Inspiring Teachers

Learning Principles & Teaching Techniques

At the core of our curriculum are 12 Learning Science Principles that clarify how people learn best.

Principles 1-8 are based on The Willingham Model of Memory. Principles 9-12 focus on motivation.

1 Learning is building long-term memory

So we should use principles from the science of memory to design learning experiences.

2 Attention is limited and drifts

So we need to reduce distractions, re-focus attention and motivate it.

3 Working memory is limited

So we need to break knowledge into chunks, isolate the steps and use visuals so we don't overwhelm.

4 We learn by moving knowledge to long-term memory

So we need to use strategies that help learners build long-term memory.

5 We build new knowledge by connecting it to what we know

So we need to check and 'activate' prior knowledge and make new connections clear.

6 Misconceptions prevent future learning

So we need to check, identify and resolve misconceptions.

7 Hard thinking and practice builds long-term memory

So we need to give tasks that promote thinking, and help to practice across a range of problems.

8 Memories fade over time but endure if they are re-activated

So we need to revisit learning over time to help memories endure.

9 How hard we try depends on the outcomes we expect

So we need to motivate effort by heightening rewards, building confidence and making the process of getting rewards efficient

10 We are motivated by rewards and feeling successful

So we need to create a socially rewarding learning environment where learners can see how their effort links to their goals.

11 If we believe we'll succeed we are more likely to try

So we need to build learners' confidence by securing success, highlighing it and showing you believe. Teach them ability is not fixed.

12 If efforts outweigh benefits we lose motivation

So we need to make the learning process efficient by providing processes, using routines & practicing key knowledge until it's fluent.

Curriculum Overview

Our peer-coaching program focusses on 9 classroom plays to tackle specific challenges across 3 areas of teaching.
The framework below illustrates how each classroom play is linked to a specific area and challenge within teaching.

How do I...

Build a climate for learning

Where students are motivated, supported & can focus on learning...

- and make learning start and the lesson begins?
- and tackle behaviour so we can focus on learning?
- and ensure every student feels valued and motivated?

Teach new content

So learning is clear and students build lasting understanding...

- and convey content so understanding it is manageable?
- and ensure students understand the steps to take?
- and help students build fluency and lasting knowledge?

Check understanding

So I can be data driven in planning and teach responsively...

- and get learners thinking and building social skills?
- and check thinking and tackle misconceptions?
- get insights to inform my planning?

Classroom Plays:

Teaching Techniques

27 powerful techniques to tackle 9 teaching challenges

Area of Teaching

Lesson section	Climate for Learning	Teach New Content	Check for Understanding
Start First 15 minutes Indroducing, activating, and recapping learning.	**Use Routines to Start Strong** Pg. 4	**Explain With Clarity** Pg. 5	**Use Talk to Promote Thinking** Pg. 6
	1 Meet & Greet Learners	4 Connect New Learning to Old	7 Turn & Talk
	2 Give a 'Do Now'	5 Explain Clearly by Chunking	8 Write, Pair, Share
	3 Reinforce High Expectations	6 Use Visual Aids	9 Guide Whole Class Discussion
Middle 15-30 minutes Learning new content, asking questions, correcting errors.	**Proactively Manage Behaviour** Pg. 7	**Use Modelling to Show How** Pg. 8	**Ask Questions & Correct Errors** Pg. 9
	10 Get Attention	13 Demonstrate and Think Aloud	16 Cold Call
	11 Narrate the Positive	14 Review a Model nAswer	17 Ask Probing Questions
	12 Use the Minimum Intervention	15 Have students attempt	18 Correct Errors
End Last 20 minutes Practise, feedback, re-practice, takeaways.	**Create a Supportive Environment** Pg. 10	**Guide Practice to Proficiency** Pg. 11	**Get Data to Track Learning** Pg. 12
	19 Support and Value Everyone	22 Provide Scaffolding	25 Circulate to Check Work
	20 Build Growth Mindsets	23 Guide Practice	26 Quiz the Class
	21 Precisely Praise Effort	24 Independent Practice	27 Use an Exit Ticket

Losing 5-6 minutes at the start of each lesson adds up to 5 weeks of lost schooling time over the course of a year.

