

Tech Snacks: The Benefits of Multisensory Learning

Research shows that when more than one sense is accessed during a learning experience, individuals learn better, even at a very young age. When we engage students in multisensory learning, we're not only increasing their opportunities to learn effectively – we're also facilitating the development of their foundational sensory systems.¹

Eight sensory systems²

Most people are familiar with the five **external** sensory systems: touch (tactile), sound (auditory), sight (visual), taste (gustatory), and smell (olfactory). There are also three **internal** sensory systems that drive much of our behavior: vestibular, proprioceptive, and interoceptive.

For each of the eight sensory systems listed below, there are two processing subtypes: **sensory discrimination** and **sensory modulation**. **Sensory discrimination** refers to the brain's ability to make meaning out of sensory information (i.e., to learn). **Sensory modulation** refers to the brain's ability to dial up or down how much sensory input is received to prevent too little or too much stimulation. It is linked with our feeling of safety – when we perceive a particular sensory input as unsafe, this can trigger a fight-flight-or-freeze response.

AUDITORY – what we hear; this input helps us determine spatial awareness, engage socially, maintain attention, feel a sense of environmental safety, and sustain balance

Strong discriminators (seekers) can retain verbal information well, may request verbal explanation, may relate better to “storytelling” and oral modes of communication.
Weak discriminators may struggle to retain something that was only mentioned verbally.

Strong modulators can filter out background noise to focus on what's being said.
Weak modulators may struggle to learn if there is too much background noise (heater fan, projector fan, chatter behind them or in the hall).

VISUAL – what we see; used for environmental awareness, eye-hand coordination, balance, sense of safety, orientation in space, depth perception, social engagement (e.g., reading nonverbal cues)

Strong discriminators can retain visual information well and may request diagrams, pictures, written text, etc.
Weak discriminators may struggle to retain something that was only shown and not said.

Strong modulators are stimulated by visual information and can filter out room/wall clutter, PowerPoint clutter, and nonverbal social cues, to focus on the information being presented.
Weak modulators may struggle to learn if there are too many visual cues in the room.

TACTILE – what we touch and feel; allows us to build self-regulation, gain emotional security, manipulate objects, learn about texture, pain, and temperature, establish body awareness

Strong discriminators tend to have more alertness and success with “hands-on” activities.
Weak discriminators may need abstract explanation in addition to the hands-on activity.

Strong modulators can orient themselves well in a hands-on setting.
Weak modulators may need extra time/practice getting oriented in a hands-on learning setting.

GUSTATORY – what we taste; used to know what is safe and desirable to eat and drink
OLFACTORY – what we smell; used when we eat and drink, for environmental safety, and for emotion related to our memories

¹ Benstead, S. (Director). (2020). *Babies* [Series]. Netflix.

² Note: much of the key information found in this handout was taken from the Cult of Pedagogy website: <https://www.cultofpedagogy.com/multisensory-learning/>

Strong discriminators will remember information better if smell/taste experience is linked to it, or even if smell/taste memories are described/evoked.

Weak discriminators may not find much use for smell/taste connections.

Strong modulators are not distracted by smells.

Weak modulators may be distracted if a strong smell is present in the room.

PROPRIOCEPTIVE – how we perceive our body parts in space; helps us hold and manipulate objects and navigate and interact in our environment (w/o bumping into things)

Strong discriminators will be more alert if asked to move around or if shown movement that involves the coordination of parts.

Weak discriminators will need other modes of explanation/presentation.

Strong modulators tend to be physically coordinated and confident when asked to move around.

Weak modulators may be clumsy (insecure about it) and need extra notice/practice/time before engaging in activities requiring body coordination.

VESTIBULAR – how we perceive our relationship to gravity and orientation in space; used for balance, muscle tone, maintaining alertness and attention, motor coordination, sustaining an upright posture, and visual orientation

Strong discriminators often become more alert with vestibular input (being asked/allowed to move their heads to other parts of the room, turn to the side, move around, rock in a chair, etc.). They may respond well to prompts that have them imagine moving through space.

Weak discriminators will need other modes of explanation/presentation.

Strong modulators can focus mentally while moving through space.

Weak modulators may become disoriented with too much switching of orientation/direction and may focus best when sitting completely still.

INTEROCEPTIVE – how we perceive our internal needs; used for emotional awareness, bodily needs, and a sense of safety

Strong discriminators may become more alert if asked to focus on body sensations, or if emotions are evoked (through stories, imaginative exercises, movie scenes, etc.).

Weak discriminators may not respond to exercises that elicit sensation/emotion.

Strong modulators are able to focus on learning despite body sensations and emotions (hunger, fatigue, etc.). They can recognize and deal with their internal needs before they are a problem.

Weak modulators have trouble noticing and identifying emotions and recognizing when they feel hungry, full, thirsty, hot, cold, tired, nervous, etc. emotions (e.g., frustration or fear). However, these sensations will interfere with their ability to function.

Applying multisensory learning in the classroom

Research consistently supports the use of multisensory learning in the classroom in order to enhance engagement, memory, and information retrieval.³ Providing multisensory experiences will help facilitate increased brain integration while also increasing participation from students who learn differently, particularly in reading and writing.⁴

1. Weave in sensory inputs and sensory subtypes.
2. Honor sensory preferences when possible.
3. Use novelty with intention.
4. Engineer the environment with different sensory inputs.

³ Shams, L., & Seitz, A. R. (2008). Benefits of multisensory learning. *Trends in cognitive sciences*, 12(11), 411-417. https://faculty.ucr.edu/~aseitz/pubs/Shams_Seitz08.pdf

⁴ Waterford. (2019, March 5). Why multisensory learning is an effective strategy for teaching students how to read. Waterford.org. <https://www.waterford.org/education/why-multisensory-learning-is-an-effective-strategy-for-teaching-students-how-to-read/>