Australian Education Research Organisation

Develop techniques and practices

Scaffold practice
Guide student learning and gradually remove scaffolds

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Scaffolding is the process of providing support – also known as scaffolds – to students so they can successfully complete learning tasks. Intentionally providing and then gradually removing scaffolds over time enables students to achieve learning objectives and supports students' growing confidence and self-efficacy.

This practice guide will help you understand how to:

- select and use scaffolds to support each phase of the learning process as students retain, consolidate and apply their learning

- gradually remove and fade scaffolds as students develop greater proficiency.

Guide student learning and gradually remove scaffolds (*Scaffold practice*) is one of 18 interconnected practices in our Teaching for How Students Learn model of learning and teaching. This practice sits in the **Instruction** phase, which focuses on managing students' cognitive load as they process and acquire new learning. This practice is interconnected with:

- **Enabling**, which focuses on responsive, respectful relationships in a culturally safe, learning-focused environment

- **Planning**, which focuses on developing and using a sequenced and structured plan for the knowledge and skills students will acquire

- **Gradual release**, which focuses on maximising students' opportunities to retain, consolidate and apply their learning.

| Enabling | Planning | **Instruction** | Gradual release |

Understanding this practice

These examples demonstrate what guiding student learning and gradually removing scaffolds might look like in the classroom, and potential misapplications in practice.

✓ What it is

- Planned support to bridge the gap between current abilities and the learning objectives.

- Supports planned before instruction commences, as well as supports introduced during the instruction process to respond to students' needs.

- Supports for all students to be successful in their learning.

- Building students' capacity for independence by gradually removing scaffolds over time.

- Sustaining use of scaffolds as required for all students to access and meet learning objectives.

✕ What it isn't

- Just for students who are struggling or require intervention support.

- Creating a dependence on you as their teacher.

- Discouraging persistence.

- Providing students with so much information and guidance that it adds to their cognitive load and inhibits thinking.

- Excessive use of worksheets, note takers and sentence frames requiring students to fill in the blanks without also making meaning about what they're learning.

The importance of scaffolded practice

Key points from the research

- Fully explaining and scaffolding is more effective for learning new information than having students solve problems on their own. Cognitive overload can happen when students are required to complete new tasks or identify new learning by themselves, without prior instruction, guidance or scaffolding from their teacher.[1]

- When scaffolds – such as step-by-step instructions or visual aids – are carefully designed and gradually removed, they reduce unnecessary mental effort and frustration, helping to keep learners motivated and engaged.[2]

- Scaffolds can be reduced or replaced with independent problem-solving and decision-making as students become more expert in that area of learning.[3, 4, 5]

- Scaffolds that use visual prompts – such as graphs, diagrams and concept maps combined with aural and print prompts – are most effective.[6]

- Planned and contingent scaffolding can support teaching of students with English as an additional language or dialect (EAL/D). Viewing students with EAL/D as skilled bilingual learners – rather than disadvantaged Standard Australian English learners – underpins effective scaffolding. Scaffolds can support learning by helping students use the full repertoire of their home language and culture to enhance comprehension and expression.[7] With scaffolds that connect curriculum content to students' language and cultural context, you can bridge prior understanding with new concepts, fostering deeper learning.[8, 9]

- A strengths-based view is essential for providing effective instruction and supporting all students with accessing learning equitably. A reasonable adjustment is a measure – or group of measures – implemented to assist a student with disability to access and participate in learning.[10] Scaffolds are one example of a reasonable adjustment that can be provided to support access to learning. These measures should be regularly evaluated and modified to meet students' changing needs. When instruction is explicit and responds to students' individual needs with the appropriate frequency, intensity and duration of support, the scaffolds' effectiveness is significantly enhanced.[11, 12]

Key strategies and techniques

Developing and using scaffolds, and then gradually fading these as students begin to master each area of learning, supports success for all students within a consistent instructional approach. You can use planned and contingent scaffolding to support all students to work towards a common learning objective. This section describes key strategies and techniques (see summary in Figure 1) that can support you with planning, designing and using scaffolds.

