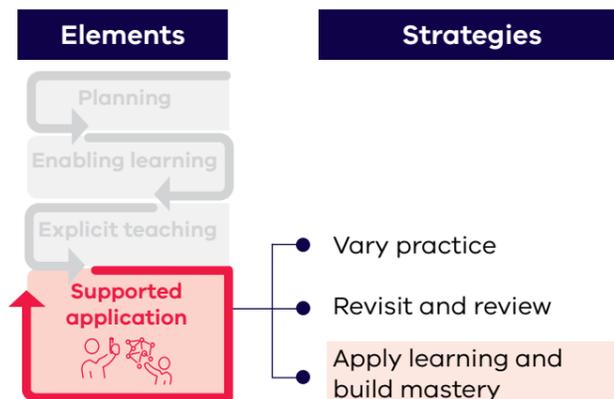# Apply learning and build mastery

Once students have developed a sound knowledge base, following explicit teaching and guided and independent practice, they can apply their learning in increasingly complex and independent ways (AERO 2024a). Students can further consolidate their knowledge and demonstrate mastery through open tasks, problem solving and guided, structured inquiry. By engaging in tasks that require students to select, organise and integrate knowledge, students can generate new learning beyond what they have been explicitly taught (Fiorella and Mayer 2016).

Elements	Strategies

- Planning
- Enabling learning
- Explicit teaching
- **Supported application**

- Vary practice
- Revisit and review
- Apply learning and build mastery

Key links to other guides

- **Scaffold practice**
- **Monitor progress**
- **Enable student self-regulation and self-efficacy**

Links to departmental initiatives

- **Diverse Learners Hub**
- **Phonics Plus**
- **Professional Learning Communities**
- **Student Excellence Program**
- **Tech Schools**
- **Victorian Lesson Plans**

References and further reading

arc.educationapps.vic.gov.au/learning/resource/78132

Practice 1 — Enable knowledge application and mastery

Use tasks to promote deep learning

With sufficient knowledge, students can engage in deep learning tasks where they draw on prior learning to generate new connections and ideas. These are activities where students think more deeply about the content: they choose what is important, organise ideas and connect new learning with what they already know (Hattie and Donoghue 2016; Fiorella and Mayer 2016). This helps students understand and remember more over time.

HOW?

- Use summary tasks that require students to select key ideas, organise them in a logical structure and integrate the new information with prior knowledge.
- Use mapping, drawing and imagining to prompt students to translate material they are learning into organised and coherent representations. E.g. in History, students draw on key material from the lesson to write a first-person account, imagining they are present at an historical event.
- Self-testing, self-explaining and peer teaching can prompt students to select relevant new content or prior learning, organise the material and build new connections. E.g. students writing quiz questions on a recently completed topic.

Use open tasks

Open tasks that challenge students to solve real-world problems allow them to use their knowledge to think critically and creatively (AERO 2024). These tasks require students to use and connect explicitly taught knowledge to solve problems and generate new learning.

HOW?

- Use open-ended tasks that encourage students to explore multiple methods and solutions. E.g. set a Fermi problem: 'Could all the people in the world fit into Victoria?'
- Vary restrictions and conditions in tasks. E.g. you have a $50 discount voucher for a dinner. What might be the cost of your dinner? What if you take a friend? Calculate the percentage discount for each diner.
- Design open tasks that allow students to apply their knowledge to real world problems E.g. students research an issue in their local community, such as rubbish disposal and recycling, and design solutions.

Practice 2 — Guide and support students as they apply their learning with greater independence

Model problem solving

Teachers enhance students' problem solving ability by modelling the process of drawing upon previously taught knowledge to solve new problems. (AERO 2023). When students have relevant domain-specific knowledge to retrieve and process, they can generate ideas and determine possible solutions (Beaty et al. 2015; Sweller 2016).

HOW?

- Show students where to start with a problem and then guide them through solution steps based on their understanding and recall of domain-specific knowledge.
- Model for students how to spot and correct mistakes.
- Introduce processes that codify the steps of problem solving and can be used with different problem types and subjects. E.g. Understand the problem, Plan the strategies, Solve the problem and Check the result (UPSC).

Support guided structured inquiry

Following explicit teaching and practice to consolidate learning, guided structured inquiry can introduce complexity, challenge and opportunities to build independence (AERO 2024).

HOW?

- Ensure students have sufficient foundational knowledge to engage in structured inquiry.
- Provide guidance and structure through clear instructions, modelling, scaffolds and feedback.
- Teach guided inquiry processes for your discipline area. Provide scaffolds, such as worksheets or guides, with step-by-step directions. E.g. in History, students use an historical inquiry process where they develop a research question, identify, organise and analyse primary sources and historical interpretations, and then construct an historical argument supported by evidence.

Use group work

Group work distributes the workload in complex tasks and promotes collaboration and communication. Protocols and scaffolds provide students with structure and ensure accountability in group tasks.

HOW?

- Explicitly teach group work protocols (see **Paired and collaborative tasks in Scaffold practice**) to ensure participation and workload is equally shared across the group.
- Provide tools and scaffolds to direct and capture group discussion, decision making and work.
- Encourage genuine collaboration by setting group tasks that are too difficult for students to complete individually.
- Consider if the benefits of group work outweigh the complexity of collaboration.

Teach metacognitive strategies

Building students' awareness of metacognitive knowledge and strategies leads to an improved ability to monitor, direct and review their learning (Quigley et al. 2018). This helps them manage their thinking, select the most appropriate strategies to solve specific tasks, and become independent learners.

HOW?

- Teach students the cycle of goal setting, planning, monitoring and self-evaluation (see **Enable student self-regulation and self-efficacy**).
- Model and support the use of the 4 types of self-directed metacognitive questions (Mevarech and Kramarski 2014):
  - Comprehension questions help students understand the problem. E.g. 'What is the problem about?'
  - Connection questions help students connect the problem to prior knowledge. E.g. 'Have I encountered this before?'
  - Strategic questions help students identify appropriate strategies. E.g. 'What strategies have I used for similar problems?'
  - Reflection questions help students monitor their progress, adapt their approach and evaluate their success. E.g. 'Was this the best strategy? Why or why not?'