# Module 6.2 – Effects of Alcohol and Other Drugs on the Driving Task - Lesson Plan

## Student Objectives (from Essential Knowledge and Skills Topics):

### Effects of Alcohol and Drugs on the Body
The student describes why and how different amounts of alcohol and drugs affect people. The student evaluates the amount of alcohol in various drinks. The student describes the blood alcohol concentration as related to body weight and the number of drinks containing alcohol consumed in a given period of time.

### Effects of Alcohol and Drugs on the Driving Task
The student describes the effects of alcohol and drugs on driver perception, vision, reaction time, and risk taking; the increased probability of being involved in all crashes, especially a fatal traffic crash; and the physiological and psychological effects of other drugs on the driving task.

### Saying “No” to Alcohol and Other Drugs
The student recognizes why it is wise not to use alcohol or other drugs, especially while operating a motor vehicle, and the consequences of unlawful consumption. The student knows how to develop a plan to intervene when someone is drinking and intends to drive. The student recognizes and responds to peer pressure to use alcohol and other drugs by knowing that saying, “No!” is a reduced risk choice.

### Alcohol-Involved Crashes and Montana Laws
The student discusses the scope of the alcohol/traffic safety problem; recognizes that alcohol is the most commonly used drug; and evaluates facts about teenage drinking and driving.

## Materials Needed:
1. Module 6.2 PowerPoint Presentation
2. Module 6.2 Fact and Work Sheets (printed for each student)
3. Module 6.2 Lesson Plan/Teacher Commentary (printed out)

## TEACHER COMMENTARY
The following are questions you can ask and comments to make during the presentation to engage students in learning the key concepts related to the effects of alcohol and other drugs on the driving task. Representation of the module slides are provided to allow you to connect the materials, data, and questions with the presentation.
Slide 2 – Drinking, Drugs and Driving

Drinking alcohol and using drugs results in a higher crash rate.

These substances impact human behavior and judgment. No person is too skilled, too big or too clever to avoid the effects.

Research shows that a single drink increases the risk of death or serious injury by five times.

Slide 3: Consequences of DUI

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Slide 4 – Drugs do different things

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Slide 5 – Fuzzy Drugs


National Institute on Drug Abuse National Institute of Health 2011
Slide 6 – FACT: Drugs mess with your brain’s wiring and signals


National Institute on Drug Abuse, National Institutes of Health 2011

Slide 7 – The adolescent brain is under construction

Teens’ brains and bodies are still developing; alcohol use can cause learning problems or lead to adult alcoholism. For example, people who begin drinking before age 15 are four times more likely to develop alcoholism than those who begin after age 20.

Montana Prevention Resource Center 2010 Underage Alcohol Prevention Connection Newsletter www.prevention.mt.gov

Slide 8 – Your one and only brain

Amygdala—The brain's "fear hub," which activates our natural "fight-or-flight" response to confront or escape from a dangerous situation. The amygdala also appears to be involved in learning to fear an event, such as touching a hot stove, and learning not to fear, such as overcoming a fear of spiders. Studying how the amygdala helps create memories of fear and safety may help improve treatments for anxiety disorders like phobias or post-traumatic stress disorder (PTSD).

Prefrontal cortex (PFC)—Seat of the brain's executive functions, such as judgment, decision making, and problem solving. Different parts of the PFC are involved in using short-term or "working" memory and in retrieving long-term memories. This area of the brain also helps to control the amygdala during stressful events. Some research shows that people who have PTSD or ADHD have reduced activity in their PFCs.

Anterior cingulate cortex (ACC)—the ACC has many different roles, from controlling blood pressure and heart...
rate to responding when we sense a mistake, helping us feel motivated and stay focused on a task, and managing proper emotional reactions. Reduced ACC activity or damage to this brain area has been linked to disorders such as ADHD, schizophrenia, and depression.

Hippocampus—Helps create and file new memories. When the hippocampus is damaged, a person can’t create new memories, but can still remember past events and learned skills, and carry on a conversation, all which rely on different parts of the brain. The hippocampus may be involved in mood disorders through its control of a major mood circuit called the hypothalamic-pituitary-adrenal (HPA) axis.


Photo and information from National Institute of Health

Slide 9 – 15-year-old brains on and off alcohol

A study was performed on teens and drinking. Scans illustrate that drinking might harm the ability of a teenager’s brain to process information. This slide shows brain activity of a 15-year-old with an alcohol problem versus the brain activity of a non-drinking 15 year old. The pink shows brain activity. It is clear that the teenager who does not drink has much more activity.

So drinking relates to various short term and long term effects on the body. It could also have a long term effect in the sense that it could affect your future by decreasing brain function during prime learning periods.