Figure 1: Key strategies and techniques for developing and using scaffolds
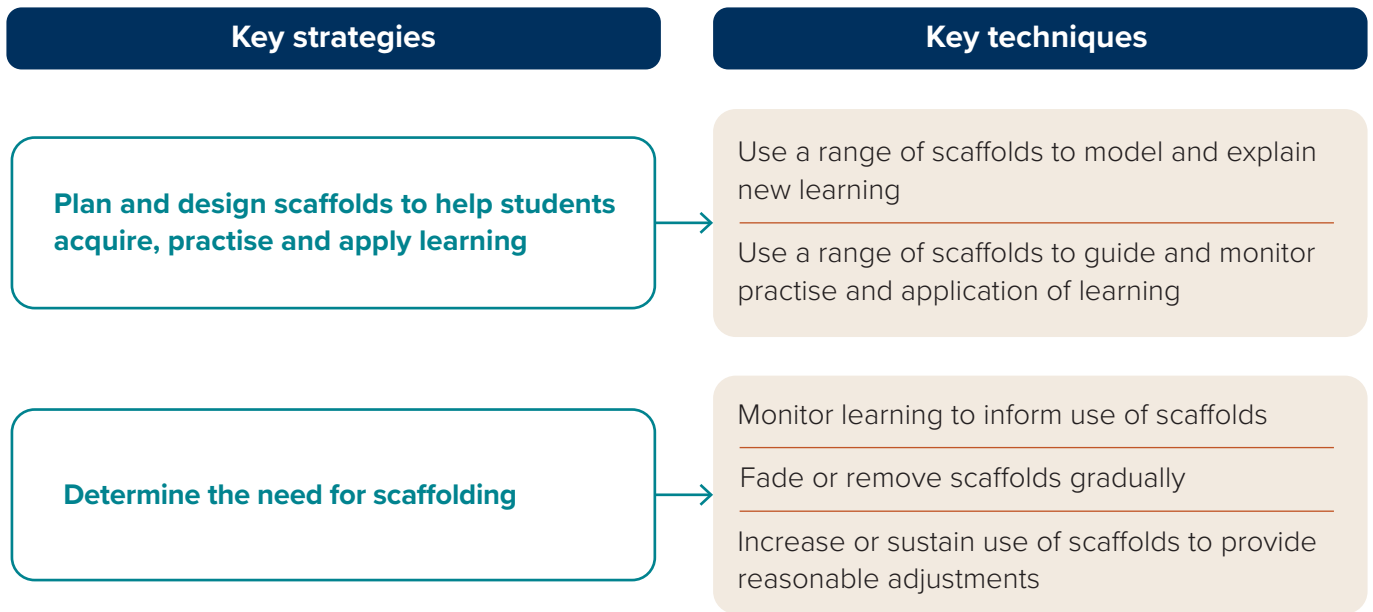
Key strategies	Key techniques

Plan and design scaffolds to help students acquire, practise and apply learning

Use a range of scaffolds to model and explain new learning

Use a range of scaffolds to guide and monitor practise and application of learning

Determine the need for scaffolding

Monitor learning to inform use of scaffolds

Fade or remove scaffolds gradually

Increase or sustain use of scaffolds to provide reasonable adjustments

Plan and design scaffolds to help students acquire, practise and apply learning

Use a range of scaffolds to model and explain new learning

Using a variety of scaffolds supports different aspects of the teaching and learning process. Types of scaffolds for new learning include:

- **Worked examples:** In a worked example (also described in AERO's Teach Explicitly practice guide), you model and explain aloud each step in a task before moving on to the next. Limit the number of steps and keep examples clear to help manage cognitive load effectively. When fading a worked example, gradually remove or fade solution steps until students can problem-solve without support.

- **Example-problem pairs:** In example-problem pairs, the example is modelled and students complete a paired problem. The paired example and the problem should be minimally different so that the example guides students as they work to solve the paired problem. A common format is to display the example on the left and the problem on the right. For example:

Modelled example

Solve for x:

$2x + 5 = 7$

$2x + 5 - 5 = 7 - 5$ (Take 5 from both sides)

$2x = 2$ (Simplify)

$2x/2 = 2/2$ (Divide both sides by 2)

$X = 1$ (Simplify)

Student question

Solve for x:

$3x + 2 = 11$

- **Annotated work samples:** Students may not always know what success looks like. Clear examples of high-quality work can be annotated to clarify the meaning of success criteria and highlight common pitfalls. For example, you may provide annotated essays to highlight key elements of a literary analysis.

