



# Introduction to the Risks of E-cigarettes and Vaping: Digital Lesson Educator Guide

ELEMENTARY SCHOOL | CORE PROGRAM BUNDLE

Generously supported by



~~BE VAPE~~ FREE



# Session 1: Consequences of Vaping

## Learning Objectives

Students will be able to:

- **Identify** negative consequences of e-cigarette use.
- **Describe** the health hazards associated with e-cigarette use.

## Overview

After engaging students by asking them to consider what they have heard, seen, or thought about e-cigarettes, they will learn about how e-cigarettes work and investigate the chemicals they contain. The session ends with small and whole group discussions about the negative consequences of using e-cigarettes.

### Content Areas

Health

### Target Grade Level

Grade 5

### Approximate Class Time

35–40 minutes

## Materials

- **E-cigarette Ingredient Investigation** student handout, one per group
- Index cards or squares of paper, two per student
- White board and dry erase markers

## Key Terms

- **E-Cigarette:** A battery-powered device that heats an e-liquid to make an aerosol that is inhaled. Also formally called Electronic Nicotine Delivery System (ENDS).
- **E-liquid:** A liquid usually containing nicotine, propylene glycol, flavorings, and other chemicals.
- **Vapor:** Refers to a gas phase at a temperature where the same substance can also exist in the liquid or solid state at a different temperature. For example, water can be frozen (solid phase), liquid, or steam (gas phase).
- **Aerosol:** The tiny particles or droplets that are inhaled and exhaled by an e-cigarette user after the flavored e-liquid is heated.
- **Nicotine:** A highly addictive drug found in tobacco and nearly all e-liquids.
- **JUULing:** A common term for vaping or using a JUUL brand e-cigarette
- **Vaping:** The act of using an e-cigarette.
- **Formaldehyde:** A potential byproduct of heating e-liquid too hot and a chemical used, as a preservative for dead bodies, and in some strong adhesives used as building materials.
- **Propylene glycol:** A chemical in e-liquid that mixes well with nicotine and flavor chemicals to make the smoke-like vapor when heated.
- **Toxin:** A poisonous substance.

## Slide 3 | Engage

- Open by explaining to students that they will be participating in a program called *CATCH My Breath* that will take place over four classroom sessions (ideally, two or four weeks) that will give them important information about e-cigarettes to understand why they shouldn't use them.
- Read out the objectives of the curriculum as they are written on a slide or call on students to read them out loud.

## Slide 4 | Engage, Cont.

- Ask students if they have ever heard that e-cigarettes are less harmful than regular cigarettes.
- Reinforce that while cigarettes kill the people who use them and it is true that e-cigarettes may have fewer toxic chemicals than cigarettes, they are still harmful.

### KEY TALKING POINTS

- **Just like regular cigarettes, the nicotine in e-cigarettes is harmful to young people whose brains and bodies are still growing and developing.**
- **Because e-cigarettes have not been around for a long time, we don't yet know their long-term effects. But we do know that smoking tobacco causes cancer and heart disease.**
- **Although e-cigarettes have fewer toxic chemicals than cigarettes, they are still harmful.**

## Slide 5 | Engage, Cont.

- Distribute an index card or square of paper to each student. Let students know that they do NOT need to include their names on the index card. Instruct them to write about what they have heard, seen, or thought about e-cigarettes. Stress that there are no wrong answers for this activity. After giving students some time to think and record their thoughts, collect the index cards.
- Skim through the cards and find some repeated trends. Students will likely report some anecdotes about exposure as well as some myths.
- Write some of the student responses on the board and explain that they will be learning more about these topics over the coming sessions. On the board, be sure to write the following even if the kids did not come up with them:
  - E-cigarettes are designed to attract kids to use them by coming in many flavors.
  - Because tobacco kills, all tobacco products are illegal for kids to buy and use, including e-cigarettes.
  - There are lots of different types of e-cigarettes.
  - You can get in trouble for using e-cigarettes and other tobacco products.
  - E-cigarettes can explode and cause nasty burns.

