Western Australian Virtual Education (WAVE) Project

Virtual reality (VR) alcohol and other drug project

At the beginning of the lesson, teachers should remind students that at the end of the lesson, there is an anonymous survey that students are to complete.

VR Lesson 2 - Caffeine, Nicotine and Alcohol Teacher' script summary

Scene 1 – Introduction

For this part of our journey, we'll head to a nearby galaxy, where we'll explore the effects of alcohol and other drugs on the brain and body.

As you may know, different drugs have different effects on the brain and body. Stimulants, for example, speed up the activity of your central nervous system by triggering the release of three major neurotransmitters:

- Dopamine: our feel-good chemical
- Serotonin: our mood and appetite chemical; and
- Norepinephrine: our adrenaline chemical

When we consume substances that release feel-good chemicals like dopamine, this may lead us to want to repeat the experience of using that substance.

If a person starts consuming a substance regularly, therefore producing a lot of extra dopamine, the brain may begin to try to bring back the normal balance by stopping its own production of dopamine.

Interaction: *Click and drag the dopamine button to the left to reduce the brain's dopamine production.*

When drug use is stopped, this can result in an under-production of dopamine. This may lead to symptoms of withdrawal, irritability, intense cravings, tiredness, feeling run down and or tiredness or depression.

The use of alcohol or other drugs during adolescence brings with it a number of potential harms that will depend on the **individual** using the drug, the **drug** or drugs they use and the **environment** in which they are using them. Let's look at some drugs and how they affect our brains and bodies.	

Scene 2 – Stimulants (Caffeine)

Let's start with a stimulant many people would be familiar with: caffeine.

Interaction: *Grab the energy drink in front of you. Take a look at the label on the front of the energy drink to see the amount of caffeine contained in one can of energy drink.*

Did you know that a 500ml can of energy drink can have as much as 160 mg of caffeine? That's like having two coffees at once!

Caffeine increases our wakefulness by blocking the receptor sites that create our sleep-regulating molecule. It also increases the production of dopamine, so for a little while, we may feel more awake and energised after drinking an energy drink, however, there are also negative consequences if you consume too much caffeine.

Too much caffeine can cause difficulty sleeping (also called insomnia), nervousness, restlessness, nausea, increased heart rate and increased blood pressure. In increasing amounts, the caffeine in energy drinks may cause headaches, anxiety, and/or chest pain.

Interaction: *Click and drag the products to arrange them in order from the product with the least amount of caffeine to the product with the most amount of caffeine.*
Answer: Chocolate bar (50g), Black tea (250ml), Instant coffee (250ml), and an Energy drink (1 can).

Energy drinks can vary in the amount of caffeine that they contain. They also come in different-sized cans. Small cans, on average, contain roughly 80mg of caffeine, while larger cans can contain up to 160mg of caffeine per can, so remember to always check the label!

Sudden reductions in caffeine use can cause withdrawal symptoms such as headaches, tiredness and altered mood.

Activity [Knowledge check]

Question	**Caffeine is a harmless drug.**
Options	a) True b) False
Answer (Shown on screen)	b) Correct! There is no safe level of drug use. The use of any drug carries some risk.
Feedback (shown on screen)	*If the student answers a) True.* Nice try! The correct answer is: b) False. There is no safe level of drug use. The use of any drug carries some risk.

Question	**The type of reaction someone has to a drug depends on factors related to the:**
Options	a) drug b) individual c) environment d) all of the above
Answer (shown on screen)	d) Correct! Changing any of these factors can alter a person's drug use experience.
Feedback (shown on screen)	*If the student answers a), b) or c): Not quite! This is one factor, but all factors should be considered.*

Now, let's take a look at another stimulant that is highly addictive: nicotine.

Scene 3 – Stimulants (Nicotine)

Nicotine is a naturally occurring chemical produced by the tobacco plant. It is the addictive chemical in products such as cigarettes and e-cigarettes, also known as vapes.

When you smoke cigarettes or use a vape that contains nicotine, the nicotine enters your body and activates dopamine production.

Over time, as you continue to use nicotine, the number of nicotine receptors in your brain increases. When you try to stop smoking or vaping, the receptors in your brain stop receiving nicotine, so the pleasure response is cut off.

This can lead to symptoms of nicotine withdrawal, such as strong cravings for a cigarette or vape, irritability, depressed mood, and difficulty sleeping, even for several weeks after smoking or vaping is stopped.

So, how is the body affected by smoking and vaping? Let's take a look.

Let's look at cigarettes first. Cigarettes contain many harmful and toxic chemicals that can cause significant short-term and long-term health effects on our developing bodies.

Interaction: *Click on the lungs in front of you to learn how they are affected by cigarettes.*

Smoking can cause lung disease by damaging your airways and the small air sacs found in your lungs. They can also cause changes in our DNA that can lead to cancer forming.

Interaction: *Now click on the heart to see how smoking affects this vital organ.*

Smoking can cause stiffening of the heart's arteries, which can lead to an increased risk of cardiovascular disease. Smoking also increases inflammation in our bodies and reduces the ability of our blood to carry oxygen.

Other health-related issues linked with smoking include diabetes, dental problems, hearing and vision loss, and fertility issues. Now let's have a look at vaping.