- **Writing scaffolds:** Sentence stems, sentence starters or visual prompts can support writing. You could provide students with an independent clause and ask them to join it with a dependent clause using a subordinating conjunction. For example:

> Using subordinating conjunctions like 'after', 'although' and 'because':
>
> Independent clause: 'The music was loud.'
>
> Student's dependent clause: 'although the windows were closed'.
>
> The student then combines the independent and dependent clauses:
>
> 'The music was loud, although the windows were closed.'

Using connectives to join an independent clause to a dependent clause is covered in more detail in AERO's practice guide on writing complex sentences.

Sentence combining is another example of a writing activity that makes use of sentence stems. You provide students with the prompt to combine sentences. For example:

> Combining sentences with 'unless':
>
> - 'I will be late for school.'
> - 'I pack my bag quickly.'
>
> 'I will be late for school unless I pack my bag quickly.'

Sentence combining is covered in more detail in AERO's practice guide on sentence combining.

For extended writing, students can learn to orally recite, act out and map out stories with graphic organisers as part of preparation to write them.

> **Talk for Writing** is an example of a scaffolded writing approach. You can help students tell stories orally, then map them out with pictures or diagrams, and then have students follow and reproduce the structure and features they've used in their own writing. Pictures and prompts for the structure can be gradually reduced as students move to increasingly independent writing.

Use a range of scaffolds to guide and monitor practise and application of learning

Scaffolds are still relevant as students consolidate, practise and apply their learning in new ways. Types of scaffolds for these later stages of the learning process include:

- **Questions:** Questioning helps students retrieve and consolidate their learning. Clarifying or rephrasing questions can make it easier to assess students' understanding. De-escalating a question involves simplifying it into a multiple-choice format with 2 options for the first step, such as in this question about an addition procedure:

> 'You're adding
> $$\begin{array}{r} 34 \\ + 13? \\ \hline \\ \hline \end{array}$$
>
> How do you solve this? Not sure?
>
> Do you start by adding from the right or the left? Good, so what's 4 + 3? Where do you write the answer? Yes, in the ones column.'

- **Guided notes**: You can offer pre-prepared summaries with blanks for students to fill in key information when presenting new concepts or when reviewing a presentation or reading material. Gradually reduce the detail included so that students are prompted to recall and represent more information for themselves using text and diagrams.

- **Discussion framework:** A discussion framework is a visual or verbal prompt that prepares students to share their responses in a discussion. When provided with a discussion framework, students can think more about 'what to say' without the added cognitive load of 'how to say it'. Discussion frameworks can teach students specific ways to engage by helping them ask and answer questions, paraphrase, share a point of view and build on each others' ideas. For example:

  - 'Compare … with …'
  - 'What are the pluses and minuses of … ?'
  - 'What predictions can you share about … ?'
  - 'What are the 3 key ideas about…?'

- **Templates:** Templates can ensure students have a clear understanding of task requirements and what's expected to persist through these tasks. You could provide a template to support students with writing a technical description. For example:

  Template for technical description of an animal

  - Classification (What is it?)
  - Appearance (What does it look like?)
  - Behaviour (What does it do?)
  - Habitat (Where does it live?)

- **Process worksheets:** Process worksheets list the steps involved in completing tasks or solving problems. Students use them as guides, with each step explained and suggestions like 'When doing A, consider X and Y.' For example, you can use process worksheets to scaffold process or methods in science or maths. As students get better at using and describing a process, the details and guidance on the worksheet can be gradually reduced or removed. For example:

  - What do you want to know or explain?
  - What do you think you will observe or find out?
  - How will you design an experiment?
  - Does the data support your hypothesis?

- **Procedural prompts:** A procedural prompt is a specific cue or instruction to guide students through a process or task. Procedural prompts can help students persist with and complete less structured tasks, such as those found in comprehension and writing activities. The most common procedural prompts are words like 'what', 'who', 'why' and 'when'.

- **Information process models:** Once students have a strong foundation of related knowledge and skills, you can provide a scaffold to help manage the cognitive demands of investigating an open or real-world problem. For example, the Information Search Process (ISP)[13] suggests the following steps:

  - **Initiation:** Provide clear prompts or questions to define the information needed.

