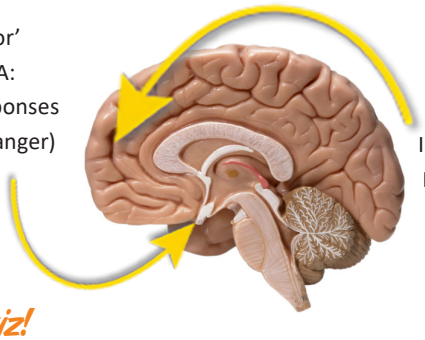
Abstract Reasoning Skills Activity Guide Grade 6-12

Know Your Neuro

'The Reactor'
AMYGDALA:
Emotional Responses
(fear, anxiety, anger)



'The Thinker'
FRONTAL LOBE:
Impulse Control &
Rational Thinking

Brain Quiz!

1) What is abstract reasoning? **Answer:** The ability to form judgments or conclusions based upon conceptual or hypothetical thinking, and to see things from different perspectives or the bigger picture.

2) What is the opposite of abstract reasoning? **Answer:** Concrete thinking. This is an all-or-nothing approach to thinking or problem-solving that involves reasoning based on what someone can see, hear, feel, or express in the here and now.

2) What developmental stage do abstract reaonsing skills mature? **Answer:** Stage 2 between age 11/12 and about 25.

3) What are the benefits of being able to reason abstractly? **Answer:** Abstract reasoning increases one's ability to
a) analyze things in deeper, more complex ways,
b) find patterns and relationships between things,
c) develop independent theories and conclusions and,
d) understand multiple meanings about complex things and ideas.

4) What are the steps to developing critical thinking or abstract reasoning skills? **Answer:**
1) Formulate a clear question.
2) Gather information.
3) Apply the information by asking critical questions.
4) Consider the implications or effects.
5) Explore ***other*** points of view.

5) What is the relationship between abstract reasoning and risky behavior? **Answer:** Abstract reasoning may decrease concrete thought about high-risk situations and increase other perspectives that see risky behavior in positive ways. Abstract reasoning also increases the ability to understand and predict implications, effects and consequences of engaging in risky behavior.

6) What is a dialectic? **Answer:** Something that is true and false simultaneously without canceling each other out.

Long-Term Learning

See, Think, Wonder

In small groups, ask students to discuss their opinions about a hot topic such as the legalization of marijuana, artificial intelligence, etc. Ask students to practice the following three steps when they listen to their peers' opinions:

1) SEE - Carefully observe and listen
2) THINK - Make thoughtful observations
3) WONDER - Wonder about different meanings and perspectives

Ask students to discuss how these steps improve their higher-level thinking strategies and what obstacles interfere with them.

Decisions, Decisions

Apply abstract (conceptual) reasoning skills to these problem scenarios to decide what to think and do.

A. At a party, you see a few of your friends smoking who previously said they never would do drugs.
B. In an intimate relationship, your partner wants to talk you out of having sexual boundaries.
C. A friend wants to teach you how to use AI to do your homework.
D. Your peer group wants to look at websites with content that makes you uncomfortable.
E. Your best friend feels depressed and hints about suicde but asks you not to tell anyone.

Critical Thinking Obstacles

Concrete Thinking: A literal, black-and-white way of thinking where new information is taken at face value.

Confirmation Bias: Interpreting new evidence as true if it confirms what one already thinks, discounting new information if it contradicts it.

Intellectual Arrogance: The idea that one's knowledge is superior, inability to see from another's perspective.

Logical Fallacy: An error in reasoning that renders an argument invalid by distorting or manipulating facts, drawing false conclusions, or distracting from the issue at hand.