It is important to know that vaping, whether the e-cigarette contains nicotine or not, can cause significant harm. Human lungs work best when breathing clean air.

E-cigarette aerosols can contain harmful and potentially harmful substances, such as nicotine, ultrafine particles that can be inhaled deep into the lungs and cancer-causing chemicals. Vaping can increase the risk of lung infections, serious lung disease and heart disease.

The aerosols that are inhaled and exhaled from e-cigarettes not only expose you to potentially harmful substances but also others around you. Young people who vape are more likely to take up smoking cigarettes. Vapes have also been known to cause serious injury including burns through fires and explosions.

Activity [Knowledge check]

Question	**Chemicals exhaled from vapes can be harmful to others around you.**
Options	a) True b) False
Answer: (shown on screen)	a) Correct! Chemicals exhaled from vapes can be harmful to others around you.
Feedback (shown on screen)	*If the student answers b) False.* Nice try! The correct answer is: a) True. Chemicals exhaled from vapes can be harmful to others around you.

Question	**Chemicals in cigarettes cause damage to DNA which can lead to cancer.**
Options	a) True b) False
Correct answer: (Shown on screen)	a) Correct! Cigarettes are one of the leading causes of cancer in Australia.
Feedback (shown on screen)	*If the student answers b) False.* Nice try! The correct answer is: a) True. Cigarettes are one of the leading causes of cancer in Australia.

Like nicotine and caffeine, other drugs can be harmful to our health. Let's take a look at how depressants, such as alcohol, can affect our brain and body.

Scene 4 – Depressants (Alcohol)

Alcohol is a depressant drug that slows down the messages to and from the brain and body.

Interaction: *Click and drag down the liquid in the alcohol bottle to see how consuming alcohol affects the speed of our brain activity. A speedometer decreases speed to illustrate slow messages travelling to and from the body.*

Look at that! When alcohol is consumed the brain activity significantly slows down!

Interaction: *Now click and drag down the liquid in the water bottle to see what happens when we consume water. A speedometer increases speed to illustrate slow messages travelling to and from the body.*

What a difference! A well-hydrated brain works much faster and more efficiently.

When you start drinking alcohol, the frontal lobe is the first part of your brain to be affected. Remember that the frontal lobe regulates our emotions, planning and reasoning. After some time, you may feel more relaxed because alcohol slows down our heart rate and can temporarily make us feel less anxious or stressed.

However, as you continue drinking, your ability to focus, make good decisions and control your emotions reduces. You might end up doing or saying things you usually wouldn't**.**

As the amount of alcohol consumed increases, its effects on the central nervous system also increase, impacting the way the brain communicates with the rest of the body. More water is lost as waste, leading to dehydration. This explains why people often experience headaches and nausea, which is also known as a hangover.

Alcohol-related blackouts (or gaps in our memory) can happen when large amounts of alcohol are consumed. These gaps happen when a person drinks enough alcohol to temporarily block the transfer of memories from short-term to long-term storage in the brain.

Other harms that can occur include:

- decreases in perception and coordination
- risk of accident or injury
- distorted vision and hearing
- breathing difficulties
- severe dehydration, chills or fever, convulsions, stroke, heart attack
- cancer and even death.

Whilst the majority of students are choosing not to use alcohol, it is still important to know the facts and the potential harm that can occur from using alcohol and other drugs. This will give us the best opportunity to look after our brains, bodies and our mates.

Activity [Knowledge check]

Question	**Most young people are choosing not to use alcohol.**
Options	a) True b) False
Answer: (shown on screen)	a) Correct! Most young people are choosing not to use alcohol.
Feedback (shown on screen)	*If the student answers b) False.* Nice try! The correct answer is: a) True. Most young people are choosing not to use alcohol.

Question	**The major effect that alcohol has on our brain, is that it:**
Options	a) Slows down activity b) speeds up activity c) has no effect on brain activity d) all of the above
Answer: (shown on screen)	a) Correct! Being a depressant, alcohol slows down our central nervous system, which includes our brain function.
Feedback (shown on screen)	*If the student answers b), c) or d.* Nice try! The correct answer is: a) Slows down activity. Being a depressant, alcohol slows down our central nervous system, which includes our brain function.

Now, let's have a go at the next activity and see how sharp your brain is.

ACTIVITY: MEMORY GAME

A collection of 16 blocks is displayed on the screen.

Each block is imprinted with an image. Each block has a matching pair somewhere in the grid.

Students are asked to find all the matching pairs.

The activity ends either when the player finds all matching pairs or when the timer runs out (whichever happens sooner).

At the end of the memory game, students are advised: “Now that we’ve explored the ways drugs affect our brains and bodies, let’s share with our classmates some strategies to reduce our harm”.

In-VR Survey

Choose the responses that most reflect your opinion.

I enjoyed this virtual reality lesson.

I would like more lessons in virtual reality.

I know more about the effects of alcohol and other drugs than I did before this lesson.

Doing the lesson in virtual reality made it easier for me to understand how alcohol and other drugs affect my body.

The information provided in this VR lesson has helped me to consider the impacts alcohol and other drug use can have on my body.

SUBMIT
When SUBMIT is clicked, ‘Response submitted’ appears.

End of the VR component of the Lesson 2.