

Technology Feature Brief

Affect & Student Learning

Applications and tools that capture and display learner affect, such as a mood meter or the built-in “reaction wheel” in [Clusive](#), support students to identify, assess, and reflect on their emotional state when engaging in readings or other learning activities. Teachers can use this information to help them identify barriers or interests to better support students’ readiness to learn—they can also use affective information as a prompt for dialogue with students.

Research

Research from psychology, social sciences, and brain science shows that emotional states influence people throughout daily life, including impacting a person’s readiness to learn. This is because a person’s affect can influence key aspects of learning, such as attention, memory, and motivation. Affective states refer to a blend of valence (ranging from positive to negative emotions) and activation represented by physiological arousal (ranging from deactivating—such as boredom or calmness—to activating—such as fear or excitement). Affective states can disrupt a student’s ability to concentrate and remember what they have read, or they can lead to increased learning opportunities. There is no one right affective state for learning. High energy and negative valence can be good for problem-solving. Low energy and negative valence can be a place for reflection and recuperation.

- [Kuppens et al., 2012](#)
- [Tyng et al., 2017](#)
- [Törmänen et al., 2021](#)

Multiple studies have identified links between a student’s affect, emotions, and learning behaviors, such as readiness to learn.

- **Emotions affect a student’s learning by influencing specific cognitive mechanisms that are key to learning, including attention, memory, and motivation.** One simple way teachers can build upon this is by providing positive feedback to a student. This may be especially helpful when a student is able to label their emotions and inform the teacher.
 - [Li et al., 2020](#)
 - [Fishback et al., 2010](#)
 - [Villavicencio & Bernardo, 2013](#)
- Appraisal theory is an important concept within the larger umbrella of emotion theory. Simply put, **a person’s emotions can be related to the value they place on a goal, their**

expectations regarding that goal (such as whether or not the goal is relevant and matches what they want to achieve), and how much control they have over completing that goal. The “reaction wheel” in Clusive, for example, helps students identify their emotions after reading and can aid them in understanding how their emotions can motivate them to continue reading more texts or guide them in choosing a different type of text if they experienced a negative emotion.

- [Barrett & Westlin, 2021](#)
- [Ellsworth, 2013](#)
- [Roseman, 2013](#)
- [Smith and Lazarus, 1990](#)
- **There is also evidence that emotions can influence reading comprehension skills specifically.** For example, Child et al. (2018) found texts can elicit emotional responses from readers. Readers processed positive texts with greater ease, particularly when they experienced a personal connection with the text. Additionally, Daley et al. (2013) examined middle school students’ emotions while reading by measuring physiological responses. Their study showed that simply providing a reading task can elicit an emotional response that may hamper reading comprehension. However, students who were able to become calm before reading had better reading comprehension scores. When students can identify how a reading, or even the potential of a reading task, influences their affect and emotions, teachers can identify enjoyable texts that they can use to develop students’ reading comprehension skills.
 - [Child et al., 2018](#)
 - [Daley et al., 2013](#)

Individuals feel best supported when their input is acknowledged and responded to in a personalized manner. Students will experience a wide range of affect over time, and different texts elicit different responses in learners. Neuroscience research has shown that a strategy known as “affect labeling” (or putting feelings into words) can help individuals regulate a negative emotional experience. When students are frustrated, an easy-to-use mechanism that allows students to identify their emotional state may help teachers redirect students to a more positive learning experience.

- [Lieberman et al., 2007](#)
- [Lieberman et al., 2011](#)

Research into whether digital educational tools and coaches can adequately assess students’ emotional states is still in its infancy. Researchers are attempting to use digital educational tools to identify and categorize students’ emotional states and tailor texts and comprehension questions to those emotional states. While early results seem to be promising, further research is needed before educators can utilize such technology. At the moment, **enabling students to self-**

report their affective and emotional states seems to be the most efficient way to help teachers match instruction to students' emotions.

- [Schouten et al., 2018](#)
- [Tsonos & Kouroupetroglou, 2008](#)

Related Guidelines

Affect and student learning are referenced in existing guidelines, frameworks, and best practices, including the Universal Design for Learning (UDL) Guidelines. Connections include:

- [UDL Checkpoint 9.2](#): Facilitate personal coping skills and strategies
- [UDL Checkpoint 9.3](#): Develop self-assessment and reflection

Examples of Applications that Capture & Display Affect

- [Mood Meter](#)
- [Mood Track](#)
- [Daylio](#)
- The reaction wheel in [Clusive](#)



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