These strategies will help make every minute matter by getting students learning from the moment they enter the classroom.

1 Meet & Greet Learners

As children arrive, stand at the door so you can see inside and outside the classroom.

1. **Smile and greet students by name with a welcoming tone**
2. **Impress your high expectations of what they will do and achieve**
3. **Give instructions for what to do so they get started straight away**

Consider how you can use this time to strengthen relationships and show you care and are interested in students' wider lives.

"How was the netball match? Did we win?"

"I'm looking forward to some more of those thoughtful questions"

How you interact with students at the start of the lesson will set the tone. Use your interactions with students to model the behaviours you expect.

Related Learning Principles

- 9 Social norms and rewards drive us

2 Give a 'Do Now'

As students arrive (or the lesson begins) give a 'Do Now' task to get them focused and primed to learn.

Your 'Do Now' should:

- [ ] **Be displayed clearly e.g. on the board**
- [ ] **Take 2-4 minutes**
- [ ] **Review recent learning/preview today's learning**
- [ ] **Be something they can do on their own**
- [ ] **Free you to prepare to teach**

Good examples of a 'Do Now' include:

- **Questions on the board** testing previous learning
- **Reviewing exit ticket** from last lesson
- **Review feedback** on yesterday's work

Consider how your 'Do Now' can refresh memories and activate prior knowledge.

Time students in completing the 'Do Now' to create urgency and a sense of pace and make minute matter in your classroom.

Related Learning Principles

- 2 Attention is limited and drifts
- 3 New knowledge builds on old

3 Reinforce High Expectations

Motivate students and remind them that you have high expectations of what they will do, how hard they will try and what they will achieve.

Remind students you expect them to:

- **Behave well** - Focused, respectful.
- **Work hard** - Persevering when it's difficult.
- **Achieve great things** - doing their best work.

To make expectations clear:

- **Use concrete examples** so they know what success looks like.
- **Highlight previous successes** to remind students they can do it.
- **Highlight good behaviour** making it visible so others learn from it.

Expressing your confidence in students will increase their own confidence which will motivate them to try.

"Great to see you hard at work Andre. With that focus all lesson, I'm sure you'll write an exciting story."

Related Learning Principles

- 8 Expectancy determines effort

We learn by making connections between new knowledge and what we already know.

Use these techniques to help learners connect new ideas to their existing knowledge.

4 Connect New Learning to Old

Get students ready to build new knowledge by checking and activating their prior knowledge. This gets you ready with a shared starting point.

1. **Ask questions or give a task**
2. **Recap concepts or vocabulary**
3. **Link learning what they know**
4. **Display and explain learning goals**

Ways to capture interest:

- **Tell a story** with exciting characters & emotions.
- **Bring in a real world item** that links to the topic.
- **Make it matter** by connecting to things students care about or bigger learning goals.
- **Share a real life challenge** or problem.
- **Ask a question** that sparks interest in the topic.
- **Link new learning to previous learning** and future goals.

Related Learning Principles

3 Working memory is limited

5 New knowledge builds on old

5 Explain Clearly by Chunking

Explain new material or activity by presenting it in small 'chunks' that are big enough to be meaningful but small enough to be manageable.

- [ ] **Introduce one step at a time**
- [ ] **Link ideas to prior knowledge**
- [ ] **Use as few words as possible.**
- [ ] **Use concrete examples**
- [ ] **Define any new words**
- [ ] **Display formulae or procedures**
- [ ] **Use visual aids as you explain**

Use clear explanation alongside questions to check students have understood at every step.

Consider which areas of the learning are prone to errors or misconceptions and tackling them first.

E.g. Remember to use the right spelling of "their" because there are three.

Related Learning Principles

3 Working memory is limited

6 Use Visual Aids

Make concepts memorable and easier to understand by using visuals (notes, diagrams, pictures) that can be referred to and show how ideas connect. Use diagrams and charts to represent and organise information.

