Explainer

Australian Education Research Organisation

Attention and focus

Students are actively engaged when learning

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Attention and focus are essential for students to process and retain new information effectively. Attention refers to the selective focus of conscious thought on specific information, allowing students to engage meaningfully with learning tasks. Engagement encompasses how students behave, feel and think as they actively participate in learning activities.

This explainer examines how students direct their attention in a schooling environment and how the actions of the teacher can support focus, minimise the impact of distractions on learning and foster conditions for learning success. Understanding these processes is important because sustained attention lays the foundation for effective learning and deeper engagement with learning content.

This explainer is one in a series of 4 that describe the cognitive science of how students learn. Each explainer summarises an element of the student learning process outlined in the Australian Education Research Organisation (AERO)'s Teaching for How Students Learn model of learning and teaching.

Teachers and school leaders can use these explainers to deepen their understanding of the cognitive science of how students learn and consider implications for practice:

Attention and focus
Students are actively engaged when learning

Knowledge and memory
Learning is a change in long-term memory

Retention and recall
Students process limited amounts of new information

Mastery and application
Students develop and demonstrate mastery of their learning

The role of attention in learning

There are 2 types of memory that manage information during learning:

- **working memory**, which processes information
- **long-term memory**, which stores information for later use (Baddeley, 1997).

Working memory – also called 'short-term memory' – acts as a mental workspace where students actively engage with facts, concepts and procedures. Long-term memory stores some of this knowledge, which students may need for future use (Cowan, 2008). For learning to occur, students must actively focus their attention on new information so it can be processed in working memory and potentially stored in long-term memory (Cowan, 1998). Sustained attention and effective processing help students transfer information from working memory and store it in long-term memory.

The ability to direct and maintain attention develops from early childhood. This skill enables children to focus on important information while ignoring distractions (Posner et al., 2014). Over time, children develop the ability to use working memory to control where their attention is directed. For example, they learn to switch attention between different parts of a task or maintain focus on steps in a process (Oberauer, 2024).

This development of attention control continues through adolescence and varies between individuals. Factors such as sleep patterns, stress levels and opportunities to practise focusing attention on learning tasks influence how well students can control their attention (Miyake & Friedman, 2012).

Factors influencing attention and focus

Executive functions are mental processes that help students plan, focus their attention and control impulses (Diamond, 2013). Working memory – a key executive function – has a limited capacity for processing new information (Baddeley, 1992). When students are asked to think about too many things at once – for example, when they face complex tasks, distractions or unclear expectations – they may experience cognitive overload (Sweller et al., 2011). This cognitive overload can overwhelm working memory and reduce students' ability to focus on learning (Lavie et al., 2004).

Through repetition and practise, students can reduce the demand on their limited working memory resources by making the use of knowledge and its associated behaviours automatic. For example, when students develop automatic recall of multiplication facts or fluent reading skills, they can direct more working memory resources to solving complex maths problems or understanding the meaning of a text. This ability to perform tasks with less effort and without conscious thought is called 'automaticity' (Feldon, 2007).

The amount of new information students can effectively process and focus on at any given time depends on their prior knowledge and the level of automaticity they've developed in related skills and behaviours (Feldon, 2007). When students master foundational knowledge and expected behaviours to the point of automaticity, they free up working memory resources to focus on new and more complex learning (Chaffee et al., 2017; Simonsen et al., 2008).

Self-regulation of attention

Self-regulation is the ability to monitor and control thoughts, emotions and behaviours to achieve goals. Many factors influence the development of self-regulation. Trauma, neurodivergence or emotional states like anxiety can make it harder for students to regulate their attention and behaviour in learning situations. Emotional dysregulation reduces students' ability to focus attention and process new information (Pekrun & Linnenbrink-Garcia, 2012). Students with strong self-regulation can better resist distractions and regain focus after interruptions, allowing them to stay engaged with learning tasks (Zimmerman, 1989).

Safe, structured and predictable environments help students self-regulate, sustain attention and engage effectively with learning. Students who have been explicitly taught and practised routines for learning until they become automatic can spend less mental effort managing their behaviour and interactions and, instead, focus their working memory resources on learning (Chaffee et al., 2017; Simonsen et al., 2008). When students feel that their cultural identity is recognised, valued and respected in their learning environment, they experience a greater sense of belonging. This can improve psychological safety, motivation and engagement (Pekrun & Linnenbrink-Garcia, 2012) and reduce cognitive stress, freeing up mental resources for processing new information (Martin et al., 2021).

Implications for teaching and learning

Teachers and leaders play an important role in creating a learning-focused environment and delivering instruction that supports students' learning success. To help students sustain attention and effectively process new content, teachers should consider several factors when teaching. These include establishing clear rules and routines, explicitly teaching self-regulated learning strategies, structuring lessons to manage cognitive load, reinforcing key ideas through regular review and practice, and fostering a safe and supportive learning environment.

To support students in maintaining attention and focus on learning, teachers should:

- **Establish rules and routines that support students to focus on learning.** Explicitly teaching and practising rules and routines until they become automatic helps students understand and meet expectations with less mental effort. When behaviour and classroom expectations are predictable, students spend less mental energy on managing their actions and more on sustaining attention and focus on learning. Clear, consistent rules and routines create a structured learning environment that minimises distractions and supports students to actively engage in their learning.
- **Teach techniques that develop students' capacity to improve their own learning.** Explicitly teaching self-regulated learning strategies builds students' confidence and self-efficacy – the belief in their ability to learn. Teachers can support this by modelling and guiding students to set goals, monitor learning progress and seek feedback. Encouraging students to set meaningful goals may help them maintain focus by highlighting the relevance of their learning. Teachers can also help students recognise distractions and develop strategies to sustain attention and stay on task. With appropriate support, students can develop metacognitive strategies to manage their learning and focus more effectively (Ahn & Bong, 2019; Education Endowment Foundation, 2018; Stanton et al., 2021; Willingham, 2021).

- **Demonstrate respectful interactions to foster positive relationships and belonging.** When students feel accepted, valued and connected to their learning community, they experience greater psychological safety, higher motivation and engagement and lower stress levels – all of which help them sustain attention and focus on learning (Nickerson et al., 2021; Pekrun & Linnenbrink-Garcia, 2012; Vogel & Schwabe, 2016). Teachers and leaders can create these conditions through respectful interactions and inclusive practices. A strong sense of belonging can reduce anxiety and distractions, allowing students to focus their mental resources on processing new information during learning.
- **Develop cultural responsiveness to meet the learning needs and aspirations of all students.** While culturally responsive teaching practice is an emerging area of research, there are promising approaches developed by First Nations communities that foster culturally safe learning environments to support student attention and focus on learning. These promising approaches emphasise building relationships founded on trust and respect; learning about the context of your school, students, families and communities; and being reflexive and responsive to create culturally safe learning environments.
- **Engage with families for successful learning.** Recognising and supporting learning at home, two-way positive communication and collaboratively planning and problem-solving with families can all contribute to improved student learning outcomes (AERO, 2021a, 2021b). Through these practices, teachers and leaders can work with families to establish a shared understanding of learning and behaviour (Llewellyn et al., 2018). Strong family–school partnerships can support students to understand expectations for learning and behaviour so they can better focus and sustain attention in the classroom.

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