonymous others
- Over time, reduce use of student-friendly language so that they become familiar with more technical terms
- Ask students to design their own test questions.

Eliciting Evidence of Learning: Questioning

- Most questions should be pre-planned.
- There are TWO good reasons for asking questions:
  1. To cause thinking
  2. To collect evidence to inform instruction
- No hands up (except to ask a question), should be the general rule:
  - Students should be chosen at random (lolly sticks, name generator)
  - No opt out. If called upon, a student must provide an answer eg encourage a response starting with “I’m not sure, but I think it could be/my best guess would be…” or select a couple of other people to give ideas and return to the first to summarise or explain which they prefer.

Common Errors

Asking:

- too many questions at once
- a question and answering it yourself
- questions only of the most able
- a difficult question too early
- questions in a threatening way
- irrelevant questions
- the same kind of questions all the time

Failing to:

- correct wrong answers
- indicate a change in question type
- give students the time to think
- pay attention to answers
- see the implications of answers
- to build on answers

Multiple Choice Questions

- Encourage students to think.

Only one of the following sentences is correct. Select it.

A. A great film.
B. A great film is.
C. Fascinating film.
D. Enjoyed the film.
E. She watched a great film.

Success Rate: 91%

Only one of the following sentences is correct. Select it.

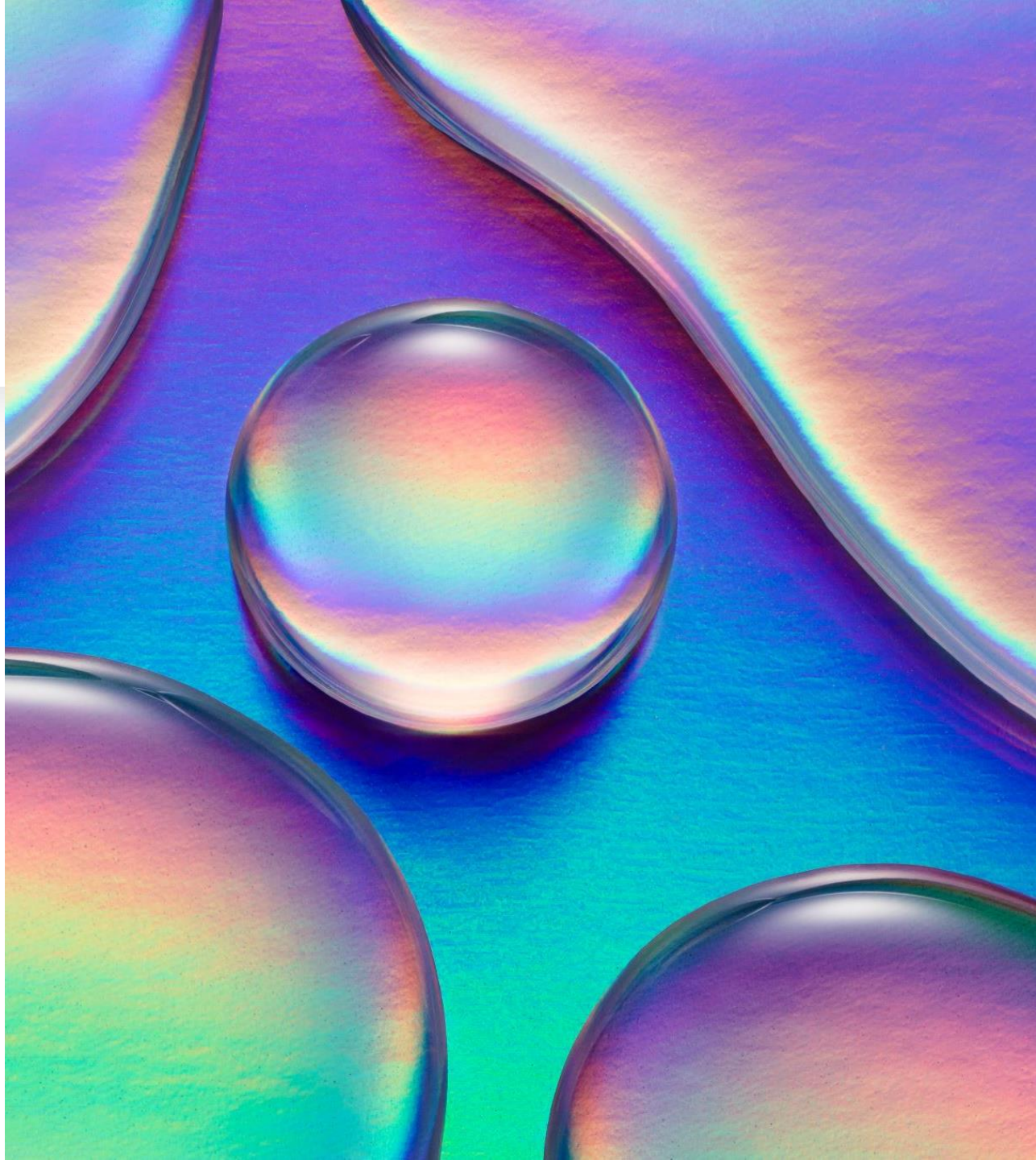
A. He scowled.
B. The silent crowd.
C. The silent and unhappy crowd.
D. Scowled at the screen.
E. The silent crowd scowled at the camera and.

