

## Teaching to the Teenage Brain

Draw on the classroom environment to turn teens' natural wiring for novelty, risk taking, and social rewards into cognitive assets.

There is a beautifully remodeled high school in my neighborhood. The state-of-the-art campus features open learning spaces with huge windows facing the street. It's from one of those windows that students recently posted a sign calling for help. The classroom is so visible to any passerby, that instantly, police descended and the school went into lockdown mode. It turned out to be a prank—an incredibly stupid, potentially dangerous prank that highlights the stereotype that teens will enact wild, risky behaviors, especially to impress their friends.

What were they thinking? Recent brain imaging provides an edifying answer and some important cues for teaching the teen brain.

### Wired for Risk

Adolescent brains go through a surprising growth spurt around ages 10–13, followed by a period in the teen years of pruning, organizing, and strengthening neural connections, according to recent research by Jay Giedd at the National Institutes of Health. Changes in the brain move in a slow wave from the back of the brain, the area responsible for more behaviorally basic functions like vision and movement, to the front of the brain, the region responsible for conducting complex decision making based on memory, experience, considering multiple variables, and weighing long-term goals.

At times, the slow maturation of the frontal regions of the brain may lead to clumsy decision making, but it's actually an adaptive advantage. Still-maturing teen brains are highly

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flexible, constantly learning from experiences and integrating new learning into a growing repertoire of problem-solving skills. Teen brains crave novelty, risk taking, and peer affiliation because they provide opportunities to sharpen thinking skills and build supportive social networks—essentials to surviving the world away from home.

### Adaptive Adolescence

“The first four years of life are all about developing the sensory-motor brain and learning the basics—how to walk, talk, and be social,” says author, teacher educator, and psychologist Donna Wilson. “But the middle school and teen years are really about getting your sea legs up around problem solving and becoming a better thinker. In both cases, kids start off kind of wobbly, but become much more sophisticated.”

For teens to become more adept thinkers, environment is everything.

“It’s a myth that the teenage brain is a big wasteland,” says author and former teacher Eric Jensen. It is simply that the adaptive teenage brain is highly susceptible to environmental input but has little experience evaluating options

effectively, he notes. Scientists use the term neuroplasticity to describe how the brain responds and grows according to its environment and experiences at this age.

“There’s a misperception that students are just going to naturally mature,” adds Wilson. Unlike the sensory-motor developments, like walking, that happen naturally, teen brains need a lot of feeding from their environment to be able to take their natural wiring and turn it into an adaptive advantage. Here’s how educators can work with the teen brain.