  - **Selection:** Guide and provide students with criteria for evaluating the usefulness of different sources.

  - **Exploration:** Provide examples of how to analyse and interpret information.

  - **Formulation:** Provide opportunities for feedback to refine and clarify understanding.

  - **Collection:** Offer tools for organising and managing collected information, such as templates or concept maps.

  - **Presentation:** Provide guidelines or rubrics for presenting information.

  Continue to guide and monitor practice throughout independent problem-solving, scaffolding where appropriate.

  Open and real-world problems are covered in more detail in AERO's Extend and Challenge practice guide.

Self-review: Self-review routines can be set up to scaffold students to evaluate their progress against success criteria. You can support this by providing checklists, rubrics and finished examples. AERO's practice guide on supporting self-regulated learning provides more information.

Determine the need for scaffolding

Monitor learning to inform use of scaffolds

Monitor students' progress by checking for understanding to determine what students know and can do, identify gaps in their learning and adjust your teaching to meet their needs. Monitoring progress helps you create a learning environment where students feel safe and supported to be active participants in the learning process. It also better equips you to provide valuable feedback and adjust your teaching. Examples of scaffolds to monitor student progress include:

- **Hinge questions:** When planning your lesson, identify the key concepts and design one or two questions that all students can quickly answer to demonstrate their understanding. These questions are often referred to as hinge questions. Simple methods for answering these questions include finger voting, ABCD cards or mini whiteboards. Students' responses help you decide whether to reteach or move forward in a lesson and whether scaffolds can be gradually removed.

- **Simple assessments:** You can use quick quizzes, exit tickets or conversation prompts followed by circulating the room to monitor discussions to check for understanding.

- **Routines to seek help:** You can also develop a routine for students to signal what level of guidance or support they'd like with this stage of their learning. This could be an area of the room students can move to if they're seeking more instruction and guidance during practice time or coloured pegs on their desk to signal 'Check in soon' or 'Check with me later'. You can monitor these as you circulate the classroom.

Fade or remove scaffolds gradually

Fading scaffolds provides a way for you to smoothly transition students from using a fully worked example or explanation to guide their practice to using one that has less working out shown or thinking explained. Fading involves providing less of the modelling, explaining and demonstrating as you observe students completing elements of the process for themselves. You can recognise readiness to fade scaffolds and supports when, for example, a student can explain to you or a peer the steps they've followed to complete a task successfully.

Increase or sustain use of scaffolds to provide reasonable adjustments

Adjustments help you ensure all students can access education equitably. Scaffolds can play an important role in this. Some students need persistent scaffolding, such as glossaries, concrete materials (physical tools like blocks, counters, dice, etc.), assistive technologies (for example, speech-to-text software, screen readers, hearing aids, mobility aids and adaptive keyboards for those with physical disabilities), structured worksheets and lists of formulas or symbols to support maths or science tasks. Scaffolds that provide reasonable adjustments may also involve rephrasing questions, modifying tasks or adjusting oral instructions. When you plan and make decisions about what scaffolds to use, consider scaffolds for supporting self-regulated learning and social-emotional regulation. These scaffolds could form part of a personalised learning plan. Avoid a deficit view of students' needs. Instead, support student success with clear, explicit instruction and selecting learning materials that will help students access learning while managing cognitive load.

Developing your practice*

Consider what's informing your current practices, expectations and beliefs. Use these questions to reflect, make a plan to develop your practice and seek feedback to monitor the impact for your students:

- To what extent do you plan for scaffolds to model and explain new learning?

- How do you provide contingent scaffolding strategies when a student needs more help with an activity?

- In your teaching, how do you:
    - check for understanding and give additional instruction, guidance or feedback as needed?
    - guide students with gaps in prior learning?
    - monitor for student needs and support student access to learning objectives?
    - balance the support provided with growing students' confidence and self-efficacy?

- What would others (peers, students, leaders) observe about your approach to ensuring all students can access the learning in your classes? How could you invite and use their feedback to strengthen your approach?

