Was offered a drug.
Chose to try it.
Felt weird, but good. Chose to try it again.

Started looking for chances to get high.

Lunked a few tests at school. Missed Mom's birthday.

Found a connection to score drugs.

Got busted for drug possession and picked me up at the station house.

Got high with a friend once treatment was over. Begot a feel

Chose to go back to treatment, this time for real.

Felt weird, but good. Chose to try it again.
Dear Teacher,

As an educator, you’re aware of how teen choices regarding drugs, alcohol, and tobacco can result in serious short- and long-term effects. This important teaching guide, Facts on Drugs—Teen Guide to Making Smart Decisions, is a skill-building program to help students understand the importance of informed decision making. Developed by the National Institute on Drug Abuse (NIDA) in conjunction with Scholastic, these lesson plans and activities support the idea that when young people know the facts, they can make better decisions.

Inside you’ll find lessons that bring students facts about the science behind teen brain development, decision making, and making choices based on the health risks associated with drug abuse. You’ll also find critical-thinking activities to help students use these facts to evaluate the risks of real-world situations.

We thank you for sharing this important program with your students. In doing so, you are not only increasing their health literacy, but providing them with critical information to help them make healthy decisions.

Sincerely,

Nora D. Volkow, M.D. Ann Amstutz Hayes
Director Vice President
National Institute on Drug Abuse Scholastic Inc.


Alignment with National Standards

Science (NSES, NRC)
- Life Science
- Science in Personal and Social Perspectives
  - Risks and Benefits
  - Personal and Community Health

Reading (IRA/NCTE)
- Students read a wide range of print and nonprint texts to build an understanding of texts, of themselves… ; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment.
- Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts.
- Students participate as knowledgeable, reflective, creative, and critical members of a variety of literacy communities.

ADDITIONAL RESOURCES
- For free printable copies of this Poster/Teaching Guide, visit www.scholastic.com/HEADSUP.
- For facts about drugs and health, visit www.teens.drugabuse.gov and www.scholastic.com/HEADSUP.
- For printables student articles and lessons in the HEADS UP series, visit www.scholastic.com/HEADSUP.
LESSON 2: Drugs and Your Body

Objective: Students will understand how drugs change the body, including short- and long-term effects.

Materials: Poster Front and Worksheet 4

Time Required: 20 minutes, with additional time for students to complete Student Worksheet.

Key Concepts: Science shows that teen smokers and drinkers are more likely to be involved in crime and to drop out of school than their non-using peers. The probability of using drugs increases when students perceive that their peers are using drugs. As a result, every student should understand the health and social effects of drugs. Additional effects of drug use include academic and financial difficulties.

Discussion: What are some of the long-term consequences of drug use? What are some of the short-term consequences of drug use? How do you think these consequences affect your health and the health of your friends?

Critical Thinking: Use Worksheet 4 as an assessment quiz to determine what students have learned throughout the lessons.

LESSON 3: Peer Influence

Objective: Students will understand how peer influence can have on making decisions, including short- and long-term effects.

Materials: Poster Front and Worksheet 5

Time Required: 20 minutes, with additional time for students to complete Student Worksheet.

Key Concepts: Teenagers are increasingly exposed to peer influence. Friends exert a great deal of influence on what teens decide to do and on their values. Peer influence can motivate teens to make decisions that are unpopular.

Discussion: How do you think marijuana would affect your behavior? How do you think the brain would “fool” you into doing something you know is wrong? What are some ways to make smart choices?

Critical Thinking: After reviewing the effects of peer influence, consider how you would respond to someone who says, “As long as you’re not addicted to drugs, or don’t smoke, drugs can’t cause much harm?”

LESSON 1: The Science of Teen Decision Making

Objective: Students will understand how a drug affects the body, including short- and long-term effects.

Materials: Worksheet 1

Time Required: 20 minutes, with additional time for students to complete Student Worksheet.

