# Teaching that Aligns with How the Brain Works

In recent years, neuroscience has played an increasing role in helping educators understand how the brain works in general and how learning happens in particular. Bransford, Brown, and Cocking (2000), Doyle and Zakrajsek (2013), and Medina (2014) provide important principles related to how the brain learns. While these principles are aimed at helping learners, I’ve rewritten them from the perspective of the instructor, providing suggestions for how best to teach that aligns with how the brain works. My hope is for instructors to find creative ways to implement them in their teaching.

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| **Principles** | **Evidence** | **Teaching Application** |
| 1. Sleep is critical to memory formation. | Studies show that adults who sleep 7-9 hours a night regularly perform better on cognitive tasks than those who are sleep deprived. | Tells students that sleeping enough is just as important as studying. Encourage them to take naps if necessary to restore focus and attention. |
| 2. All movement is good for learning. | Studies show that exercising at least 30 minutes a day 4 to 5 times a week improves overall brain function. | The brain works best when the body is moving. When possible, make your class an active learning environment where students are moving around. |
| 3. Multisensory learning is ideal. | Multisensory learning allows students to process and master new information quicker and deeper. | Incorporate the five senses (sight, sound, smell, touch, and taste) in your teaching to help students relate and retain new materials. For example, use audio-visual media to reinforce concepts. |
| 4. The brain likes patterns. | Recognizing patterns in information is essential to improving understanding and recall. | Structure what you’re teaching into patterns to make it easier for students to follow. For example, use concept maps and visual syllabi to organize your materials so students know how one concept relates to another. |
| 5. Retrieve a memory to strengthen it. | Each time a memory is recalled, the brain makes it stronger, making future recalls easier. | Use recall (as opposed to recognition) formative assessments to help students solidifying understanding of materials. For example, a recall assessment is fill-in the blank, whereas a recognition assessment is multiple choice. |

**Resources**:

Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.). (2000). How people learn: Brain, mind, experience, and school. Washington, DC: National Academies Press.

Doyle, T. and Zakrajsek, T. (2013). The New Science of Learning: How to Learn in Harmony With Your Brain. Virginia: Stylus Publishing.

Medina, John. Brain Rules (2014). 12 Principles for Surviving and Thriving at Work, Home, and School. Washington: Pear Press.

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