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TransformED NI:
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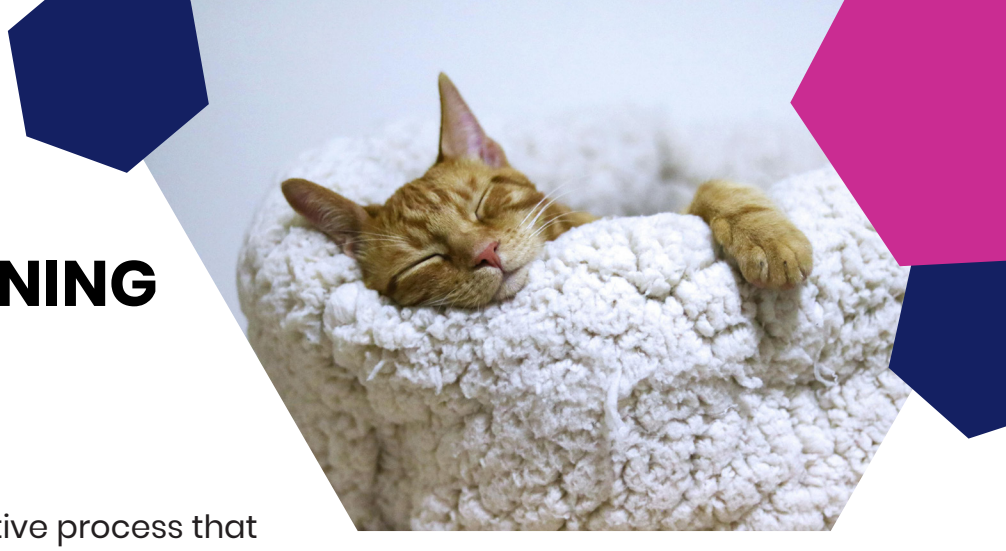
The Role of Sleep in Learning:

How sleep impacts Cognition, Learning and Performance

InnerDrive

THE ROLE OF SLEEP IN LEARNING

By InnerDrive



Sleep is an essential cognitive process that directly impacts attention, memory, learning and performance. Despite this, many young people consistently get less than the recommended hours of sleep.

This article explores the research behind how sleep affects learning, outlining what happens in the brain during sleep, how poor habits undermine performance and what practical steps schools can take to help students improve.

SLEEP AND ACADEMIC PERFORMANCE

Students who sleep well consistently learn better and achieve more. In one of the most comprehensive reviews to date, Dewald et al. (2010) conducted a meta-analysis of over 19,000 participants and found that sleep quality, sleep duration and sleepiness were all significantly related to school performance.

Similarly, Okano et al. (2019) tracked older students using wearable sleep trackers. They found that sleep consistency was a better predictor of academic performance than just sleep quantity and that sleep duration and quality in the week leading up to tests, not just the night before, were strongly associated with better results.

A real-world intervention by Scullin (2018) tested whether students could improve exam performance by aiming for eight hours of sleep each night during finals week. The result? Students who committed to this target – regardless of whether they achieved it every night – performed significantly better on their final exams.

THE COGNITIVE BENEFITS OF SLEEP

Why does sleep have such a dramatic impact on performance? The answer lies in how the brain processes information during rest.

Walker & Stickgold (2006) found that sleep supports memory consolidation, the process of converting short-term learning into long-term understanding. Sleep helps reinforce recently learned information and reorganise it for future use – allowing insights to form overnight.

Building on this, Diekelmann & Born (2010) showed that sleep does not just stabilise memory – it actively strengthens and integrates it. During deep sleep stages, the brain replays and enhances neural connections made during the day, a key part of embedding learning.

SLEEP AND COGNITIVE FUNCTIONING

The effects of sleep go beyond memory. Lack of sleep impairs attention, processing speed, emotional regulation and executive function – all of which are critical in the classroom.

Okano et al. (2019) showed that even one poor night of sleep could reduce attention and test performance and those with more irregular sleep patterns across the week had lower grades. Their study also reinforced that cognitive performance is accumulated over time, not based on isolated nights.

COMMON BARRIERS TO SLEEP

Despite the evidence, many students fall into habits that reduce sleep quality without realising the cognitive costs. Research points to several key issues:

1. Screen use before bed

Bright screens suppress melatonin, a hormone that signals when it is time for sleep. In an experiment by Wood et al. (2013), just two hours of tablet use before bed significantly suppressed melatonin levels and delayed the onset of sleepiness. This leads to shorter and less restful sleep, impacting next-day learning.

2. Caffeine consumption

Caffeine stays in the system for hours and can significantly disrupt sleep architecture. In a controlled study, Drake et al. (2013) found that caffeine taken even six hours before bed still reduced total sleep time and sleep quality.

3. Inconsistent sleep patterns

Staying up late on weekdays and sleeping in on weekends leads to "social jetlag". Okano et al. (2019) found that inconsistency in sleep schedules, regardless of total hours, was one of the strongest predictors of poor academic performance.

BIOLOGICAL CHANGES IN ADOLESCENTS

It is important to note that sleep challenges faced by teenagers are not simply behavioural. Crowley, Acebo & Carskadon (2007) found that adolescents undergo a biological shift that naturally makes them feel sleepy later and wake later. This change in circadian rhythm often clashes with early school start times, putting students at risk of chronic sleep deprivation.

PRACTICAL STRATEGIES TO IMPROVE SLEEP AND LEARNING

Drawing from these studies, here are four science-backed actions schools can promote to help students maximise both sleep and academic performance:

1. Promote sleep consistency – Encourage students to keep regular bed and wake times – even on weekends. Okano et al. (2019) found that consistency across the week improves test scores more than just total hours.

2. Establish screen-free wind-down routines – Based on Wood et al. (2013), avoiding screens for a few hours before bed can improve melatonin release and sleep onset. Students could be encouraged to read, stretch or write instead.

3. Time caffeine carefully – Avoid caffeine in the afternoon. According to Drake et al. (2013), even afternoon caffeine use reduces sleep time, potentially compromising next-day concentration and memory.

4. Start the conversation early – Schools should discuss sleep habits from early adolescence onwards (and maybe even earlier). Helping students and families understand the science can create lasting behaviour change.

FINAL THOUGHTS

Sleep is not a luxury – it plays a fundamental part in how students think, feel, behave and learn. It influences what students remember, how well they focus and how effectively they can apply what they learn. When sleep suffers, so does cognition and performance. By applying the lessons from recent research, educators can help students prioritise rest, build healthier habits and ultimately unlock their full academic potential.

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ADDITIONAL RESOURCES

Blogs

How does sleep help improve student performance?
https://innerdrive.co.uk/blog/how-sleep-can-help-student-performance/

5 ways sleep helps revision
https://innerdrive.co.uk/blog/5-ways-sleep-helps-revision/

How all-nighters are hurting students' grades
https://innerdrive.co.uk/blog/all-nighters-and-grades/

9 common sleep mistakes to avoid
https://innerdrive.co.uk/blog/sleep-mistakes/

Book

Why We Sleep: The New Science of Sleep and Dreams (2018) by Matthew Walker
uk.bookshop.org/p/books/why-we-sleep-the-new-science-of-sleep-and-dreams-matthew-walker/1371280

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