3.1 Develop expert learners:
Teach students how to learn

Essence >
The teacher develops students' understanding of learning and expands their strategies for thinking, learning and working collaboratively.

Create space for many ways

A great way to get the minds 'ticking' in the morning is to have a 'problem of the day'. Maths problems, such as the Prisoner's Puzzle, provide an exciting challenge for students to work on individually or as a group. The process involves students in thinking about:

- How did I work this out?
- Were there other ways I could have done this?
- Which strategies work best for me?

The Prisoners' Puzzle*[1]*:

Fifty prisoners are locked in cells in a dungeon. The prison guard, not realising the doors are locked, passes each cell at bedtime and turns the key once. A second guard comes later and turns the locks on cells 2, 4, 6, 8 and so on, stopping only at multiples of 2. A third guard does the same, but stops at cells 3, 6, 9, 12 and so on, and a fourth guard turns the locks in cells 4, 8, 12, 16 and so on. This carries on until 50 guards have passed the cells and turned the locks, and then all the guards go to bed. ***Which prisoners escape in the night?***

This problem aroused great excitement amongst my Year 6/7 students. Groups quickly galvanised to try and come up with a solution. The allocated 15 minute timeslot was soon up, and the students negotiated to spend more time on it later that day. We scheduled the last 20 minutes of the day for groups to share their strategies—both successful and unsuccessful—and to discuss how issues were dealt with and new discoveries made.

The strategies used by different groups were amazing:

- One group had negotiated with the class next door to join us for the last 20 minutes of the day as they needed the extra 'bodies' to act out the problem. What fun the neighbouring class had in being prisoners and keeping track of whether their cell was locked or unlocked as each guard passed!
- There were several interpretations through drawings and tables used by a number of groups—lots of versions were shown.
- One group meant business. They enlisted the aid of a teacher who was good at maths to help them work out a formula and they proceeded to explain how it worked.

Then there was the group who gave up. Having exhausted all the strategies they thought they could use, they couldn't decide which way to go next. For this group in particular, the sharing led to significant learning because it opened their minds to new ways of thinking. By listening to others describe how they'd persisted and finally come up with a strategy that worked, this group realised that they'd definitely given up too quickly.

Through this new learning challenge I gained valuable insights. I hadn't needed to enforce limitations on students. I hadn't restricted them to working within the classroom. The group who needed the extra 'prisoners' came up with the idea of using more students, and they successfully engaged the interest of that teacher and her class. The experience showed me that I must continue to actively support creative ways of thinking.

Upper primary teacher

[1] *Dorling Kindersley & Ball J,* Think of a number, *2005, p 44*

Key actions: Teachers

Develop students' learning dispositions
- Model curiosity, excitement and appropriate habits of mind as a learner
- Actively promote risk-taking and discovery, so that students learn to challenge themselves

Develop students' self-concept
- Affirm effort and committed approaches to learning
- Share personal stories of learning, and together reflect on the thinking and feelings involved in learning experiences

Develop students' understanding of how we learn
- Lead students to explore how the human brain functions, and how there are optimal conditions for learning

Develop students' metacognition
- Structure activities in a variety of learning modes, encourage learners to reflect on modes of choice and what they tend to avoid, to increase students' awareness of their strengths and areas for refining their skills
- Teach the language of and specific strategies for thinking, learning and working together

Extend students' learning potential
- Teach strategies, and design opportunities for creative and critical thinking and inquiry
- Deliberately plan for students to use different strategies to reflect on what they have learnt, how they learnt, why it had that outcome and where it might lead

Manage and direct learning
- Create a range of tasks where students can decide to work individually or in groups, and discuss how those decisions affected their subsequent learning outcomes
- Model, teach and reinforce goal setting, time management and organisation procedures and strategies
- Reassure students that learning can be hard and requires persistence and practice

Work collaboratively
- Explicitly teach and articulate strategies for effective collaboration: role taking, listening to and respecting others' points of view, appreciating different contributions and playing your part

Key actions: Students

- Find out how I can use different strategies to help me concentrate
- Develop skills for learning in different ways—be creative and think 'How?', 'Why?' and 'What if?'
- Talk with others about how they learn best, and share tips that work well when we're facing a challenge
- Use time management and organisation skills to make the most of my learning time
- Value other people's help and advice, and keep reflecting on how I'm going
- Keep trying with my learning even when I find it hard
- Identify people such as other students, parents and teachers who have particular strengths, and learn from them and use them as models
- Be prepared to use my strengths to help others learn

If you never change your mind, why have one?
Edward de Bono

Justice alert

Whose learning thrives and whose learning is stifled by classroom norms?