### KEY TALKING POINTS:

- **Most kids have heard of e-cigarettes before, but there is some confusion and misinformation about them.**

## Slide 6 | Engage, Cont.

- Explain that many of the things they have heard are probably myths. To help them make healthy and informed decisions, they will be learning the facts about e-cigarettes.
- Show students the video from *The DeNoble Files* on e-cigarettes. Before playing the video, tell them to think about some of the “facts” that some of their peers wrote on their cards.
- Click to reveal the following facts about e-cigarettes:
  - “Safer” does not mean safe.
  - Even though they deliver less toxin than cigarettes, e-cigarettes still deliver toxins known to cause cancer.
  - E-cigarettes contain nicotine, which is addictive.
  - Addiction can cause permanent and lifelong changes to your brain.

### KEY TALKING POINTS:

- **Even though e-cigarettes are safer than regular cigarettes, from what we know right now, that doesn't mean they're safe. Safer doesn't mean safe.**
- **Both tobacco cigarettes and e-cigarettes deliver cancer-causing toxins. But e-cigarettes deliver less than regular cigarettes.**
- **The biggest problem is that e-cigarettes contain nicotine, just as tobacco cigarettes do, which means they are addictive. Once you start using nicotine, it's really hard to quit.**
- **Addiction is a brain disease. This means once you start using nicotine-based products like e-cigarettes (or any kind of tobacco) your brain gets rewired and restructured. This makes it hard to quit using any product that contains nicotine.**
- **Addiction can cause permanent structural changes to neurological pathways.**

## Slide 7 | Explain

- Ask students what they think of when they hear the word “vapor.”
  - Many will say “water.”
- Click to share the fact that e-cigarette “vapor” is NOT water vapor.
- Click again to reveal that e-cigarette “vapor” is really an aerosol. Ask students what they think of when they hear the word “aerosol.”
  - Many will think of spray cans like room fresheners or hairspray.
- Explain to students that an aerosol is a suspension of tiny particles of liquid, solid or both within a gas. As opposed to water vapor, which is a substance (in this case water) in its gaseous phase.
- Click a third time to show students that e-cigarette aerosol is made up of ultrafine particles containing nicotine and harmful chemicals. So, even though everyone calls it vaping, the terms “vaping” and “e-cigarette vapor” are inaccurate. Technically, it is an aerosol.

### KEY TALKING POINTS:

- **E-cigarette “vapor” is NOT water vapor. It is made up of tiny particles containing nicotine and harmful toxic chemicals.**

## Slide 8 | Explain, Cont.

- If any students mentioned nicotine or addiction in their index cards, reference their statement. Inform students that nearly all e-cigarettes contain nicotine, which is a HIGHLY addictive chemical. Let them know that JUUL, the most popular e-cigarette device, always contains nicotine.<sup>8</sup>
- Explain that the brains of young people are still developing, making it easier to get addicted to nicotine. Addiction is a brain disease. This means once you start using nicotine-based products like e-cigarettes (or any kind of tobacco) your brain gets rewired and restructured. This makes it hard to quit using any product that contains nicotine.

### KEY TALKING POINTS:

- **99% of e-cigarettes contain nicotine.**
- **JUUL, the most popular e-cigarette device, always contains nicotine.**
- **Nicotine causes addiction and makes it hard to quit any form of tobacco products, including e-cigarettes.**

<sup>8</sup> <https://www.lung.org/assets/documents/stop-smoking/e-cigarettes-teens.pdf>

## Slide 9 | Explain, Cont.

- Many students might be familiar with the brand JUUL or the term JUULing; it is important that they know that JUULs are e-cigarettes and have the same risks.
- JUULs are often mistaken for tech gadgets because of their flash-drive-like design.
- Tell students that one JUUL pod, the little pack of chemicals that is inserted into the JUUL device, contains about the same amount of nicotine as an entire pack of 20 cigarettes.<sup>9</sup>

### KEY TALKING POINTS:

- **Just like other e-cigarettes, JUULing involves inhaling dangerous chemicals.**
- **All JUUL pods contain nicotine.**
- **JUUL claims each pod contains as much nicotine as two packs of cigarettes.**

## Slide 10 | Explain, Cont.

- Explain to students that there are over 7,000 e-cigarette flavors on the market, and 99% of them contain nicotine.<sup>10</sup> E-cigarette companies claim to use flavors to help adults quit.
- Prompt students to examine the list of flavors on the slide and ask them who they believe the e-cigarette companies are targeting with those flavors. Most will notice that the flavors listed are appealing to young people.
- Explain to students that these flavors entice youth into experimenting with e-cigarettes. Once youth experiment with e-cigarettes, they often become addicted to the nicotine and find it hard to stop even if they are no longer interested.

