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combine it with the work of educational consultants (Jensen, E., 2009; Sousa, 2006; Sylwester, 2003), and add a dash of classroom observation regarding the use of best practices. There you have it! The recipe for effective teaching or 20 strategies that take advantage of how all brains learn. These strategies work for primary, middle years, secondary school, and university students, as well as adults, in any learning situation. They work for students in special education programs, regular education programs and gifted programs; students who are learning a second language; and students who have attention deficit disorder. In other words, they work for all students and adults. While these ways are not new—your most effective teachers have used them for generations—what is new is that brain researchers have given us a reason as to why these strategies work better than others. If you really examine the letters from the year two students, you will see that I used at least five of the strategies as I taught them about the planets in order: mnemonic devices, drawing, writing, music and role play. Whether I am teaching students from prep to year twelve or adult audiences, I teach absolutely nothing without the 20 strategies. I am challenging you to do the same.

The 20 brain-compatible strategies are as follows:

1. Brainstorming and discussion
2. Drawing and artwork
3. Excursions
4. Games
5. Graphic organisers, semantic maps and word webs
6. Humour
7. Manipulatives, experiments, labs and models
8. Metaphors, analogies and similes
9. Mnemonic devices
10. Movement
11. Music, rhythm, rhyme and rap
12. Project-based and problem-based instruction
13. Reciprocal teaching and cooperative learning
14. Role-plays, drama, pantomimes and charades
15. Storytelling
16. Technology
17. Visualisation and guided imagery
18. Visuals
19. Work study and apprenticeships
20. Writing and journals

Comparison of Brain-Compatible Instructional Strategies to Learning Theory		
Brain-Compatible Strategies	*Multiple Intelligences*	*Visual, Auditory, Kinesthetic, Tactile (VAKT)*
Brainstorming and discussion	Verbal-linguistic	Auditory
Drawing and artwork	Spatial	Kinesthetic/tactile
Excursions	Naturalist	Kinesthetic/tactile
Games	Interpersonal	Kinesthetic/tactile
Graphic organisers, semantic maps and word webs	Logical-mathematical/spatial	Visual/tactile
Humour	Verbal-linguistic	Auditory
Manipulatives, experiments, labs and models	Logical-mathematical	Tactile
Metaphors, analogies and similes	Spatial	Visual/auditory
Mnemonic devices	Musical-rhythmic	Visual/auditory
Movement	Bodily-kinesthetic	Kinesthetic
Music, rhythm, rhyme and rap	Musical-rhythmic	Auditory
Project-based and problem-based instruction	Logical-mathematical	Visual/tactile
Reciprocal teaching and cooperative learning	Verbal-linguistic	Auditory
Role-plays, drama, pantomimes, charades	Bodily-kinesthetic	Kinesthetic
Storytelling	Verbal-linguistic	Auditory
Technology	Spatial	Visual/tactile
Visualisation and guided imagery	Spatial	Visual
Visuals	Spatial	Visual
Work study and apprenticeships	Interpersonal	Kinesthetic
Writing and journals	Intrapersonal	Visual/tactile

Figure 0.1

HOW: INSTRUCTIONAL ACTIVITIES

WHEN: During a lesson

TOPIC AND YEAR LEVEL: Characteristics of organisms (P–4); Structure and function in living systems (5–8); Matter, energy and organisation in living systems (9–12); Systems, order and organisation (P–12)

- Cut out and laminate parts of the human body that, when assembled, combine to form a system of the body. Also, cut out labels for the parts. Put students in cooperative groups, and give each group a set of parts and labels. Time how long it takes each group to arrange and correctly label each system. The winning group is the one who can assemble the system in the shortest amount of time. Have younger students assemble the body parts without the labels. When assembled, they can name each body part orally.

WHEN: During a lesson

TOPIC AND YEAR LEVEL: Understanding about science and technology (P–12)

- This game is called Smack a Word. Tape squares to the wall in the front of the classroom. On each square is a science prefix, root word or suffix. When students come across a prefix, root word or suffix during the school year, have them run to the front of the room and, using a fly swatter, smack the word part. Points can be earned for each word smacked.

WHEN: During a lesson

TOPIC AND YEAR LEVEL: All (P–12)

- Throw a soft ball or stuffed animal around the room as science questions are randomly asked of students. Have students try to break the record of the most correct answers in a row.

WHEN: During a lesson

TOPIC AND YEAR LEVEL: All (5–12)

- Conduct an Egg Carton Review. Write 12 review questions prior to a test, and place them in 12 numbered envelopes. Number the sections in an egg carton from 1 to 12. Place a marble in the egg carton and close it. Shake the carton. Have students take turns answering the questions on which the marble lands.

www.epals.com) or the National Geographic (n.d.) Jason Project (www.jason.org/public/whatis/start.aspx), where students work side by side with other students and scientists. (The e-Pals website provides an online network for schools to engage in collaborative, project-based learning. Learners can connect locally, nationally or internationally. The Jason Project connects students with scientists and science events. Students can connect their knowledge to real-world scenarios faced by scientists.)

WHEN: During a lesson

TOPIC AND YEAR LEVEL: Structure and function in living systems (5–8); Reproduction and heredity (5–8); Molecular basis of heredity (9–12); Understanding about scientific inquiry (5–12); Evidence, models and explanation (5–12)

- To help students understand the sheer enormity of DNA tell them if you took all the DNA strands in one human cell and stretched it out, it would extend a few metres. But there are approximately 10 trillion cells in the human body. Therefore, the entire DNA in the human body, if laid end to end, would reach from the earth to the sun a hundred times!

WHEN: During a lesson

TOPIC AND YEAR LEVEL: Properties of objects and materials (P–4); Properties and changes of properties in matter (5–8); Structure and properties of matter (9–12); Understanding about scientific inquiry (P–12); Evidence, models and explanations (P–12)

- Use the following simile to help students understand the vast number of molecules in water: A thimble full of water contains as many molecules as the Atlantic Ocean contains thimblefuls of water.

WHEN: During a lesson

TOPIC AND YEAR LEVEL: Changes in earth and sky (P–4), Earth in the solar system (5–8), Origin and evolution of the earth system (9–12), Evolution and equilibrium (P–12)

- Compare the Earth to an apple. Tilt the apple to represent a 23.5-degree angle of tilt of the Earth. Rotate the apple on its axis and revolve it around an imaginary sun to simulate a day and a year. Cut the apple to show the core, mantle and crust. Every time your students eat an apple, they will be reminded of the Earth.