

ORAL HEALTH ANTI-VAPING

HEALTHY MOUTH VS. SMOKER'S MOUTH



With support from Delta Dental of Minnesota

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GRADES 6-8

This project was designed to engage youth in learning about the negative effects of vaping and oral health. The lesson supports students in making informed decisions about their health by exploring facts about vaping among Minnesota youth, particularly middle school students.

BIOLOGY CONNECTION

Youth explore the structure and function of the human mouth by identifying the roles of incisors, canines, premolars, and molars. Through hands-on modeling, students learn how tobacco products and vaping can affect biological systems, including teeth, gums, and oral tissues. Students investigate how nicotine addiction develops and examine the physical effects of tobacco use, such as tooth discoloration, gum disease, and oral cancer. By comparing healthy and tobacco-affected mouth models, students gain a deeper understanding of how lifestyle choices influence the health and function of the human body.

PUBLIC HEALTH CONNECTION

Youth examine how public health organizations work to prevent tobacco and nicotine use, educate communities, and reduce health risks. Through discussions and reflection activities, students develop the knowledge and skills needed to advocate for healthy behaviors, resist peer pressure, and contribute to healthier schools and communities.

STEM JUSTICE PHILOSOPHY

This lesson reflects a STEM Justice approach by empowering youth to use science, health knowledge, and critical thinking to understand and address real-world issues that affect themselves, their families, and their communities. Through the exploration of vaping, nicotine addiction, and oral health, youth examine how health information can be used to make informed decisions and advocate for healthier communities. Youth learn that access to accurate health education is an important component of health equity and that understanding the science behind tobacco and vaping products helps individuals make choices that support their long-term well-being.

The hands-on modeling activity encourages students to engage in scientific inquiry, analyze evidence, and communicate their learning to others. By investigating the biological effects of tobacco use and discussing prevention strategies, students develop the skills needed to become informed consumers of health information and active participants in community health promotion.

LEARNING GOALS

- Youth will learn about the dangers of vaping
- Youth will learn about Nicotine addiction
- Youth will learn about the oral health effects of tobacco use
- Youth will create models to show healthy mouths and mouths affected by tobacco use

VOCABULARY

Addiction - Addiction is when your brain gets used to a substance or activity, making you feel like you need it even when you know it's hurting you. It changes how your brain handles rewards and self-control, making it very hard to stop on your own.

Canine - These teeth get their unique name for their fang-like appearance that resembles those of a canine (another name a dog). In humans, the canine teeth are located outside your incisors and are also known as your cuspids.

Cinnamaldehyde - An organic compound responsible for the flavor and aroma of cinnamon, with various applications in food, medicine, and industry.

Chemical - a compound, substance, or ingredient that is found naturally or is added.

Drug - a medicine or substance that has an effect on the body.

Incisor - A narrow-edged tooth at the front of the mouth, adapted for cutting. In humans there are four incisors in each jaw.

Menthol - A crystalline alcohol with a minty taste and odour, found in peppermint and other natural oils.

Molar - a grinding tooth at the back of a mammal's mouth.

Nicotine - is a highly addictive, naturally occurring toxic chemical found in the tobacco plant. It acts as a stimulant in the central nervous system, affecting brain chemistry to produce temporary feelings of pleasure and relaxation

Nicotine Addiction - This happens when someone feels they can't stop using tobacco or vape products, even though they know it's harmful to their health. It's when your body and brain get so used to nicotine that it becomes really difficult to quit, often because of physical needs and daily habits or feelings that make you want to use it.

Premolar - A tooth situated between the canine and the molar teeth. An adult human normally has eight, two in each jaw on each side.

Propylene Glycol (PG) - A colorless, odorless liquid widely used in food, cosmetics and a synthetic liquid substance that absorbs water.

Vegetable Glycerin (VG) - A clear, odorless liquid from plant oils, widely used in food, cosmetics, and pharmaceuticals for its moisturizing and sweetening properties.