- [ ] **Build diagrams in steps**
- [ ] **Explain your thinking as you go**
- [ ] **Highlight the sequence of steps**
- [ ] **Label and define key features**
- [ ] **Explain how ideas connect**
- [ ] **Define key new vocabulary**
- [ ] **Get students to copy it down**

Consider dividing the board into one section for notes that students can copy and a section for rough work. This helps students build meaningful notes that help them organise knowledge.

You can refer back to or remove visual aids to support or add challenge during questioning, discussion, guided and independent practice.

Related Learning Principles

3 Working memory is limited

Well managed classroom discussions can give you valuable insights on you students' understanding.

Use these strategies to get students expressing their ideas while giving you information on what they know.

7 Turn & Talk

Get all students engaged and thinking aloud by having them discuss in pairs. Listen in to check for understanding.

1. **Put all students in pairs**
2. **Display and explain a task**
3. **Check they know what to do**
4. **Give a specific length of time**
5. **Start with a countdown "3,2,1"**
6. **Circulate to check understanding**
7. **End by counting down**
8. **Ask a few pairs to share back**

Remind students to listen actively and get the them to face each other so they are fully engaged.

Setup pairings that prevent behavioural issues.

Create a sense of pace by using time increments (e.g. "1 minute left!") and stop discussions before they go out.

Use Turn & Talk to get students: comparing answers, sharing what they know, or testing each other, solving problems together.

Related Learning Principles

4 Memory is the residue of thought

8 Write, Pair, Share

Get students to write responses to a question or task before discussing it with a peer. This adds accountability to turn and talk because it requires every student to produce work.

1. **Give students a question or task**
2. **Give everyone time to write an answer**
3. **Put students in pairs to discuss their answers**
4. **Circulate, listening and checking**
5. **Ask pairs to share answers with the group**

Use Write Pair, Share to get students:

- Comparing answers
- Practicing communication skills
- Teaching each other
- Testing each other
- Thinking hard and recapping

This strategy helps you gather data and is a good checkpoint activity. Consider reviewing norms for active listening before starting.

"Today lets work on active listening."

Related Learning Principles

4 Memory is the residue of thought

9 Guide Whole Class Discussion

Help students make connections and practice reasoning by building on and debating each other's ideas. Use this time to develop discussion skills.

1. **Provide a question or statement**
2. **Ask students what they think**
3. **Ask them to build on/challenge each others ideas**
4. **Ask them to explain and justify**
5. **Summarise key takeaways**
6. **Thank those who contributed**

Remind students that it is important to:

- Look at the speaker
- Being respectful, friendly and take turn
- Asking questions and acknowledge ideas

Focus discussions and draw in quiet students.

Try displaying sentence starters and key words:

"I can see why you'd say that but"

"I thought something similar but"

"I disagree because"

Related Learning Principles

4 Memory is the residue of thought

Disruptions distract students from learning and waste precious instructional time.

Use these strategies to make good behaviour feel like the norm so learning can be the focus.

10 Get Attention & Transition

Maximise learning time by making transitions between activities efficient.

1. **Stand where all can see**
2. **Get attention with a routine** (e.g. Countdown "3,2,1 eyes on me!")
3. **Wait until everyone is quiet and you have 100% attention.**
4. **Give clear instructions: for what to do, where to go and what to bring.**
5. **Check students understand by having them explain it back.**
6. **Cue the transition with a signal** (e.g. "3, 2, 1, go.")

Consider displaying your instructions on board so students can check them and you can refer to them.

Try narrating attentive behaviours while you count down to highlight what students should be doing.

Name, explain and practice routines so students learn the cues and what to do. Over time they will feel automatic.

Related Learning Principles

1 Attention is limited and drifts

11 Narrate The Positive

Describe and "narrate" behaviour that meets your high expectations as you notice it in your classroom.

- **Describe specific positive behaviours you notice**
- **Name the individual or group you are noticing from to create pride**
- **Link those behaviours to learning**

E.g. "Christine and Jane are doing a great job of listening to each other's ideas and taking notes which will help them remember."

Narrating the positive makes good behaviour "visible" which sets norms. It also reminds students of expectations and by acknowledging efforts strengthens relationships.

