Teaching the Teen Brain: Helping Adolescents Learn, Discover, and Thrive

Adolescence provides a window of opportunity for learning and taking risks in a supportive environment. Teen brains are not simply smaller, less developed versions of adult brains; they are designed to help teens explore, adapt, and gain independence. **Students are primed to learn from new and meaningful experiences in the classroom.**

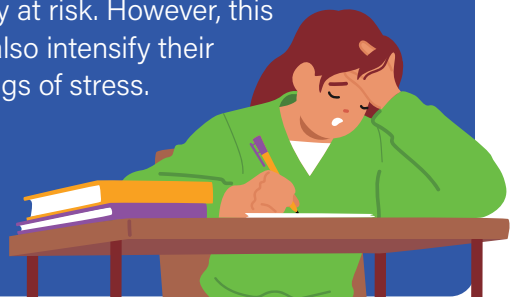
Brain Development in Adolescence

During adolescence, the brain is fine-tuning how it works and is organized. Different brain regions get better at communicating with each other, for example.

- Important development takes place in brain areas that process emotional and social information—especially in the late teen years. These areas of the brain help us recognize and react to emotional events—especially things that might feel threatening or scary—and process feelings of pleasure.
- The brain areas involved in decision-making, planning, and reasoning are maturing but show continued development well into a person's 20s.
- As the connections among emotional and thinking systems in the brain grow stronger, teens' emotional regulation and decision-making continue to improve. Until then, teens may be more likely to make decisions based on feelings in emotionally charged situations.

Emotional Responses

Teens are often more emotionally reactive than adults, which may help them detect situations that put their safety at risk. However, this can also intensify their feelings of stress.



Reward Sensitivity

Teen brains are especially sensitive to rewards. The brain's reward system releases dopamine during positive and exciting experiences, reinforcing behaviors that feel good. Because dopamine production leaves us feeling good, we're more likely to do the behaviors again.

Students differ in the types of rewards that motivate them. Some students are more responsive to monetary and status-based rewards, such as points toward classroom prizes, public recognition of their performance, and titles like "student of the week." Other students are more responsive to social and relationship-based rewards, like verbal praise from their teacher and being chosen for classroom responsibilities.

Decision-Making and Risk-Taking

Knowing risks doesn't always stop risky behavior. Teens develop the ability to think critically before they fully develop impulse control (the ability to resist immediate urges). This means they may know the risks of a decision but still make it anyway. Teens may also be driven to take additional risks by the desire to pursue new and intense experiences (called sensation seeking).

Healthy risk-taking is developmentally appropriate and can help teens thrive. It supports independence and creativity and fuels curiosity and learning.

Peer approval strongly influences behavior. Teens may take risks to gain social acceptance. Students with stronger and more comfortable friendships are less likely to be influenced by their peers' behavior.

What Can Educators Do to Support Adolescents During This Critical Period of Brain Development?

- **Help students manage impulses.** Educators can provide clear expectations when introducing a new task or assignment, have students write down their ideas before sharing them, and collaborate to create individualized communication signals to help the student slow down and consider the consequences of their behavior before they engage in it.
- **Support students in taking healthy risks.** Educators can motivate students to take healthy academic and personal risks—like speaking up in class, joining a club, enrolling in advanced classes, or trying new activities like sports or theater. These healthy risks stimulate the brain's reward system and reinforce positive, developmentally appropriate behavior.
- **Introduce coping skills.** If students have a hard time coping with stress, their academic performance and engagement may suffer. Nearly two-thirds of high school students report limited or no confidence in their ability to cope with school stress. Educators can reinforce that mistakes are part of learning and suggest brief activities, like movement breaks and guided breathing, to help students manage stress.
- **Provide opportunities for students to contribute and lead.** Because teens are more sensitive to rewards, they gain more positive feelings from being kind and helpful to others compared to children or preteens. Educators can facilitate supportive student interactions by including small group interactive activities in their lessons.
- **Recognize their contributions.** Positive feelings from being recognized peak in adolescence, making recognition by educators especially impactful. Positive reinforcement works better than punishment for managing behavior.

Strengthening Skills

Most teens become more efficient at processing information, learning, and reasoning over the course of adolescence. This capacity for flexibility and adaptability can foster deep learning, complex problem-solving skills, and creativity. Read more about **adolescent skill development (PDF)**.

What Protects Teens' Health and Well-being

Teens' skills and interpersonal relationships can support their well-being throughout adolescence.

- **Coping skills:** Throughout adolescence, teens build skills to regulate and cope with strong emotions. Teens can use active coping strategies—such as taking a walk or talking to friends—to deal with everyday stress. **Use this NIH-developed lesson to help high school students develop healthy coping skills**.
- **School involvement:** Teens who enjoy school tend to show more empathic behaviors. Extracurricular activities can help students feel connected to others in their school community. They also build social skills, offer positive stimulation, and support cognitive development. **Explore classroom management approaches to enhance school connectedness**.

What Puts Teens' Health and Well-being at Risk

- **Family stress:** Conflict within a teen's household, parental stress, and parenting style can impact teens' mental health and brain development—and subsequent academic outcomes. Read about **how trauma affects students and how educators can support them**.
- **Peer-to-peer conflict:** Bullying (including individuals who bully and those who are bullied) increases risks of mental health problems while also harming learning and memory. How young people process information about social relationships may explain why some lash out or act aggressively toward their peers. **Review these skills to help foster strong connections among students**.

The World Around Teens Makes a Difference

Community and environmental factors can influence mental health and brain development, including access to resources (like parks and libraries), safe neighborhoods, quality schools, experiences with poverty, and environmental exposures (like pollution). **Many of these factors are beyond the control of an individual educator. However, you can support students by creating a safe, supportive, and engaging learning environment.**

About the ABCD Study®

The Adolescent Brain Cognitive Development℠ (ABCD) Study is the largest long-term study of brain development and child health in the United States. Researchers are following nearly 12,000 participants through adolescence and into young adulthood. The ABCD Study is researching many experiences and behaviors that impact youth well-being.

Questions Scientists Have for Future Research

- How can health-promoting programs address unique factors that put youth at risk?
- How can educators reinforce protective factors in school?
- How can classroom management strategies be tailored for different stages of development?

Resources for Educators

- **BrainU: Neuroscience Resources** (University of Notre Dame): a program that teaches students about neuroscience concepts
- **BRAIN Explorer Educational Experience** (National Institutes of Health [NIH] BRAIN Initiative): a set of activities that teach students, across grades, about the brain and the scientific method
- **Understanding Polysubstance Use and How to Make Health-Enhancing Choices** (National Institute on Drug Abuse): a lesson to support high school students in assessing risk and making health-promoting choices
- **Frontiers for Young Minds**: an open access scientific journal for youth 8–15 years old
- **BrainFacts for the Classroom**: a source of brain and nervous system information presented by the Society for Neuroscience
- **Early Adolescence: A Window of Opportunity for Educators to Support Positive Mental Health (PDF)** (UCLA): research-based recommendations for middle school educators to promote positive mental health for early adolescents
- **Videos on Decision-making** (Columbia University): research-based videos that probe how we make decisions

Adolescent Brain Cognitive Development®
Teen Brains. Today's Science. Brighter Future.