CONNECTION TO MINNESOTA EDUCATION STANDARDS

ALIGNED MINNESOTA HEALTH STANDARDS

- **Standard 1: Functional Health Knowledge** - students identify the short- and long-term effects of tobacco and nicotine use on the body, including oral health.
- **Standard 5: Decision-Making** - students demonstrate healthy decision-making skills related to tobacco, vaping, and peer pressure situations.
- **Standard 7: Practicing Health-Enhancing Behaviors** - students identify and practice behaviors that promote oral health and prevent tobacco-related diseases.
- **Standard 8: Health Promotion and Advocacy** - students practice refusal skills and communicate healthy choices regarding vaping and tobacco use.

SCIENCE INTEGRATION

- Students develop and use models to represent how healthy choices affect body systems.
- Students obtain and communicate information about the impact of substances on human health.

ENGLISH LANGUAGE ARTS INTEGRATION

- Participate in collaborative discussions.
- Use evidence from videos, demonstrations, and class discussions to answer reflection questions.
- Communicate health information through oral and written responses.

FACILITATING THE LESSON

Teachers need the following resources to use as they guide students:

Materials

Dixie Cups	Water Pitcher	Pencils	Food Dye
Styrofoam	Modeling Magic	Yellow, brown, black pink or red, markers	Dental Typodont Model (in lending library kit)

OPENING ACTIVITY | 30 MINUTES

What's in that Cup

1. Prepare disposal cups by labeling them with various chemical additives (Propylene Glycol, Vegetable Glycerin, Cinnamaldehyde, Menthol, and Vanilla).
2. Fill each labeled cup with water mixed with different shades of food coloring.
3. Invite student volunteers to approach the front and combine the contents of their cups into a single shared pitcher.
4. Begin by adding the Propylene Glycol solution to the pitcher.
5. Incorporate the cup representing Cinnamaldehyde next.
6. Follow this by pouring in the Menthol container.
7. Proceed by adding the Vegetable Glycerin to the mixture.
8. Conclude the sequence by adding the Vanilla flavored solution.
9. Lead the group in a reflective class discussion:
 - a. Considering the appearance, would you consume this beverage? Explain your reasoning.
 - b. Would you encourage a peer to drink this substance?
 - c. If offered this drink, how would you respond? What refusal strategies could you employ?
 - d. How would you handle a situation where someone ridiculed your choice not to participate?
 - e. What parallels can you draw between this activity and the ingredients found in vapes?

Optional: Follow along and lead group through [Anti vaping powerpoint](#) on canva

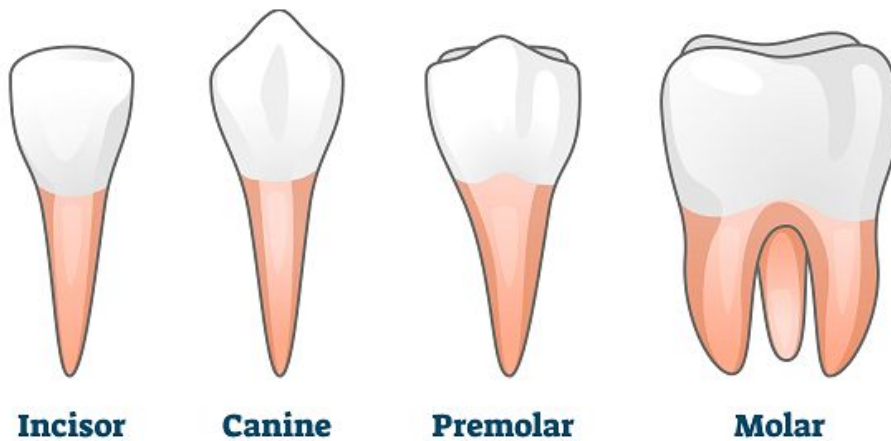
MAIN LESSON ACTIVITY

30-40 MINUTES

MODELING HEALTHY VS. TOBACCO-IMPACTED MOUTHS

Purpose: Students examine the physical consequences of vaping and smoking on dental health by constructing and evaluating anatomical models of healthy and diseased oral environments.