Related Learning Principles

9 Social norms and rewards drive us

12 Use the Minimum Intervention

Maintain positive relationships by telling students what they should do, not what they shouldn't.

Prevent, tackle disruption and issues early using these steps (ordered from least to most invasive):

1. **Use non-verbal intervention** by standing near disruptive students or using gestures.
2. **Anonymously correct behaviour** by highlighting issues without names.
3. **Privately correct** by standing near the student and speaking quietly.
4. **Quick verbal correction** giving instructions a strong, calm voice.
5. **Acknowledge better behaviour** with a glance or thank you.

Focus on behaviours, not traits and let students to believe you think misbehaviour was accidental.

Separate students who distract each other.

Find opportunities to praise improved behaviour and rebuild relationships.

Related Learning Principles

1 Attention is limited and drifts

9 Social norms and rewards drive us

Building new skills is much easier when we have had someone else show you how first.

Use these strategies to show students the steps they need to take so they are ready to try themselves.

13 Demonstrate & Think Aloud

Demonstrate a skill or new procedure, explaining your thinking processes to give your students the steps they need to take in manageable chunks.

1. **Describe your goal and plan**
2. **Break the task into stages**
3. **Demonstrate each step**
4. **Share your thinking for what you do and why at each step**
5. **Highlight the specific things that make your work correct**
6. **Display them as success criteria and explain why they matter**

Consider asking students to help you with prompts or advice as you go.

Think of connections students need to make as you plan your demonstration,

Anticipate common errors and demonstrate in a way that helps students avoid them.

Related Learning Principles

- 2 Working memory is limited

14 Review a Model Answer

Share a model answer (sentence, diagram, or calculation with workings) so that students can see what a high quality answer looks like.

1. **Display a model answer**
2. **Analyse it using success criteria**
3. **Ask probing questions to check understanding**
4. **Correct misconceptions**
5. **Show an incorrect answer and repeat steps 1-4 exploring why it is incorrect**

Refer to the model answer and success criteria, when you give feedback, during questioning, guided and independent practice.

Example of model answers include:

- Correct calculations with full workings.
- Fully labelled diagrams
- Paragraphs that are correctly punctuated and make correct points compellingly.

Analysing examples and non-examples can help you build success criteria together. Students can use these to make decisions and check their work.

Related Learning Principles

- 2 Working memory is limited
- 3 New knowledge builds on old

15 Have Students Attempt

Have students solve examples on the board to check what they understand and get everyone thinking. Use questions, give prompts and ask their classmates to help them.

1. **Display a task or question like the one you've modelled**
2. **Ask a volunteer to attempt it at the board explaining their thinking**
3. **Ask guiding questions and give prompts**
4. **Ask other students questions or to help**
5. **Get students to check if work meets success criteria and correct errors together**
6. **Thank the volunteer and get the class to clap or give recognition**

Consider repeating this with a range of students or having students come up in pairs. Build up the difficulty with each example.

Related Learning Principles

- 5 Misconceptions prevent learning

Not only can misconceptions last a lifetime, they can prevent future learning.

These strategies will help you check understanding and resolve errors or misconceptions early.

16 Cold Call

Ensuring everyone thinks hard when you ask questions by asking your question first and then choosing who answers it.

1. **Ask the whole class the question**
2. **Give enough thinking time for all**
3. **Scan to ensure all are engaged**
4. **Pick who answers strategically**
5. **Prompt, ask probing questions to get an answer that's "all the way right"**

Cold calling gets all students to think of an answer.

Pick students whose understanding you need to check and pitch questions to challenge students, by making them increasingly hard.

Be balanced in choosing boys and girls. Use this technique to draw out quieter students but never cold calls to catch students out.

To get a "snapshot" of everyone's understanding', have all students respond at the same time by: answering in unison, writing down and showing answers, or using thumbs or hands up/down.

Related Learning Principles

- 3 Working memory is limited
- 5 New knowledge builds on old

17 Ask Probing Questions

Check understanding and push for deep thinking by asking follow up questions that get students to explain, justify, compare and build on ideas.