Ways to teach students how to learn

Strategies to support learning: Useful strategies include Gardner's Multiple Intelligences, Costa's Habits of Mind, Bloom's Taxonomy, and Thinker's Keys. Design tasks for students to experience how these specific approaches help them to learn more effectively.

Metacognitive learning journals: Learners are capable of higher levels of critical thinking and learning when they are aware of their thought processes. In this style of journal, learners are encouraged and supported to think about their own thought processes after reading or other class activities.

When students discuss ways of thinking with the whole class or with other individual students, it helps them to know their strengths in, or heightens their awareness about, other strategies to try.

Metacognitive Journal	
What I learnt	How I learnt It

Thinking aloud: Provide dedicated time and opportunities for students to verbalise their emerging ideas. Thinking aloud helps students to talk their way into their learning by sorting and clarifying ideas, and putting words to their thinking. Listening to others think aloud provides models of a range of thinking strategies to try.

Reciprocal reading: This is a structured process where students read together and monitor their comprehension by stopping, asking questions and explaining to each other what the text means.

Future-based planning: Learners envisage what it will look like when they've achieved their learning goal. They write/draw it on a flip-chart with a target date; they then decide what they'd have to do the day/week before, then two days/weeks before, then three, moving back in time to the present. They can then ask the question: 'Now, what do I need to do first?'.

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3.1 teach students how to learn

Evidence of Learning folder:
This is all about valuing the process, not just the product. Ask students to set up a folder (hard copy and/or electronic) to keep all their ongoing work, photos, articles etc, as all of these are evidence of their learning process. Don't insist on 'good copies' of everything—tell students to keep even the examples of 'quick thinking'. Make time for them to look back through their folder and reflect on all those steps they take in their learning.

Break states: Change the mental and physical state of the class by using music, quick games, guided relaxation, change of lighting, breathing exercises, and snack breaks. Discuss their impact on concentration/focus. Invite students to devise ways to use these break states in other contexts to keep their learning on track.

Superheroes: Ask students to design superheroes to embody the things that the students think are most important for them as lifelong learners (eg skills, dispositions, learning capacities).

Desert Island Discs: Create a regular timeslot where students take turns to nominate four 'learning items' to take to their desert island. Which skills, capacities, approaches and techniques would they consider most useful to them when learning new things in a strange environment, and why?

The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn.

Alvin Toffler

Language that teachers can use to teach students how to learn

- When are you most excited about learning? What makes it exciting?
- How did you make connections from what you already know? Could you teach someone else?
- What's your first step in this task?
- Do you need time to talk it over?
- Have a go, move outside your comfort zone and see what happens
- What learning challenge are you prepared to take on?
- What strategies could help you learn—diagrams, self-testing, physical activity, talking it through with someone?
- What strategies could help you reinforce or master your learning—creating rhymes, memorising, imagining, experiencing, doing?
- What didn't work so well? Why? What would you do differently next time? Who could help you?
- Which tasks are more successful for you working alone? Which are better done as part of a group?

This element is not demonstrated if:

- The teacher assumes that all students can learn successfully in the same mode
- The teacher focuses on affirming ability only, rather than including process and commitment
- The teacher always sets the learning context, goals and strategies
- There is a lack of explicit teaching of the strategies for successful learning
- Feedback is teacher-dominated and fails to provide information about future direction
- Students are unable to articulate what they are learning and how this connects to prior learning
- Students are denied opportunity for critical thinking, creative thinking or inquiry
- Students' approaches and ideas are dismissed as inappropriate, incorrect or inferior

Practice check

- When teaching, do I tend to favour my own learning mode preference?
- Have I deliberately extended my teaching style?
- Am I creating an environment that encourages students to try new strategies for learning and helps them recognise that what feels comfortable is not necessarily best?
- How do I clarify and support the learning process, and get students to share how they learn and what works for them?
- How do I encourage students to be critically reflective thinkers?
- Do I teach in a way that encourages students to ask questions, rather than restate information?
- Am I giving opportunities for students to evaluate their learning outcomes from individual tasks and also group work?
- Are my students ever stuck? If not, are they challenged enough in their learning?
- Do I affirm curiosity, effort and challenge, or do I affirm compliance?
- Have I helped my students to experience greater success through using appropriate learning strategies.

expand students' thinking strategies

Notes:

Metacognitive skills include taking conscious control of learning, planning and selecting strategies, monitoring the progress of learning, correcting errors, analysing the effectiveness of learning strategies and changing learning behaviours and strategies when necessary.

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