Decoding: The science behind the scores

M2 and MirrorTalk turn complex principles from educational research into instant, actionable feedback for educators and their students.

✔ **Grounded in best practices** in instruction, cognition, and student development

✔ Make key aspects of teaching and learning **measurable and accessible**

✔ Give educators **instant, research-backed insights** — without adding extra work

Here's how our scores work and what they reveal:

M2 feedback

M2 provides feedback on several areas of instruction including engagement, pacing, and questioning. The selection of these criteria is inspired by the work of John Hattie and Robert Marzano.

- Engagement refers to how the teacher verbally interacts with the students, and how the students respond to the teacher's interactions.
- Pacing refers to the speed at which the teacher moves through lesson content and activities, and whether that speed allows students to appropriately process new content and practice new skills.
- Questioning refers to the clarity, quality, and complexity of the questions the teacher poses to the students.

M2 scores

After an M2 activity, teachers receive scores for engagement, pacing, and questioning. Scores are generated on a scale of 0 to 4, following the rubric below:

SCORE	MEANING
0	No evidence of effort (e.g., no attempts to engage students).
1	Minimal effort and significant gaps in execution.
2	Effort with noticeable inconsistencies or missed opportunities.
3	Strong performance with minor areas for improvement.
4	Exemplary performance exceeding expectations.

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Reflection score

Swivl used Norman Webb's Depth of Knowledge framework to design the Reflection score.

MirrorTalk's Reflection Score operates on a 0-4 scale, where each level describes the kind of thinking demonstrated in the reflection.

SCORE	MEANING
0	The learner does not reflect, reflects on an irrelevant topic, or reflects in a very minimal way.
1	The learner demonstrates thinking at the recall level, where they can identify facts, names, places, objects, and basic ideas that are relevant to the reflection prompts.
2	The learner identifies patterns in recalled information. This may include noticing similarities and differences, making observations or categorizations, using context clues and summarizing key information.
3	The learner demonstrates thinking at the abstract level, which may include developing arguments, revising ideas, formulating a hypothesis, integrating multiple perspectives, or evaluating a situation.
4	The learner extends their thinking by synthesizing multiple concepts, making novel connections, applying ideas in unexpected contexts or engaging in deeper analysis.

Zone

Swivl used the Zone of Proximal Development (ZPD) and Yerkes-Dodson Law to build the Zone score.

SCORE	MEANING
Below	Activities are not challenging enough, or the learner is notably disengaged. The learner needs more demanding tasks or increased motivation to fully engage with the material. This zone may result in boredom or lack of progress.
Ideal	Activities are appropriately challenging and supportive for the learner's current level. Learners are engaged and capable of their best learning and productivity. This zone promotes growth and optimal learning experiences.
Above	Activities are excessively challenging, or the learner is overly stressed or anxious. The learner needs additional support, scaffolding, or stress management to effectively engage with the material. This zone may lead to frustration or overwhelm if not addressed.

Mindset

Swivl used Carol Dweck's work on mindset to build the Mindset score.

SCORE	MEANING
Fixed	Demonstrates a fixed mindset, negative attitudes towards learning and challenges.
Neutral	Shows a mix of fixed and growth mindset characteristics.
Growth	Demonstrates a strong growth mindset, positive attitudes towards learning and challenges.
Above	Overly positive attitude that may inhibit realistic self-assessment and learning.

Tone

Swivl used <u>Carol Dweck's work</u> about how one speaks influences the learning process to build the Tone score.

SCORE	MEANING
Negative	Uses language indicating frustration, disengagement, or pessimism.
Neutral	Uses balanced language without strong positive or negative sentiment.
Positive	Uses language indicating enthusiasm, engagement, and optimism.
Above	Uses language indicating excessive positivity, in cases like sarcasm, superficiality, or delusion.

Cognitive bias

There are <u>dozens of cognitive biases with generally agreed upon definitions</u>, Swivl identifies and defines a cognitive bias when there is evidence of it in a reflection. Some cognitive biases more commonly occur during reflection, including:

BIAS	MEANING
Confirmation bias	The tendency to search for, interpret, and remember information in a way that confirms one's preconceptions, while giving less consideration to information that contradicts them.
Halo effect	The tendency to allow one's overall impression of a person or entity (often based on one positive trait) to influence judgments about unrelated characteristics, leading to a skewed perception.
Fundamental attribution error	The tendency to overemphasize personal characteristics and underestimate situational factors when explaining someone else's behavior, while often doing the opposite for one's own behavior.
Sunk cost fallacy	The tendency to continue investing in a project, decision, or course of action, despite it no longer being beneficial, because of the time, money, or effort already invested.
Anchoring bias	The tendency to rely heavily on the first piece of information encountered (the "anchor") when making decisions, even if that information is irrelevant or insufficient.
Recency bias	The tendency to give greater weight to recent events or information than earlier data, even if the earlier information is more relevant or significant.
Negativity bias	The tendency to focus on, remember, and give more importance to negative events or information over positive ones.
In-group bias	The tendency to favor and prioritize the opinions, actions, or preferences of one's own group over those of outsiders, leading to biased decisions and actions.
Status quo bias	The preference for maintaining the current state of affairs and resisting change, even when change might be beneficial.
Overconfidence bias	The tendency to overestimate one's knowledge, abilities, or control over situations, often leading to excessive risk-taking or flawed decision-making.

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Lesson

Each MirrorTalk reflection comes with a Lesson, located on the front of the reflection card. Swivl used Robert Kegan's <u>Levels of Consciousness</u> and <u>Subject-Object</u> Theories to build the Lesson.

- MirrorTalk analyzes the learner's grade level and reflection to identify key challenges and growth opportunities relevant to their age and their current level of thinking (see Reflection Score).

- Based on this analysis, MirrorTalk provides a key insight to help the learner navigate their current challenge and progress their thinking to the next level.

- When the learner is reflecting on an activity with an objective, the lesson will focus on helping the learner progress their thinking related to the objective.