Slide 10 – Drinking + Driving = Tragedies

1. Research shows that a single drink increases the risk of death or serious injury by five times.
2. On average each year in Montana, alcohol/drug-related driving has been a factor in 10% of all crashes, roughly 20% of all injuries, and almost 50% of deaths on Montana’s roads – MDT
3. Drinking illegally combined with less driving experience results in a deadly combination.
### Slide 11 – Teen Drinking and Driving Stats

Alcohol Use: While only 10% of teens report drinking and driving within the prior month, nearly 4 out of every 10 teens behind the wheel who died in a crash had blood alcohol content (BAC) levels of ≥ 0.01 percent.

Research shows that a single drink increases the risk of death or serious injury by five times.

### Slide 12 – Why do people drink alcoholic beverages?

Before you risk it:
- Know the law.
- It is illegal to buy or possess alcohol if you are under age 21.
- Get the facts.

One drink can make you fail a breath test. In Montana, people under age 21 can lose their driver's license, be subject to a heavy fine, or have their car permanently taken away.

### Slide 13 – The Drinking Culture

Alcohol is a depressant, or downer, because it reduces brain activity. If you are depressed before you start drinking, alcohol can make you feel worse.

### Slide 14 – Crunching the Numbers

Aren't beer and wine "safer" than liquor?

No. One 12-ounce beer has about as much alcohol as a 1.5-ounce shot of liquor, a 5-ounce glass of wine, or a wine cooler.
**Slide 15 – Some likely driving impairments**

Consuming several alcoholic drinks in one hour will raise blood alcohol concentration much more than having one drink over a longer period of time.

Source: CDC, 2012
(http://www.cdc.gov/vitalsigns/drinkinganddriving/)

**Slide 16 – Binge Drinking**

Drinking alcohol or using drugs when driving is totally unacceptable, dangerous, illegal and it can cost you your license.

Resource: http://www.abovetheinfluence.com

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6039a4.htm

**Slide 17 – Someone passes out at a party …**

Knowing and understanding the signs of alcohol poisoning can save lives. Call 911.

Don’t wait for all the signs before seeking medical help. Blood alcohol levels can continue to rise even when a person stops drinking or is passed out.

Signs of alcohol poisoning include:
- Mental confusion or stupor – The person can’t speak or doesn’t make sense
- Passed out and can’t be roused – The person may already be in a coma
- Vomiting – Throwing up is not a normal result of drinking
- Seizures – The body shakes or convulses
- Slow breathing – Less than eight breaths per minute
- Irregular breathing – Taking 10 seconds or more between breaths
- Hypothermia – The person is cool to the touch, is pale or has bluish skin color
Slide 18 – Elimination Time after Drinking

Rate of alcohol elimination varies by individual and time is essential. The body can eliminate about one dose of alcohol per hour.

*Understanding Alcohol: Investigations into Biology and Behavior*, page 29 – 30; figure 6.
National Institutes of Health 2003 Curriculum

Slide 19 – MIP and DUI Consequences

Drinking alcohol or using drugs when driving is totally unacceptable, dangerous, illegal, and it can cost you your license. See the MDT MIP penalties fact sheet in the Additional Resources folder

Resource: [http://www.abovetheinfluence.com](http://www.abovetheinfluence.com)


[http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6039a4.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6039a4.htm)

Slide 20 – Make Safe Decisions

Never drink or use drugs before driving.

If impaired, how would you react when the unexpected happens?

Slide 21 – Montana DUI Fatal Crashes

The Montana Forensic Science Division compared the classifications of drugs found in the blood of drivers apprehended for driving under the influence (DUI) from 2007 to 2010. As shown in the graph above, there has been an increase in drug-impaired driving from 2007 to 2010, especially in the number of cases involving central nervous system (CNS) depressants other than alcohol), stimulants, narcotic analgesics, and cannabis.

Types of drugs found in whole blood samples include tranquilizers, sleeping pills, muscle relaxants, inhalants, cough medicine, antidepressants, antihistamines, and numerous others.
Slide 22 – Drive High?

*Drug Involvement of Fatally Injured Drivers, U.S. DOT/NHTSA, November 2010.*

Slide 23 – Other Drugs: Marijuana

Cannabis users feel relaxed and euphoric. They are “high” or “stoned.” When translated into driving, this means their reaction time is longer, their coordination decreases, and their memory is affected.

2013 Montana Impaired Driving statutes include marijuana:

MCA 61-8-411. Operation of noncommercial vehicle or commercial vehicle by person under influence of delta-9-tetrahydrocannabinol. (1) It is unlawful and punishable as provided in 61-8-442, 61-8-722, 61-8-723, and 61-8-731 through 61-8-734 for any person to drive or be in actual physical control of:

(a) a noncommercial vehicle upon the ways of this state open to the public while the person’s delta-9-tetrahydrocannabinol level, excluding metabolites, as shown by analysis of the person’s blood, is 5 ng/ml or more; or

(b) a commercial motor vehicle upon the ways of this state open to the public while the person’s delta-9-tetrahydrocannabinol level, excluding metabolites, as shown by analysis of the person’s blood, is 5 ng/ml or more.