Key Concepts: Science shows that teens are more likely to be involved in crime and to drop out of school than their non-using peers. The probability of using drugs increases when students perceive that their peers are using drugs. As a result, every student should understand the health and social effects of drugs. Additional effects of drug use include academic and financial difficulties.

Discussion: Have you ever worried that this might create problems for you in the future? Have you ever acted before thinking about the consequences of your actions? When you make decisions, are you often influenced by external factors? Are you often influenced by internal factors? How do you think marijuana would affect your behavior?
Teenagers thrive on the spur of the moment. Whether it’s jumping into the latest fad, rushing into a decision, or acting before thinking something through, teens are known for taking “risks.” Science now provides answers on how the teen brain is particularly “wired” to do so.

First, a bit on how the brain works. The brain has a relay system in which different cells, called neurons, talk with each other through electrochemical impulses and chemical messengers called neurotransmitters. Information flows through this system across small gaps called synapses. The signal originates in the cell body, travels down the axon, crosses the synapse to affect the dendrites on the neighboring cell. The ultimate outcome of this signaling system is a feeling or a thought or a behavior.

Research shows that one’s brain reaches its full size between ages twelve and fourteen (depending on whether you are a girl or a boy). However, parts of the brain continue to mature through a person’s early twenties. One part that matures late is the prefrontal cortex, located directly behind your forehead. It is important as a control center for thinking ahead and inhibiting impulses.

Meanwhile, a part of the brain that matures earlier is the limbic system, which plays a role in emotional responses. Since this system matures earlier, it is more likely to take control in teen decision making, particularly in emotionally charged situations. Those choices often have roots in feelings (the immature prefrontal cortex), rather than carefully considered, logical choices.

Learning how your brain works can help explain why you sometimes behave the way you do. With this knowledge, you can be better equipped to make smart choices.

**Student Worksheet 1**

**DID YOU KNOW?** While the brain reaches its full size in early adolescence, parts of the brain continue to mature through a person’s early twenties. One part that matures late is the prefrontal cortex, located directly behind your forehead. It is important as a control center for thinking ahead and inhibiting impulses.

**Photos, top to bottom:** © Somos/Veer; © Rubberball/Veer.

**Pick Your Brain:** After reading the information above, answer the following questions:

1. Brain cells, called neurons, talk with each other through electrochemical impulses and chemical messengers called neurotransmitters. Information flows through this system across small gaps called synapses. The signal originates in the cell body, travels down the axon, crosses the synapse to affect the dendrites on the neighboring cell. The ultimate outcome of this signaling system is a feeling or a thought or a behavior.

2. The cortex, located directly behind your forehead, is an important control center for thinking ahead and inhibiting impulses.

3. One’s brain reaches its full size between ages twelve and fourteen (depending on whether you are a girl or a boy). However, parts of the brain continue to mature through a person’s early twenties. One part that matures late is the prefrontal cortex, located directly behind your forehead. It is important as a control center for thinking ahead and inhibiting impulses.

4. Parts of the brain continue to mature through a person’s early twenties. One part that matures late is the prefrontal cortex, located directly behind your forehead. It is important as a control center for thinking ahead and inhibiting impulses.

5. The brain’s system plays a role in emotional responses.
Drugs and Your Brain

Drugs are chemicals. They work by tapping into the brain’s communication system and interfering with the way neurons (nerve cells) send, receive, and process information. Some drugs resemble natural neurotransmitters, a similarity in structure that “fools” receptors in the brain and allows the drugs to lock onto and activate the nerve cells.

Here’s how it works with two commonly abused drugs: marijuana and prescription painkillers. In marijuana, the principal chemical affecting the brain is called THC (tetrahydrocannabinol) and it attaches to specific receptors called cannabinoid receptors. THC affects the hippocampus, causing problems with short-term memory and attention; the hypothalamus, increasing hunger; the prefrontal cortex, affecting decision making; and the cerebellum and basal ganglia, affecting balance and coordination.