### KEY TALKING POINTS:

- **There are more than 7,000 e-cigarette flavors on the market, and 99% of them contain nicotine.**
- **E-cigarette companies claim to use flavors to help adults quit, but it is also true that curiosity about flavors are the reason most kids try e-cigarettes, and possibly become addicted to nicotine and tobacco products.**

<sup>9</sup> [https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/Quick-Facts-on-the-Risks-of-E-cigarettes-for-Kids-Teens-and-Young-Adults.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/Quick-Facts-on-the-Risks-of-E-cigarettes-for-Kids-Teens-and-Young-Adults.html)

<sup>10</sup> <https://truthinitiative.org/research-resources/emerging-tobacco-products/lot-youth-think-they-arent-vaping-nicotine-true/#targetText=Ninety%2Dnine%20percent%20of%20e,for%20Disease%20Control%20and%20Prevention.>

## Slide 11 | Explain, Cont.

- Share the following facts:
  - Almost all sweet, candy, and fruit flavored e-cigarette liquid contains nicotine.<sup>11</sup>
  - E-liquid containing nicotine is very harmful and can be fatal if swallowed.<sup>12</sup>
  - As of October 31<sup>st</sup>, 2019, poison control centers have managed 4,415 exposure cases related to e-cigarettes and e-liquid.<sup>13</sup>

### KEY TALKING POINTS:

- **Most flavored e-cigarettes contain nicotine.**
- **Nicotine liquid, called e-juice, is very harmful. If you drink it, it could kill you.**

## Slide 12 | Explore

- Explain to students that they will be participating in an investigation of e-cigarette ingredients.
- Click to display the introduction. Remind students that e-cigarettes contain harmful chemicals and not water. Explain that each chemical has a Material Safety Data Sheet (MSDS) that gives information about it, like its short- and long-term side effects.

## Slide 13 | Explore, Cont.

- Divide students into groups of four and distribute one **E-cigarette Ingredient Investigation** handout to each group.
- Assign each group one of the substances from the handout. Read the directions as a group and instruct students to begin working. Remind students that *all* groups will complete the “Other Substances” section.
- As students work, circulate through the classroom to provide help where needed. If students are struggling for depth, push them with questions like,
  - **“What would you say if this ingredient were in the school lunch and no one told you?”**

### KEY TALKING POINTS:

- **There are many chemicals in e-cigarettes that are toxic.**

<sup>11</sup> <https://www.ncbi.nlm.nih.gov/pubmed/28323467>

<sup>12</sup> <https://www.healthychildren.org/English/safety-prevention/at-home/Pages/Liquid-Nicotine-Used-in-E-Cigarettes-Can-Kill-Children.aspx>

<sup>13</sup> <https://aapcc.org/track/ecigarettes-liquid-nicotine>

## Slide 14 | Elaborate

- Instruct students to pick one group member (or you can choose one) to share out what they learned about their assigned chemical and what their group's reaction was to the info. Tell the other students listening in class to snap their figures if the speaker mentions a reaction that their group had as well or with which they agree.
- When all groups have presented, call out some of the common reactions mentioned and how many kids in the class agreed with those reactions.