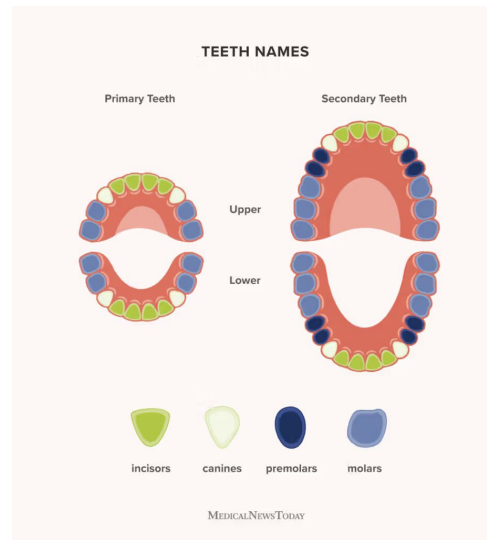
1. Present the Mr. Gross Mouth video segment:
 - a. [Oral damage from tobacco products](#)
2. Guide an ORID-style group reflection:
 - a. O (Objective): What visible changes caused by nicotine use did you observe?
 - b. R (Reflective): What were your internal reactions to the appearance of the diseased model?
 - c. I (Interpretive): In what ways do the chemicals in tobacco compromise teeth and gum tissue?
 - d. (Decisional): How can you act today to maintain a healthy mouth?
3. Go over dental anatomy:
 - a. 8 Incisors
 - b. 4 Canines
 - c. 8 Premolars
 - d. 12 Molars



4. Organize youth into pairs or small collaborative teams.
5. Students build dual anatomical models using provided styrofoam and clay:
 - a. Mouth Model A: Vibrant health
 - b. Mouth Model B: Impacted by tobacco/vaping

MAIN LESSON ACTIVITY

30-40 MINUTES



MODELING HEALTHY VS. TOBACCO-IMPACTED MOUTHS (CONT'D)

6. Utilize markers and molding materials to illustrate:
 - a. Discolored teeth (yellow/brown stains)
 - b. Periodontal issues and receding gums (carve dents in the styrofoam)
 - c. Signs of oral cancer or tumors (insert tumor by coloring model magic pink)
 - d. Structural damage or tooth loss
7. Using an ORID-style group reflection: contrast and identify discrepancies between their two creations.
 - a. O (Objective): What did you do to create a smoker's mouth? How do your smokers' mouth and healthy mouth differ?
 - b. R (Reflective): How did today's lesson feel? Has smoking or vaping impacted you personally?
 - c. I (Interpretive): What did you learn about smoking and oral health?
 - d. D (Decisional): What can you do to protect your health? How can you reject using products you're uncomfortable using?
8. Teams showcase their work while discussing:
 - a. Pathological changes related to nicotine use
 - b. Protective behaviors for dental wellness

LEARNING SUPPORTS

- Supply a detailed dental placement chart.
- Distribute vaping statistics and visual aids.
- Share [Delta Dental Oral Health Tips - 6 easy ways to protect your smile](#)

EXTENSION CHALLENGES

- Direct youth to investigate further systemic effects of e-cigarette usage.
- Challenge students to design advocacy content promoting tobacco-free lives.



6 EASY WAYS TO PROTECT YOUR SMILE

Most people don't realize how easy it can be to incorporate healthy behaviors into their regular routines. Here are some simple ways to enjoy better oral health.



1 BRUSH YOUR TEETH CORRECTLY TWICE DAILY.

Brushing twice a day for two minutes each time is the most effective way to remove plaque.



- Brush thoroughly, reaching every tooth surface above and slightly below the gumline.
- Use toothpaste with fluoride — it's key to preventing tooth decay.
- Brush gently, because brushing too hard can damage your gums and wear down enamel.
- Talk to your dentist or dental hygienist about brushing effectively.