- **Ask students to explain answers**
- **Ask them to justify their answer**
- **Ask them to share their thinking process**
- **Ask guiding questions to help students improve answers**
- **Get "an all the way" right answer**

Examples:

- Say more: "Can you say more about that?"
- Justify: "Why is that true?"
- Compare: "How is this different?"
- Explain process: "What were the steps you took?"
- Improve: "How might you say that more clearly?"

Try collecting multiple answers and getting students to compare and improve them. Show curiosity and interest in their answers.

Related Learning Principles

- 3 Working memory is limited

18 Correct Errors

Get to the bottom of errors by checking thinking that led to them. Once you find out how the error arose, fix the misconception or gap that caused it.

If you get an error or answer that isn't fully correct:

- **Repeat the student's answer back**
- **Rephrase the question**
- **Ask them to explain their thinking**
- **Give a minimum clue or helpful prompt***
- **Ask probing questions so they rethink**
- **Reteach concepts to fix misconceptions**
- **Ask questions to confirm correct understanding**

Examples:

- "Can you explain your thinking?"
- "Have you considered that...?"
- "Let me show you again"
- "Here is another example..."

*Give just enough new information, so they work out the correct answer (e.g. a rule, or a step).

Remind students that errors help us learn, and thanks them so they feel safe to take risks.

Related Learning Principles

- 3 Working memory is limited

Every child has a right to an classroom experience where they feel safe, valued and can thrive.

Use the strategies to create a climate where every student feels supported, valued and motivated to persevere.

19 Support and Value Everyone

Create an environment where every child feels they belong, are valued, has their needs met and can contribute.

- [ ] **Ensure all can see and hear**
- [ ] **Ensure physical needs are met**
- [ ] **Include/treat girls & boys equally**
- [ ] **Resolve issues affecting wellbeing**
- [ ] **Celebrate each child's strengths**
- [ ] **Seat students who need it with supportive peers**

Address and challenge bias by teaching your students about bias and discrimination around race, gender, religion and disability.

Use examples that defy stereotypes, highlight the value of diversity and carefully challenge issues if they arise.

You may find that some groups speak up or volunteer more than others. To tackle this issue, keep track of how many questions you give each group e.g. girls or boys.

Related Theory

9 Social norms and rewards drive us

20 Build Growth Mindsets

Motivate effort by reminding students that ability is not "fixed" because hard thinking makes your brain grow allowing you to do great things — achieving your goals.

Use feedback to build growth mindsets among your students.

- **Say you know they can do it**
- **Highlight effort and perseverance**
- **Highlight progress towards goals**
- **Remind them learning is a process**
- **Say why failure helps you learn**
- **Use "yet" to frame the gap between current level and goals**
- **Explain growth mindset and why it is so important and powerful**

"You are almost there. You've worked really hard and stuck at it today and you've mastered calculating the area of a rectangle."

"You aren't there yet in calculating the area of a circle. I'm confident you'll get there tomorrow"

Related Theory

9 Social norms and rewards drive us

10 Belief about underpins our choices

21 Precisely Praise Effort

Reinforce behaviour by giving students specific praise as a class or as individuals for good behaviour and efforts in learning. Avoid giving praise for their intelligence or traits.

To make your praise effective:

- **Be specific in praising behaviours**
- **Praise perseverance and grit**
- **Celebrate progress towards goals**

Consider having students give each "props" in ways that create social reward. Have a way to cue public peer praise. E.g. "Clap for her".

"Your story has a clear structure because of your efforts in planning the outline".

Praising today's effort encourages future effort. It creates a sense of safety and fosters self-esteem. It builds the crucial positive relationships and trust teaching depends on.

Related Theory

9 Social norms and rewards drive us

Practice helps us 'lock in' learning by moving new knowledge and skills to long term memory.

Use these strategies to get students experiencing success and building fluency increasingly challenging work.

22 Provide Scaffolds

Make learning easier for students by providing supports that make building and applying knowledge manageable.

Your scaffolds should enable students to become increasingly independent and experience success.