Success Rate: 13%

Discussion Questions

Ice-cubes are added to a glass of water. What happens to the level of the water as the ice-cubes melt?

A. The level of the water drops
B. The level of the water stays the same
C. The level of the water increases
D. You need more information to be sure



Diagnosis Questions

Version 1

Which of these are living?

A. Rock
B. Cat
C. Table
D. Bird

Version 2

Which of these are living?

A. Grass
B. Bus
C. Computer
D. Tree

Distractor-driven questions: Science

Janet was asked to do an experiment to find how long it takes for some sugar to dissolve in water. What advice would you give Janet to tell her how many repeated measurements to take?

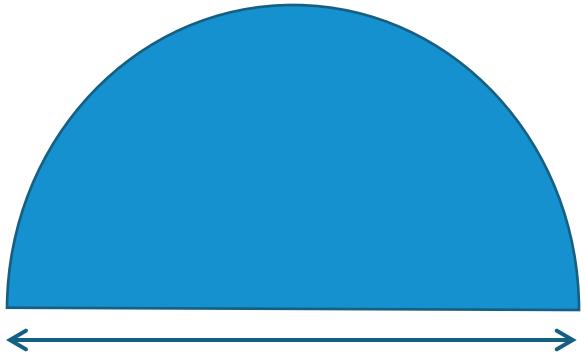
A. Two or three measurements are always enough
B. She should take 5 measurements
C. If she is accurate, she only needs to measure once
D. She should go on taking measurements until she knows how much they vary
E. She should go on taking measurements until she gets two or more the same

Distractor-driven questions: Stats

An experimental study of a new method for reading instruction finds that a result was significant ($p<0.05$). This means that:

A. The experimental group out-performed the control group by 5%
B. There is a 5% chance that the experimental group did not out-perform the control group
C. There is a 5% chance that there is no difference between the experimental group and the treatment group
D. There is less than a 5% chance that the observed result would have happened if the experimental and control groups had the same achievement

Multiple correct responses: Maths



What is the area of the semi-circle in cm^2?

A. $\frac{\pi \square 20}{2}$ B. $\frac{\pi \square 20 \square 20}{2}$ C. 50π D. $\frac{\pi \square 10 \square 10}{2}$ E. $\frac{\pi}{2}\left(\frac{20}{2}\right)^2$

Distractor driven *and* multiple-correct responses

Identify the adverbs in these sentences:

1. The boy ran across the street quickly.
   (A) (B) (C) (D) (E)

2. Jayne usually crossed the street in a leisurely fashion.
   (A) (B) (C) (D) (E)

3. Fred ran the race well but unsuccessfully.
   (A) (B) (C) (D) (E)

Feedback

- Dylan Wiliam has some general principals for feedback:
  - The purpose of feedback is to improve the student, not the work
  - The only thing that matters with feedback is what students do with it
  - If your feedback is getting you more of what you want, it's good feedback
  - Feedback should be more work for the recipient than the donor

Techniques

- **Marking for Improvement:**
  - Written comments have more impact than grades.
  - Time should be allocated for students to read the comment and then to resubmit the work.
- **Find and Fix:**
  - Instead of marking answers as correct or incorrect, tell them the number of incorrect answers and get them to find and fix them.
- **Margin Marking:**
  - Instead of marking each individual spelling and grammar error, place a mark in the margin. Students find their mistakes and correct them

Techniques cont.