### KEY TALKING POINTS:

- **Most kids have negative reactions when they learn about the chemicals in e-cigarettes, and it causes them to think differently about using them.**

## Slide 15 | Explain

- Explain to students that e-cigarettes come with other risks as well. Some have been known to unexpectedly explode in a person's pocket or mouth. While there have been no reports of JUUL and other USB e-cigarette devices exploding, several other battery-operated e-cigarette devices have the potential to explode and have on multiple occasions. There have been multiple reports of battery-operated e-cigarettes exploding either due to user or manufacturer error.<sup>14</sup>

### KEY TALKING POINTS:

- **There have been reported incidences of e-cigarettes exploding in people's pockets, faces, and purses.**

## Slide 16 | Explore

- Distribute an index card or square of paper to each student. Instruct each student to think about what they just learned and write down what they think are negative consequences (or side effects) of using e-cigarettes. Prompt students to not only list out health consequences but also possible social and emotional consequences like what could happen in their friend groups, with their parents, to their wallets, etc.
- Give the students three minutes to think and write, then prompt one student from the group to collect the cards to read out loud to the group. As they do that, circulate around the room to provide help if needed. Encourage students to think deeper by asking them about specific scenarios like, "What would happen if your younger brother or sister saw you smoking an e-cigarette?" or "What could happen if you left a JUUL in your room and your younger brother and his friends found it?"

<sup>14</sup> <https://www.fda.gov/tobacco-products/products-ingredients-components/tips-help-avoid-vape-battery-explosions>

## Slide 17 | Explore, Cont.

- Ask each group to share one or two responses and write them on a whiteboard or space where all students can see.
- Click to reveal a list of common responses, but be sure to add more from students in their words.

### KEY TALKING POINTS:

- **While there are plenty of important physical health consequences of using e-cigarettes, there are also many social, emotional, and financial effects as well.**

## Slide 18 | Wrap Up

Reinforce students' learning by reviewing the following points:

- There are many negative consequences of using e-cigarettes.
- E-cigarettes contain toxic chemicals including nicotine.
- Nicotine is addictive, especially for young people.
- E-cigarettes are illegal for kids your age to buy, sell or use. You can get in big trouble at home, school, and by the police by messing with them.

## References Guide

E-Cigarettes and Liquid Nicotine. (2019, June 30). Retrieved July 18, 2019, from <https://aapcc.org/track/ecigarettes-liquid-nicotine>

Kamboj, A., Spiller, H. A., Casavant, M. J., Chounthirath, T., & Smith, G. A. (2016). Pediatric exposure to e-cigarettes, nicotine, and tobacco products in the United States. *Pediatrics*, 137(6), e20160041.

Nayir, E., Karacabey, B., Kirca, O., & Ozdogan, M. (2016). Electronic cigarette (e-cigarette). *Journal of Oncological Science*, 2(1), 16–20.

Chatham-Stephens, K., Law, R., Taylor, E., Kieszak, S., Melstrom, P., Bunnell, R., ... & Foster, H. (2016). Exposure Calls to US Poison Centers Involving Electronic Cigarettes and Conventional Cigarettes—September 2010–December 2014. *Journal of Medical Toxicology*, 12(4), 350–357.

Chen, B. C., Bright, S. B., Trivedi, A. R., & Valento, M. (2015). Death following intentional ingestion of e-liquid. *Clinical toxicology*, 53(9), 914–916.

Public Health Law Center: <http://www.publichealthlawcenter.org/resources/us-e-cigarette-regulations-50-state-review>

Wang, T. W., Gentzke, A., Sharapova, S., Cullen, K. A., Ambrose, B. K., & Jamal, A. (2018). Tobacco Product Use Among Middle and High School Students — United States, 2011–2017. *MMWR. Morbidity and Mortality Weekly Report*, 67(22), 629–633. doi:10.15585/mmwr.mm6722a3

2018 Morbidity and Mortality Weekly Review (Tsai, J., Walton, K., Coleman, B. N., Sharapova, S. R., Johnson, S. E., Kennedy, S. M., & Caraballo, R. S. (2018). Reasons for electronic cigarette use among middle and high school students—National Youth Tobacco Survey, United States, 2016. *Morbidity and Mortality Weekly Report*, 67(6), 196.)

Wang, T. W., Trivers, K. F., Marynak, K. L., O'Brien, E. K., Persoskie, A., Liu, S. T., & King, B. A. (2018). Harm perceptions of intermittent tobacco product use among US youth, 2016. *Journal of Adolescent Health*, 62(6), 750–753.