Prescription painkillers, such as OxyContin® and Vicodin® (trade names for opioids), are derived from opium in poppy plants and are called opioids. In the brain and body, opioids attach to special proteins called opioid receptors. When used as directed by a physician, opioids are designed to ease pain. But when opioids are abused, there can be serious health risks, including addiction and overdose. In the cerebral cortex, opioids distort thinking, perception, and judgment; in the cerebellum, they distort coordination; in the limbic system, they can alter the brain’s wiring for pleasurable experiences; and in the brain stem, they slow breathing and heart rate, which can lead to death.

Pick Your Brain:

After reading the information above, answer the following questions:

1. Opioids can adversely affect a person’s breathing. What part of the brain governs respiration and breathing?
   - Brain stem
   - Hippocampus
   - Limbic system
   - Cerebellum

2. Tetrahydrocannabinol (THC), the active ingredient in marijuana, acts on the brain by:
   - Surrounding the brain
   - Creating electrical charges
   - Attaching to specific receptors
   - Reducing blood flow

3. THC can affect the hypothalamus by making a person:
   - Sleepy
   - Hungry
   - Nauseous
   - None of the above

4. The cerebral cortex is also known as the:
   - Thinking center
   - Memory and learning center
   - Body regulation center
   - Reward center

5. What part of the brain determines emotional reactions, especially feeling excitable or fear?
   - Brain stem
   - Prefrontal cortex
   - Hypothalamus
   - Amygdala

DID YOU KNOW? Some drugs “fool” the brain due to their similarity in size and shape to natural neurotransmitters.

People using drugs can experience a wide variety of effects, depending on the type of drug and how it is used.

Photos, top to bottom: © PhotoAlto/Veer; © Alloy/Veer.
Drugs not only affect your brain, they can seriously damage your body. Cardiovascular disease, stroke, cancer, hepatitis, and lung disease can all be consequences of drug abuse. In addition, intravenous drug use can raise the risk of contracting HIV/AIDS. Some of these effects occur when drugs are used at high doses or after prolonged use; however, impairment may occur after just one use. Here’s what some specific drugs do to the body:

PRESCRIPTION PAINKILLERS such as oxycodone (OxyContin®) and hydrocodone (Vicodin®) slow breathing and can lead to life-threatening respiratory depression when not used under a doctor’s supervision. There is also a high risk of addiction and overdose.

INHALANTS are breathable chemical vapors that are often found in common household products, and can produce a state of intoxication similar to alcohol. They are extremely toxic to the brain and other major organs and have been associated with a condition called ‘homicidal suffocation’ which results from heart failure and/or asphyxiation.

METHAMPHETAMINE or METH is a highly addictive central nervous system stimulant that causes rapid heart rate, irregular heartbeat, and increased blood pressure. It also damages kidneys, lungs, and liver, and can cause psychotic behavior, hallucinations, and stroke.

ECSTASY or MDMA is a drug that is chemically similar to stimulants and hallucinogens and can make a person feel energized and generate a sense of well-being. It can also interfere with the body’s ability to regulate temperature, leading to hyperthermia (increased body temperature) which can cause heart and kidney failure. MDMA can also impair memory and generate depression for several days after taking it.

COCAINE is a central nervous system stimulant that causes constricted blood vessels, as well as increased body temperature, heart rate, and blood pressure. It also increases the risk of heart attacks, respiratory failure, strokes, and seizures.

NICOTINE, the addictive element of tobacco products, is one of the most heavily abused drugs in the United States. Tar in cigarettes increases the risk of lung cancer, emphysema, and bronchial disorders.

ALCOHOL is a central nervous system depressant that slows reaction time and impairs complex mental and motor functions. It can cause long-term liver failure, cancer, and brain damage.