2 WEAR A MOUTH GUARD.

Anyone playing contact sports should use a mouth guard to protect against mouth injuries, including:

- Lost and cracked teeth
- Damage to roots and crowns
- Torn lips and cheeks



Mouth guards are also beneficial for other activities that have the potential for mouth injuries — such as skateboarding, mountain biking, gymnastics and more.



Read our article on mouth guards to learn more about selecting and caring for this important piece of equipment.

3 PROTECT YOUR LIPS OUTDOORS.

Apply a water-resistant lip balm that contains SPF 30 or higher sunscreen when you are outside, even on cloudy days. Remember to reapply at least every two hours — even more often when swimming.



4 USE YOUR TEETH ONLY TO CHEW FOODS.

Avoid using your teeth as tools to open bottles and packages or to chew on pens, pencils, fingernails and ice.

If you use your teeth in unnatural ways, you can:

- Crack or chip your teeth
- Damage your fillings
- Cause toothaches
- Wear down tooth enamel
- Irritate soft tissues inside your teeth



5 FIND HEALTHY ALTERNATIVES TO SUGARY DRINKS.

Sugary drinks can cause cavities and harm your health. Choose water or plain milk instead!

SURPRISING AMOUNTS OF SUGAR PER 12 OUNCE SERVING:



12 TEASPOONS

Fruit Smoothies



9 TEASPOONS

Fruit Juices & Energy Drinks



8 TEASPOONS

Sodas



6 TEASPOONS

Sports Drinks



3 TEASPOONS

Chocolate Milk

6 WATCH OUT FOR SURPRISE SUGARS.

Many foods that aren't sweet often contain large amounts of sugar.



Examples: BBQ sauce (up to 40% sugar), ketchup, baked beans, canned soups and more.²



Also watch for "healthy" foods: some low-fat yogurts, canned fruits, granola, protein bars and most breakfast cereals are full of sugar.



Look for low-sugar versions of these products.



Consume high-sugar foods in moderation.



These are just a few of the good oral health habits you can practice daily.



Brush correctly twice daily



Floss daily



Protect your mouth



Watch your diet



Avoid tobacco

You'll see the results with a healthy smile!



Want to learn more? Visit our Oral Health Tips article for more ways to protect your smile.

<https://www.deltadental.com/protect-my-smile/oral-health-habits/oral-health-tips/>

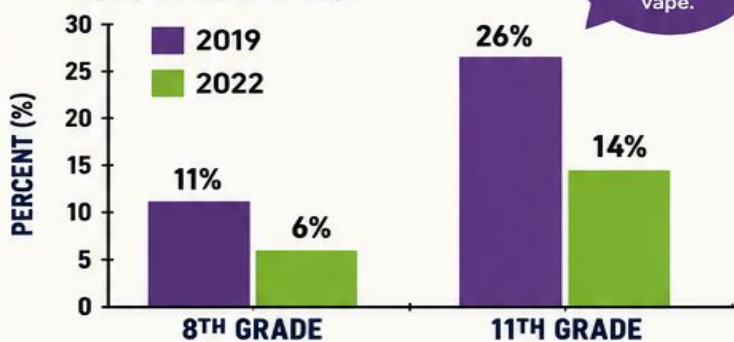
THE FACTS ARE CLEAR: DON'T LET VAPING STEAL YOUR FUTURE!

REAL FACTS. REAL HEALTH. REAL CHOICES.

MINNESOTA TEEN VAPING FACTS

MINNESOTA YOUTH VAPING TRENDS

Students who reported
vaping in the past 30 days



Rates have
declined,
but many
youth still
vape.

WHAT'S IN A VAPE?



**JUST BECAUSE IT'S FLAVORED,
DOESN'T MEAN IT'S SAFE.**

VAPING HURTS YOUR HEALTH

HARMS YOUR TEETH & GUMS
Can cause gum disease, tooth decay, and oral cancer.

IRRITATES YOUR LUNGS
Can cause coughing, shortness of breath, and lung damage.

AFFECTS YOUR BRAIN
Nicotine can harm attention, learning, and mood.

IMPACTS YOUR FUTURE
Addiction can lead to problems in school, sports, and life goals.

