A Nation in Transition: Investigating Evolving Research and Policy on Marijuana
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September 24, 2014 2:15 pm

Marijuana is illegal in the United States. Yet 35 states and the District of Columbia permit some form of marijuana consumption for medical purposes, and, as of this year, two states now allow its recreational use.

As national policy evolves on this issue, the New York Times editorial board this summer published a six-part series calling for legalization.

In this lesson, we pull together those opinion pieces as well as many other Times articles, graphics and videos to offer starting points for science, social studies and English teachers aiming to use the debate as an opportunity for learning, research and discussion.

Are you teaching this topic? How? What have we missed?

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The Natural History of Marijuana

Like other crops, marijuana is largely cultivated — legally and illegally — in greenhouse-type “grow houses” and on farms. And like other crops, marijuana comes from a plant — cannabis, originally found in the wild and cultivated over thousands of years. Have students research the history of cannabis, from its origins in South and Central Asia to its introduction to the Americas. How have people used the different parts of the plant throughout history? Then, have students work in groups to annotate a map of the world, tracing the history of marijuana cultivation.

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This Is Your Brain — and Body — on Drugs

Marijuana is best known for its psychoactive properties. But how does marijuana bring about these sensations and how else does it behave in the body? To answer these questions, students might research how the active compounds in marijuana affect the body at the level of the cell, and draw parallels with how other drugs act in the body. As is the case with many other drugs — from legal, over-the-counter medications to illegal street drugs, like heroin — the active compounds interact with locations on the surfaces of cells called receptors. Cell surface receptors provide a means for cells to receive information and input from the environment; when a molecule attaches, or binds, to a cell surface receptor, it triggers a series of events inside the cell, like the release of hormones, neurotransmitters or other molecules. A discussion about marijuana’s effects on the body might dovetail nicely with a broader class discussion or review of cell biology, the makeup and function of the cell membrane, and the function of neurotransmitters.

To dive a little deeper, explain that cells in the human body have receptors for the active compounds in marijuana, collectively referred to as cannabinoids. By binding to cannabinoid receptors, cannabinoid molecules affect how cells release chemical messengers called neurotransmitters. The human body naturally makes cannabinoids, and the main active ingredients in marijuana mimic these molecules and can therefore bind to the same receptors. This might help to explain some of the effects marijuana is reported to have not just on the brain, but on other body systems as well. With this background in place, have students research some of the conditions and disorders marijuana is reported to help. What evidence do scientists use to support the idea that marijuana may help these and other conditions? What kind of additional evidence about the beneficial effects of marijuana do scientists need, and how do they suggest better using marijuana in ways that best help patients?
Medical Marijuana and Children

Review the two active compounds in marijuana, THC and cannabidiol (CBD) and talk about how selective breeding techniques can produce strains of marijuana with varying amounts of these compounds. Why might it be important for marijuana used in a therapeutic setting to have a low level of THC? Then, watch both of these brief videos: “Healing Hemp” and “Pediatric Pot.” Which of the two active compounds has shown promise in treating children with seizures? What are some of the barriers to making this compound more widely accessible? What do scientists still need to learn about how this compound works? Why aren’t there more studies of promising applications for medical marijuana? Use these videos as a springboard for a discussion about using medical marijuana in young people. What do its proponents have to say? What are some of the main arguments against it?

The Risks of Marijuana Use

What does medical science have to say about the risks associated with marijuana use, compared with the legal, but regulated, substances tobacco and alcohol? The illegal substances cocaine and heroin? Students might compare these risks using a chart or other simple graphic organizer. What are “gateway drugs,” and why might it be time to revisit the claim that marijuana use predicts harder drug use? What does medical science also have to say about the potential health benefits of marijuana?

At the same time, what new information about the developing teenage brain suggests that recreational marijuana use, in places where it has been legalized, should be prohibited for minors? Students might read further about marijuana and the teenage brain, like these studies suggesting actual structural changes in the brains of young people who regularly use marijuana.

As students read and work, you might have them annotate diagrams of the human body and brain, highlighting the various systems affected by
marijuana and the effect marijuana has on these systems.

The History of Marijuana Prohibition

If marijuana is now considered to have valid medicinal purposes by the scientific community, and if marijuana is “less dangerous than the highly addictive but perfectly legal substances known as alcohol and tobacco,” how did the federal government come to categorize it as a Schedule I drug — in the same class of drugs as the highly addictive heroin, and more harmful than the Schedule II drug cocaine?

Students can research the evolving history of attitudes and policy toward marijuana in the United States. As a starting point, they can read about the role that prejudice and stereotypes, and a general fear of Mexican immigrants and African-Americans, played in formulating federal policy toward marijuana. They can also consult this timeline of marijuana use in the United States and this article on the origins of the term “marijuana.”

Evaluating the War on Drugs

Marijuana policy has affected millions of lives. From 2001 to 2010, the police made 8.2 million marijuana arrests. In 2011, there were more arrests for marijuana possession than for all violent crimes put together. And those arrests disproportionately affect African-Americans, even though blacks and whites use marijuana at similar rates. In states like Iowa, Minnesota and Illinois, blacks are more than seven times as likely to get arrested as whites for marijuana offenses. Nationally, blacks are 3.7 times as likely. Arrests often lead to jail time, and they can affect employment, education and even the ability to get a bank loan. Beyond the racial imbalance, some nonviolent offenders are spending decades in jail for marijuana possession while in other states marijuana entrepreneurs are getting rich.

Students can study the consequences of the war on marijuana. Who is
most affected? How are they affected? How much does the war cost? And, what are the results? They can start with Jesse Wegman’s editorial on the injustice of marijuana arrests and look at this American Civil Liberties Union multimedia presentation.

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**Debating Public Policy**

Current federal law states that marijuana, like all other Schedule I drugs, has “no currently accepted medical use in treatment in the United States.” Yet 35 states and the District of Columbia permit some form of marijuana consumption for medical purposes. And two, Colorado and Washington, now allow recreational use of marijuana, with more states considering a similar move. With such radical inconsistency between federal and state law, the country is ripe for a national rethinking of its marijuana policy.

Students can hold a mock Congress or simulate a state legislative session to debate whether marijuana should be removed from the Controlled Substances Act, or whether their state should legalize marijuana for medical or recreational use, or both. Should states treat marijuana like alcohol — regulating and taxing it, while banning its use by minors? To do their research they can read David Firestone’s argument in favor of letting the states decide, just as states did regarding alcoholic beverages after the end of Prohibition in 1933. Then, students can seek out additional evidence on both sides of the debate and determine their own state’s policy toward marijuana. After their discussion, they can write a policy paper advocating a position, or simply answer our Student Opinion question, **Should Marijuana Be Legal?**

If students want to delve deeper, they can investigate Colorado’s legalization experiment along with some of the early bumps on the road, and the finer details of marijuana regulation.

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**Standards**  

This resource may be used to address the academic standards listed
below.

View all