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TransformED NI:
Transforming Teaching and Learning

Cognitive Biases:

How Thinking Shortcuts Shape Teaching and Learning

InnerDrive

COGNITIVE BIASES

By InnerDrive

Cognitive biases are predictable patterns of thinking that influence how teachers and students interpret information, often without realising it (Tversky & Kahneman, 1974). The human brain is a powerful information-processing system, but it also has clear limitations.

In classrooms, both teachers and students are required to process large amounts of information quickly. To manage this cognitive load, the brain relies on mental shortcuts, known as heuristics. While these shortcuts are often useful, they can also lead to systematic distortions in judgement and decision-making.

COGNITIVE BIASES AND THE CLASSROOM

In schools, decisions are constantly made under time pressure and with incomplete information. Teachers make judgements about pupils' understanding, behaviour and potential, while students evaluate their own learning, confidence and progress. In these conditions, cognitive biases can strongly influence how information is interpreted and acted upon.

These biases can shape teacher expectations, affect the accuracy of assessment and feedback and influence students' motivation and learning strategies. Cognitive biases are not a sign of poor teaching or weak learning; they are a natural consequence of how the brain processes information efficiently. Understanding these biases is not about assigning blame but rather recognising predictable patterns of thinking that can unintentionally undermine teaching, learning and decision-making.

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1. BIASES THAT SHAPE JUDGEMENT AND PERCEPTION IN TEACHERS

Confirmation Bias: How expectations shape interpretation

Confirmation Bias refers to the tendency to seek out, interpret and remember information in ways that confirm existing beliefs. In classrooms, this can shape how teachers interpret pupils' behaviour and attainment as well as how students judge their own abilities.

A seminal study by Kelley (1950) demonstrated the power of early expectations. Students who were given different descriptions of the same teacher later interpreted identical behaviours in line with those initial impressions. This shows how first judgements can persist, even when new evidence is available. In education, Confirmation Bias can make it difficult to revise judgements about pupils, teaching approaches or learning strategies. Once an expectation is formed, contradictory evidence may be overlooked.

Judgements are more accurate when they draw on multiple sources of evidence, when alternative explanations are actively considered and when educators deliberately ask, 'What evidence would challenge my current view?'

The Halo Effect: When one trait influences overall judgement

The Halo Effect occurs when one noticeable characteristic, such as behaviour, effort or presentation, disproportionately influences overall judgements of ability or understanding.

In classrooms, this can lead to well-behaved or articulate pupils being judged more favourably academically, while pupils who display challenging behaviour may be underestimated. This matters because it can affect the accuracy and fairness of assessment. The Halo Effect can be reduced using clear success criteria, structured marking schemes and, where possible, blind assessment. This helps ensure that judgements are based on evidence rather than general impressions.

Negativity Bias: Why mistakes carry more weight

Negativity Bias describes the tendency for negative information to have a stronger psychological impact than positive information (Baumeister et al., 2001). In classrooms, this can influence how teachers remember behaviour, how feedback is framed and how students perceive their own progress.

When mistakes and setbacks dominate attention, students may develop distorted views of their competence, which can undermine motivation and persistence. Balancing feedback by explicitly highlighting progress, effort and effective strategies, alongside areas for improvement, can help counteract the disproportionate impact of negative information.

2. BIASES THAT DISTORT STUDENTS' SELF-EVALUATION AND LEARNING

The Hawthorne Effect: Why being observed changes behaviour

The Hawthorne Effect refers to changes in behaviour that occur when individuals know they are being observed. In educational settings, students may increase their effort simply because they are aware they are being monitored. This effect can be partly explained by social desirability bias, where individuals adjust their behaviour to align with what they believe is expected or valued in that context.

In schools, this has important implications for lesson observations and interventions. Improvements seen during periods of observation or monitoring may not reflect genuine or sustained change. As a result, it can be difficult to judge the true effectiveness of teaching strategies or interventions based solely on observed behaviour.

To reduce the influence of the Hawthorne Effect, interventions should be as unobtrusive as possible and evaluated over time. Judging impact using multiple measures, across different contexts, can help ensure that improvements reflect lasting changes in learning rather than temporary changes in behaviour.

Dunning-Kruger Effect: When confidence outpaces competence

The Dunning-Kruger Effect describes a pattern in which individuals with lower levels of understanding overestimate their competence, while those with higher levels of expertise may underestimate theirs (Kruger & Dunning, 1999).

In classrooms, this can lead students with insecure foundational knowledge to feel confident in their understanding, resulting in ineffective revision strategies or disengagement from further study. At the same time, more knowledgeable students may underestimate their performance, affecting confidence and motivation.

Frequent low-stakes testing, Retrieval Practice and structured self-assessment can help students align their confidence with objective evidence of learning. By regularly checking what they know and what they do not yet understand, students can develop more accurate judgements of their own competence.

3. BIASES THAT INFLUENCE GROUP BEHAVIOUR AND CLASSROOM CULTURE

The Bandwagon Effect: When group beliefs shape individual judgement

The Bandwagon Effect refers to the tendency to adopt beliefs or behaviours because they are perceived as popular or widely accepted. In schools, this can influence both student learning and professional decision-making.

Among students, the Bandwagon Effect may lead to misconceptions being adopted during group work or class discussions, where agreement is prioritised over accuracy. Among educators, it can contribute to the uptake of teaching approaches based on popularity rather than evidence.

It helps explain the persistence of neuromyths in education. Beliefs such as learning styles or left- and right-brain dominance often gain traction not because they are well-supported by evidence, but because they are widely discussed and commonly adopted.

When a belief appears to be endorsed by the majority, it can be accepted without critical evaluation, even when robust evidence against it exists.

This can be reduced by encouraging independent thinking before group discussion, explicitly valuing evidence over consensus and creating classroom cultures where challenge and questioning are normalised, which can help reduce the influence of group-driven bias.

FINAL THOUGHTS

Thinking biases are not just theoretical, they exist in the classroom and can impact teaching, learning and decision-making. Being aware of them not only helps you avoid automatic thinking patterns that may impact your practice but also helps create classroom environments whereby students are more likely to achieve bias-free thinking.

REFERENCES

Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). *Bad Is Stronger than Good. Review of General Psychology*, 5(4), 323–370. https://doi.org/10.1037/1089-2680.5.4.323

Kelley, H. H. (1950). *The warm-cold variable in first impressions of persons. Journal of Personality*, 18(4), 431–439. https://doi.org/10.1111/j.1467-6494.1950.tb01260.x

Kruger, J., & Dunning, D. (1999). *Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. Journal of Personality and Social Psychology*, 77(6), 1121–1134. https://doi.org/10.1037/0022-3514.77.6.1121

Tversky, A., & Kahneman, D. (1974). *Judgment under uncertainty: Heuristics and Biases*. Science, 185(4157), 1124–1131.

ADDITIONAL RESOURCES

Blogs

7 cognitive biases holding your students back: https://www.innerdrive.co.uk/blog/cognitive-biases-holding-students-back/

The cognitive bias underlying all others (and how to avoid it): www.innerdrive.co.uk/blog/cognitive-bias-underlying-all/

Expertise and cognitive biases: 3 risks and what to do about them: https://www.innerdrive.co.uk/blog/expertise-and-cognitive-biases/

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