True or False:

1. The diminished ability to think or function as a result of drug use can only occur at high doses or after prolonged use.
   - True

2. If a person drinks alcohol, his or her reaction time will be improved.
   - False

3. Taking prescription painkillers without a doctor’s supervision can result in a high risk of addiction and overdose.
   - True
Influences

The teen brain is wired differently from an adult brain, which can make decision-making difficult. Dr. Laurence Steinberg, a researcher at Temple University, notes this is due to two main differences. First, teens are drawn to the immediate rewards of a potential choice while being less attentive to the possible risks. And, second, teens are still learning to control their impulses, to think ahead, and to mediate the influence of others.

Peer influence is not necessarily a bad thing. Everyone is influenced by peers, both negatively and positively, at any age. As teens become more independent of their parents, peers naturally play a greater role in influencing their thoughts, feelings, and actions. But sometimes, especially in emotional situations, peer influence can be hard to resist. It can become "pressure," and it can feel like you have no choice but to do something, even if it isn’t always enjoyable.

According to Dr. B. J. Casey from the Weill Medical College of Cornell University, teens do exercise good judgment and make thoughtful decisions when given time to think things through. But when decisions have to be made in the heat of the moment or in social situations, teens are often influenced by peers and find it harder to suppress impulsive or risky behavior.

Learning how to pause in critical situations is an important part of decision-making. Pausing can give teens a better chance to evaluate the facts before making a rushed decision.

In evaluating risky situations, the following questions can be helpful for teens to consider before acting:

1. What are the possible consequences?
2. What are the short-term benefits (such as the feeling of fitting in) versus the possible harmful outcomes to oneself or others?
3. How could peer pressure be influencing your decision?
4. Where can you turn for additional information or advice, if you need it?

Imagine This:

Using facts you’ve learned, review the scenarios below and write a paragraph describing how you might respond to each one.

1. As you’re leaving school on Friday, a friend asks you to a party. He says it’s going to be a blast because his parents are away and some friends are bringing a keg. “So, are you going?”
2. Your friends arrive to pick you up for a concert. They’re laughing hysterically as the car pulls up, and you notice some empty beer cans in the front seat. You hesitate as the door swings open, but your friends shout, “Come on, get in!”
3. A friend has started smoking cigarettes. You don’t want to smoke, but she keeps pushing you. “You should have one,” she says, “It’s no big deal. Just take a puff off mine.”
4. You’re at a party and somebody offers you Vicodin®. They say, “Don’t worry, it’s legal. Besides, look at all the celebrities who are doing it.”

DID YOU KNOW? When making decisions in the heat of the moment or in social situations, teens are often influenced by peers and find it harder to suppress impulsive or risky behavior.
What Do You Know About Drugs and Your Body?

True or False:
1. The teen brain is "wired" to take risks.
   True False
2. In the teen brain, the prefrontal cortex is important as a control center for thinking ahead and sizing up risks and rewards.
   True False
3. A teen's limbic system develops earlier than the prefrontal cortex.
   True False
4. A teen's brain development is complete by the age of fourteen.
   True False
5. Learning how to pause in critical situations is an important part of decision making.
   True False

Multiple Choice:
6. The space separating two brain cells is called:
   a protein a synapse a lock
   True False
7. Once inside the brain, drugs of abuse can "fool" the brain because they appear similar in shape and size to:
   neurons synapses neurotransmitters
   True False
8. What is the brain's memory center?
   hippocampus hypothalamus cerebral cortex
   True False
9. What brain region is responsible for emotional reactions, especially involving pleasure or excitement?
   brain stem prefrontal cortex limbic system
   True False

Fill in the Blanks:
10. The brain has a ___________________________ in which different structures talk with each other by way of electrochemical impulses and chemical messengers, called ____________.
11. When teens make choices in emotionally charged situations, those choices often have more to do with __________ than with ____________.
12. Drugs work in the brain by ___________________________ with the way nerve cells normally send, receive, and process information.
13. The impact of ____________ can be far-reaching. Some of the effects occur when drugs are used at high doses or after prolonged use, however some may occur ____________.

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