(2) Absolute liability, as provided in 45-2-104, is imposed for a violation of this section.

History: En. Sec. 1, Ch. 153, L. 2013
Slide 24 – Montana Commonly Abused Drugs

The most commonly abused prescription drugs by teenagers include:
- painkillers (e.g. Vicodin; OxyContin)
- tranquilizers, (e.g. Valium)
- and stimulants (e.g. Adderall; Ritalin)


Slide 25 – Prescription drugs can HARM you

Prescription Opioid Abuse: A First Step to Heroin Use?

Prescription opioid pain medications such as OxyContin and Vicodin can have effects similar to heroin when taken in doses or in ways other than prescribed, and they are currently among the most commonly abused drugs in the United States. Research now suggests that abuse of these drugs may open the door to heroin abuse.

Nearly half of young people who inject heroin surveyed in three recent studies reported abusing prescription opioids before starting to use heroin. Some individuals reported taking up heroin because it is cheaper and easier to obtain than prescription opioids.

Many of these young people also report that crushing prescription opioid pills to snort or inject the powder provided their initiation into these methods of drug administration.

[Drugs_Shatter_the_Myths teen brochure_NIDA2011](http://www.drugabuse.gov/publications/drugfacts/heroin)

Slide 26 – Drug Overdose

The poisoning death rate among teens aged 15–19 years nearly doubled, from 1.7 to 3.3 per 100,000, in part because of an increase in prescription drug overdoses (e.g., opioid pain relievers).

**Source:** Vital Signs: Unintentional Injury Deaths Among Persons Aged 0–19 Years — United States, 2000–2009

Taking just one large dose of an opioid (such as Vicodin, OxyContin or Percocet) could cause severe breathing complications or death.
Slide 27 – Over-the-counter drugs (OTC)

Examples of OTC drugs include:
- Aspirin or other pain relievers.
- Cold and allergy remedies.
- Arthritis and back pain medication.

Physical effects of OTC drugs:
- Drowsiness, dizziness, slowed reaction times, poor judgment.
- Always read the labels and know the effects that could occur.

Slide 28 – Using good judgment to make the right choices

Know the risks.

Alcohol is a drug. Mixing it with any other drug can be extremely dangerous. Alcohol and acetaminophen—a common ingredient in OTC pain and fever reducers—can damage your liver. Alcohol mixed with other drugs can cause nausea, vomiting, fainting, heart problems, and difficulty breathing. Mixing alcohol and drugs also can lead to coma and death.

Using drugs with or after drinking alcohol is never a good idea. People who combine alcohol and drugs are twice as likely to be involved in a crash as those drinking alcohol alone. Drivers with a BAC of more than 0.08 g/100 ml who combine drugs with alcohol are a hundred times more likely to be injured in a road crash.

Slide 29 – Inhalants

See slide for facts about inhalants.

http://teens.drugabuse.gov/facts
Slide 30 – Other Drugs: MDMA or Ecstasy

Amphetamines, ecstasy, and cocaine are stimulants; they make users feel more energetic and alert. So drivers drive faster and more aggressively and take more risks though their driving skills are reduced: they have less ability to control the vehicle, judge distances, coordinate their actions, and make sound decisions.

Slide 31 – Other Drugs: Cocaine

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.

Slide 32 – Other Drugs: Meth

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.

Slide 33 – Did you know?

National Institute on Drug Abuse, National Institutes of Health, 2011

Slide 34 – You can prevent a tragedy ...

Consequences matter – Focus on how their drinking affects you and others they are close too.
Plan a safe ride home.
Plan2Live has videos which show extreme ways to keep your friends from driving under the influence http://www.plan2live.mt.gov/mythcrashers.shtml
Slide 35 – Making smarter choices

Discuss how to say no to alcohol when someone says “I'm afraid I won't fit in.”

It's easier to refuse than you think. Try: "No thanks," "I don't drink," or "I'm not interested."

Remember that the majority of teens don't drink alcohol. You're in good company when you're one of them.

Slide 36 – What choice will you make?

http://teens.drugabuse.gov/

Slide 37 – Most Montana teens don’t drink and drive

89.4% of our state’s teens don’t drink and drive. Let’s make it 100%. What else can you do to stay safe on the road?

Source: Montana YRBS Trend Data 2011

Slide 38 – Research Sources

Research sources for this topic (also OPI’s Traffic Education website).
Slides 39-40 – Standards and Benchmarks

Standards and Benchmarks 1-8: This is for your reference and not to be read to the class verbatim. Please review prior to the lesson so you are aware of what the student will be required to know at the end of the module.

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