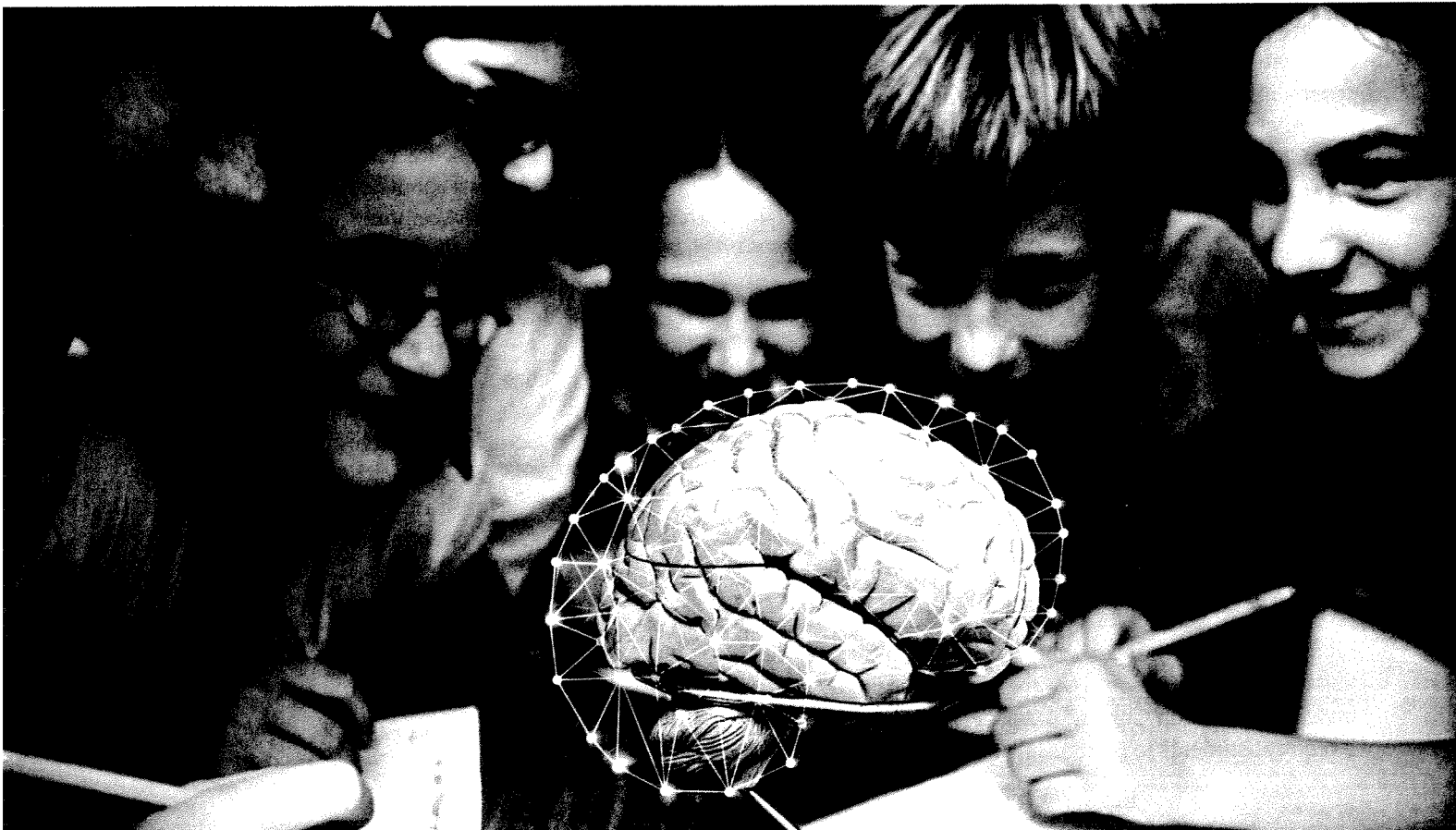
### Teach Neuroplasticity

“Kids look in the mirror and see themselves one way in the morning, and totally different when they go to bed,” Wilson says. “They’re changing so rapidly; what they seek is some sense of control.”

Educators can ease this adjustment by teaching students what’s happening in their brains and by providing them with the appropriate tools to succeed.

“Adolescents need to know that these are very formative years,” explains author and educator Pat Wolfe. Synaptogenesis, one of two ways the 85 billion neurons in the brain connect, is based on experience, says teacher, neurologist, and author Judy Willis.

Teaching teens about neuroplasticity and the effects their choices have conveys a dynamic and malleable conception of intelligence. It’s something teens can



control, and that sets them up to believe in their own potential, Wilson clarifies.

## Peddle Practical Optimism

Hand in hand with knowing you can change your brain is having a safe environment to do so. Because the executive functioning, frontal part of the brain is still maturing, teens may overly rely on their amygdala—the emotional, reactive part of their brain—and be especially vulnerable to pessimism or self-destructive behaviors.

Particularly during the teen years, educators need to set a hopeful tone. Wilson calls this practical optimism. “It’s not just a smiley-face type of optimism. It’s about really having a chance, through effort, to be able to accomplish challenging tasks.”

Rubrics and clearly defined, small, achievable goals will help teenagers develop a positive sense of agency. “The brain loves to achieve challenges, but the challenge has to seem achievable,” says Willis. For a brain that might not be mature enough to see the long game, rubrics help focus students and give them a place to start. Goals seem achievable, and regular feedback helps students develop the metacognitive ability to self-monitor what is working and what isn’t, Willis explains.

Wilson describes portfolios and “success folders” that allow students to develop a positive academic identity by tracking their best work throughout the year. A positive classroom can trigger the reward hormone dopamine, to which the adolescent brain is particularly sensitive, making students more likely to repeat the behaviors associated with the good feelings.

## Be the Learning Expert

As students develop higher-order thinking skills, they will need an in-house learning expert to show them not only that they can grow their brains, but also which tools to use when. Wilson says teachers can “chip away at the idea that school is only content and make process a priority.”

A simple strategy for doing this involves adding an “H” to the familiar K-W-L chart used to introduce a new unit or concept. This gets students tracking not only what they Know, Want to Know, and Learn, but also How they will learn it. The “H” gets students considering what strategies they’ll use and which questions they’ll ask. For example, students might identify close reading strategies, like frequently pausing to write down the gist of what the author is saying or underlining complex vocabulary to help them navigate a text.

“The goal is to gradually give students awareness and control over the how, so that when they graduate,

we can honestly say we are developing independent learners,” says Wilson.

Giving students a certain amount of choice in their learning also helps them flex their emerging independence while growing a trusting relationship with their teacher. “If kids think you trust and respect their choices, they’re likely to challenge themselves to continue to feel that positive relationship,” Jensen says.

## Model Appropriate Risk

“Given the chance, kids will push the limits of creativity in unimaginable ways,” says Willis. The upside to a brain wired for risk is that teens tend to think way outside the box when solving problems. Teens need to know that the classroom is a safe place to learn through trial and error, and also, what kinds of risks are OK to take.

Wilson says a simple way to support appropriate risk taking is for teachers to solve problems out loud, with mistakes. It models metacognition, while making it OK to take learning risks and providing the brain with a little novelty and reward. “How much do middle schoolers love it when they can catch their teacher making a mistake?”

When modeling isn’t enough to steer students’ executive functioning, Wilson advises educators to resist the urge to “just say no.” Instead, let students research, debate, and sort things out for themselves. This age group’s pull to peer affiliation often means that social rewards outweigh the risks associated with their actions.

“Kids want opportunities to gain status in your classroom,” says Jensen. Give them other options, besides acting out or joining a gang, to achieve clout in school. For example, he suggests giving teens classroom jobs or making them responsible for some aspect of the lesson.

## Gray Matters

“When you help teens meet their own needs, they’ll do almost anything for you,” says Jensen. “Be extra caring, interested, and open to their world. Show kids what to do, then let them try it out.”

“At this age, the *A* that matters most to students is autonomy,” says Wilson. And although the teen brain is wired to leave the nest, their learning environment will determine where they land. By understanding the teenage brain, educators are better able to create experiences that work with the way the brain learns, says Wolfe. In the process, teachers turn the keys to cognition over to students.

We can’t just teach content, explains Wilson. “Teaching students about their cognitive assets, to be better thinkers and learners—that’s the gift that keeps on giving. That’s what will help them make their way in the wide world.” **EU**

—LAURA VARLAS