*Reflexive practice (reflexivity) is a process that critically examines personal attitudes, values and biases, with a view to becoming a more self-aware and effective teacher. Through reflexive practice, teachers, educators and school leaders can appraise and evaluate how their behaviours and ideas influence their teaching and learning.[14]

Further reading

Australian Education Research Organisation. (2022, December 2). *Explicit instruction in English* [Video]. https://www.edresearch.edu.au/guides-resources/videos/explicit-instruction-english-video

> This video on explicit instruction in English offers a practical breakdown of how a teacher uses worked examples to scaffold their teaching to support students with more complex tasks. It includes actionable insights on how to use worked examples to support student learning.

Wood, D., Bruner, J., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Child Psychiatry*, *17*(2), 89–100. https://doi.org/10.1111/j.1469-7610.1976.tb00381.x

> Referenced in Paul Kirschner and Carl Hendrick's book How Learning Happens, this seminal article introduces the concept of scaffolding in education, where a tutor supports a learner by breaking down complex tasks into manageable steps. This foundational research highlights how guided interaction between an expert and novice can significantly enhance problem-solving skills.

Turnbull, M., & Braiding, J. (2021). *English as an additional language or dialect (EAL/D) effective school practices – School resource.* Centre for Education Statistics and Evaluation, NSW Department of Education. https://education.nsw.gov.au/about-us/education-data-and-research/cese/publications/practical-guides-for-educators-/eald-effective-school-practices-school-resource

> This resource by the Centre for Education Statistics and Evaluation provides evidence-based strategies for supporting EAL/D students in schools. It provides practical strategies and reflection questions to help teachers and school leaders develop a school and classroom environment where EAL/D learners are supported to achieve their full potential.

Hammond, Z. (2015). *Culturally responsive teaching and the brain: Promoting authentic engagement and rigor among culturally and linguistically diverse students*. Corwin.

> This book by Zaretta Hammond explores how educators can leverage the evidence on how students learn to support culturally diverse learners. It provides insights into culturally responsive scaffolding practices that can improve student learning.

Endnotes

1   Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist*, *41*(2), 75–86. https://doi.org/10.1207/s15326985ep4102_1

2   Evans, P., Vansteenkiste, M., Parker, P., Kingsford-Smith, A., & Zhou, S. (2024). Cognitive load theory and its relationships with motivation: A self-determination theory perspective. *Educational Psychology Review*, *36*(1), Article 7. https://doi.org/10.1007/s10648-023-09841-2

3   Archer, A. L., & Hughes, C. A. (2011). *Explicit instruction: Effective and efficient teaching*. Guilford Press.

4   Kirschner et al., 2006

5   Martin, A. J., & Evans, P. (2018). Load reduction instruction: Exploring a framework that assesses explicit instruction through to independent learning. *Teaching and Teacher Education*, *73*, 203–214. https://doi.org/10.1016/j.tate.2018.03.018

6   Clark, J. M., & Paivio, A. (1991). Dual coding theory and education. *Educational Psychology Review*, *3*, 149–210. https://doi.org/10.1007/BF01320076

7   Turnbull, M., & Braiding, J. (2021). *English as an additional language or dialect (EAL/D) effective school practices – School resource*. Centre for Education Statistics and Evaluation, NSW Department of Education. https://education.nsw.gov.au/about-us/education-data-and-research/cese/publications/practical-guides-for-educators-/eald-effective-school-practices-school-resource

8   Hammond, 2008

9   Wearmouth, J. (2017). Employing culturally responsive pedagogy to foster literacy learning in schools. *Cogent Education*, *4*(1), Article 1295824. https://doi.org/10.1080/2331186X.2017.1295824

10 Australian Government. (2005). *Disability Standards for Education 2005*. https://www.education.gov.au/disability-standards-education-2005

11 Swanson, H., & Siegel, L. (2001). Learning disabilities as a working memory deficit. *Issues in Education*, *7*, 1–48.

12 Australian Institute of Family Studies. (2023). *Supporting children with neurodiversity*. https://aifs.gov.au/resources/policy-and-practice-papers/supporting-children-neurodiversity

13 Genuis, S. (2007). Kuhlthau's classic research on the information search process (ISP). *Evidence Based Library and Information Practice*, *2*(4), 80–83. https://doi.org/10.18438/B88D0C

14 Australian Education Research Organisation. (2024). *Cultural responsiveness in education*. https://www.edresearch.edu.au/summaries-explainers/research-summaries/cultural-responsiveness-education