QUICK FACTS



13.9%

of Minnesota high school students reported vaping in the past 30 days (2023).

Nearly

1 in 7

high school students reported current e-cigarette use.



79.6%

of students who vape reported signs of nicotine dependence.

Nicotine addiction can develop quickly in adolescents.



MOST YOUTH WHO VAPE

begin with flavored products.

Flavors like fruit, candy, and mint are especially appealing to young people.



VAPING

remains the most commonly used tobacco product among Minnesota youth.

More students use e-cigarettes than traditional cigarettes.



MINNESOTA 11TH-GRADE VAPING RATES DECLINED

from 25% in 2019 to 8% in 2025.

Prevention efforts are making a difference, but continued education is important.

Source: Minnesota Student Survey (2019–2025)

YOU HAVE THE POWER!



BE INFORMED

Know the facts and understand the risks.



BE STRONG

Practice saying "NO" and walk away.



BE A LEADER

Encourage your friends to make healthy choices.



BE THE CHANGE

Help create a healthy school and community.

**YOUR CHOICES
SHAPE YOUR
FUTURE.**

**CHOOSE HEALTH.
BE VAPE FREE.**

DISCUSSION QUESTIONS

1. What do you notice about the vaping rates from 2019 to 2022?
2. Why do you think some youth choose to vape?
3. How might nicotine addiction affect a person's health and future choices?
4. What can schools, families, and communities do to help prevent youth vaping?
5. How can you use what you've learned to help others make healthy choices?

**FACTS TODAY.
HEALTHY TOMORROW.**

**YOU
GOT THIS!**



NEED HELP OR WANT TO QUIT VAPING?
Talk to a trusted adult.



Minnesota Quit Partner:
1-800-QUIT-NOW (784-8669)
www.quitpartnermn.com



Learn more at:
www.health.mn.gov/tobacco

VAPING IN MINNESOTA

QUICK FACTS

FACT	WHY IT MATTERS
13.9% of Minnesota high school students reported vaping in the past 30 days (2023).	Nearly 1 in 7 high school students reported current e-cigarette use.
79.6% of students who vape reported signs of nicotine dependence.	Nicotine addiction can develop quickly in adolescents.
Most youth who vape begin with flavored products.	Flavors such as fruit, candy, and mint are especially appealing to young people.
Vaping remains the most commonly used tobacco product among Minnesota youth.	More students use e-cigarettes than traditional cigarettes.
Minnesota 11th-grade vaping rates declined from 25% in 2019 to 8% in 2025.	Prevention efforts are making a difference, but continued education is important.

VAPING IN MINNESOTA

QUICK FACTS

DO YOU KNOW WHAT YOU'RE VAPING?



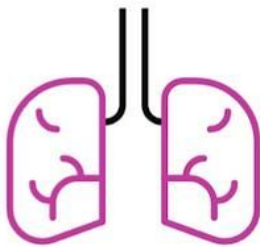
Many vapes contain nicotine making them **very addictive**



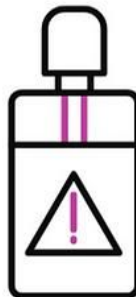
The nicotine in 1 vape can
= 50
cigarettes



If you vape you are **3 times** as likely to take up smoking cigarettes



Vaping has been linked to **serious lung disease**



Vape aerosol **is not**
water vapour



Vapes can contain the same **harmful chemicals** found in cleaning products, nail polish remover, weed killer and bug spray.

VAPING IN MINNESOTA

QUICK FACTS



SOURCES

VAPING AND TOBACCO PREVENTION

[Stanford REACH Lab Tobacco Prevention Toolkit](#)

Educators can access evidence-based activities and lesson plans focused on preventing e-cigarette use at no cost.

[Centers for Disease Control and Prevention \(CDC\)](#)

Find accessible information regarding nicotine dependence, e-cigarettes, and general prevention strategies for students.

[Smokefree Teen](#)

This platform provides youth-centered tools and interactive materials to support a tobacco-free lifestyle.