- **Break down the task or idea**
- **Focus on one part at a time**
- **Display supporting resources***
- **Prompt with guiding questions**
- **Adjust scaffolding so all are challenged but can succeed**

*Examples of types of scaffolding:

- Visual aids
- Writing frames & sentence stems
- Model answers
- Key words/definitions or formulae

Give different levels of scaffold to to ensure everyone is supported but challenged. Scaffolding works by reducing the cognitive load and helps learners integrate new knowledge.

Related Theory

2 Working memory is limited

23 Guide Practice

Help students apply new knowledge by isolating tasks and having them practice each step. Provide scaffolds and support to ensure they can succeed but are challenged.

1. **Give all students a clear task**
2. **Recap success criteria or steps**
3. **Provide supports (scaffolds)**
4. **Circulate to check work**
5. **Give prompts to secure success**
6. **Reteach to fix misconceptions**

Avoid having students practice making errors and don't move on until you have a high success rate.

Consider which types of scaffolding different learners need to be successful but challenged. See provide scaffold for examples.

Use a range of examples so students build understanding that extends beyond context. E.g. counting money or fruit.

Related Theory

2 Working memory is limited

24 Independent Practice

Have students demonstrate and embed their learning by giving them tasks that get them to apply it on their own in a range of contexts. Remove most scaffolds and assess their work.

1. **Display and explain a task**
2. **Recap key concepts if needed**
3. **Check they know what to do**
4. **Say how long they have and start**
5. **Get them to check their work**
6. **Review work when it's done**

Checking their work will tell you if you need to spend more time or add or remove scaffolding.

Practice move skills to long term memory, which builds fluency and locks in learning. This frees up working memory allowing for harder thinkign.

Then, give them similar problems so they start to understand the patterns and transfer their learning to other contexts.

Finally, give bigger tasks so students can integrate new learning with old and make wider connections.

Related Theory

6 Practice strengthens memory

Data-driven teaching, allows you to find and fix misconceptions early and move on when ready.

Use these strategies to check and track student learning so you can decide what to teach next and how.

25 Circulate to Check Work

Check as many students as you can to give students fast feedback while they practice. Get to learners who need help and whose work you need to check. Gather data and resolve errors as you go.

- [ ] **Move around to class and check**
- [ ] **Get to top, middle and bottom**
- [ ] **Hunt for and correct errors**
- [ ] **Give prompts to secure success**
- [ ] **Reteach to fix knowledge gaps**

Checking student work during practice gives you an immediate and clear picture of what they can do and allows you to catch misconceptions as they occur rather than having students practice errors.

Supporting struggling learners in real time enables you to help them catch up and encourage them.

Real time checking of work motivates and creates accountability. It gives you data to prioritise your next steps and saves you time later.

Related Theory

5 Misconceptions prevent learning

26 Quiz the Class

Check all students' understanding of key concepts quickly by giving them a quiz. This gives students feedback on their learning and reduces forgetting.

1. **Create a list of questions**
2. **Say them and give thinking time**
3. **Review questions one by one**
4. **Get student to say their answers**
5. **Have them check their work**
6. **Correct errors and reteach if needed**
7. **Check scores and track them**

Use quizzes to 'take the pulse' at the end of topics and units as a way to help students see and own what they have and haven't learned.

Include key conceptions from previous lessons in your quizzes. This reduces forgetting because it requires retrieval from long term memory.

Make questions get harder so all students have early success and so you can easily see the differences in what they understand.

Make it fun with competition and celebrate success.

Related Theory

7 Revisiting reduces forgetting

27 Give an Exit Ticket

Check if students achieved the learning goals by having them answer 2-3 questions at the end of the lesson. This gives you data on each chids' progress. Use it to plan the next lesson.

1. **Create 3 questions to assess if learning goals were achieved**
2. **Share them easiest to hardest**
3. **Give enough time do all questions**
4. **Collect them in for review**
5. **Use the data to drive planning**

Checking exit tickets can be too time consuming to do every lesson so consider reviewing a few selectively to check what particular students or groups in the class understand.

Use Exit Tickets:

- As a 'Do Now' by having students review last lessons exit ticket.
- To get students to see and take ownership of their progress.
- To check who understands what so you know what to reteach and can plan.

Related Theory

4 Misconceptions prevent future learning

5 New knowledge builds on old