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Higher order thinking

This page provides guidance on supporting the high-ability student to develop their higher order thinking skills.

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The importance of higher order thinking

It is easy to assume that students who appear to move through tasks quickly have all the skills they need. A teacher may also think these students have little more to develop. Yet, the development of cognitive and metacognitive skills has no ceiling.

There is always more for high-ability students to learn and room for them to grow.

If students exceed curriculum level outcomes, tasks can be made more challenging by targeting higher order thinking. This will set the conditions for students to extend their learning.

What we know

Teachers who plan to teach and extend students' higher order thinking skills promote growth for their high-ability students. Higher order thinking is often used to refer to 'transfer', 'critical thinking' and 'problem solving.' These can be defined as:

- transfer - the student's ability to apply knowledge and skills to new contexts (for example, a student in year 5 learning about fractions applied her knowledge to a real world scenario)

- critical thinking - the ability to reason, reflect, and decide what to believe or do next
- problem solving - meeting a goal that cannot be met with a memorised solution (Brookhart, 2010, 2011).

From theory to practice

Teachers may know some thinking skill taxonomies. These may include:

- Bloom's Revised Taxonomy (remember, understand, apply, analyse, evaluate, create) (Anderson & Krathwohl, 2001)
- Webb's Depth of Knowledge (recall and reproduction, application of skills, strategic thinking, extended thinking) (Webb, 2002).

These models can be used to plan activities that target students' higher order thinking. Focusing on content and skills at the highest level (Level 4 – Extended thinking) can help extend students' thinking skills. Low and high cognitive questions can also be used to target activities towards specific levels of thinking skills.

Strategies and tools

Strategies that teachers may use in their classes to encourage higher order thinking include:

- posing provocative questions, statements or scenarios to generate discussion (for example, the use of 'what if' questions)

- requiring students to explain concepts using analogies, similes and metaphors
- posing problems with no single solution, or that have multiple pathways to a solution
- modelling a range of problem solving strategies
- using concept mapping to assist students to make connections between and within ideas
- creating a makerspace in your classroom to encourage creativity, critical thinking and design thinking
- posing paradoxes for students to consider (for example: In a study of World War 1, students can be presented with the statement: 'War nurses saved lives, but they also contributed to deaths')
- creating an 'I wonder' wall in your classroom
- conducting a Socratic dialogue.

Tools that can assist teachers to encourage higher order thinking include:

- depth of knowledge table (informed by Webb 2002)
- low and high cognitive questions exemplar for reading comprehension
- SOLO taxonomy

Focus questions for professional learning

- How do you, or can you, plan for higher order thinking in your lessons?
- How does higher order thinking support the needs of the high-ability student?
- What thinking skills are considered to be of higher order in the depth of knowledge table?

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