- **Match Comments to Work:**
  - Write comments about student's work on strips of paper. Students work in groups of four to match the comment to the work.
- **Aim for the Next Level:**
  - Students identify areas of improvement by comparing their work to exemplars at the next level of achievement. This helps students realise they need to set higher standards. Able students find that they can improve a piece of work

Feedback as detective work

Feedback as information	Feedback as detective work
You've done a really great job of ordering the first 3 objects in order of smallest to largest. The final two are the wrong way around. Shall we try again with these different objects?'	"You're nearly there, but two of these are the wrong way round. Can you see which ones they are?"
Great use of capital letters. Make sure you are forming your letters correctly and using full stops in all your work	Great use of capital letters. Look back at your work and draw a line under five words that you think could be written better.
When reading maps, remember the order of North, East, South, West. This will be really useful across all of our map work.	Can you think of a way that would help you remember the order for North, East, South West?
You've named lots of carnivores, but not many herbivores. Check back over your work to see if you have included all of the herbivores we've learned about.	You've named lots of carnivores. Check back over your work to see if you have included all the other kinds of animals we've learned about.

Retrieval Practice

- **The Education Hub**: Retrieval practice tops a list of the most effective evidence-based learning strategies. It was shown to be effective for learners of all ages and subjects.
- **Retrievalpractice.org:** When we think about learning, we typically focus on getting information **into** students' heads. What if, instead, we focus on getting information **out** of students' heads? It is a **learning** strategy which also helps the teacher determine what has been understood.

Techniques

- Rather than starting a lesson by reviewing content (“here’s what we did in class last week”), simply ask students to retrieve (“what did we do in class last week?”). This tiny switch from encoding to retrieval practice will boost long-term learning and reduce forgetting.
- Brain dumps: ask students to write down everything they can remember from a previous lesson.
- Two things: at the end of the lesson, ask students to retrieve two things they learned.
- Low stakes testing: quick fire questions at the start of a lesson.

Reviewing Learning

- Taking time at the end of your lesson for student reflection has sound pedagogical purpose:
  - Checking for comprehension/understanding
  - Addressing misconceptions
  - Preparing for future learning
  - Promotes discussion
  - Builds retrieval strength
- Mini reviews can also be embedded throughout the lesson, as can be seen in the ‘eliciting evidence of learning’ section.

Strategies

- Exit tickets: brief written response to one or two focussed questions. This could be done on mini whiteboards or sticky notes. For a digital alternative, try a Microsoft form or mentimeter.
- Traffic lights: students can colour code their level of confidence by adding a coloured shape to their digital work, draw a traffic light in their book, or use coloured cards.
- 3-2-1: 3 things they learned, 2 questions, 1 connection to prior knowledge.
- Think-pair-share.
- Peer teaching: students create a 30 second summary for a partner or prepare a mini presentation on the concepts learned.

Key Takeaways

Learning intentions are most useful for teacher planning of lessons.

Success criteria are essential for students to clearly understand what they need to do produce.

Questions should be planned.

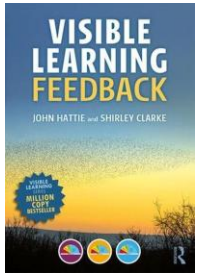
All student response systems encourage 100% engagement and allow teachers to instantly check for understanding.

Reviewing learning does not just occur at the end of a lesson.

Resources

- Dylan Wiliam books:

- John Hattie and Shirley Clarke:



- Websites:
  - https://theeducationhub.org.nz/
  - https://tahurangi.education.govt.nz/
  - https://www.retrievalpractice.org/
  - https://www.structural-learning.com/