

# LESSON GUIDE

# CYBERSECURITY BASICS

## Security: Attacks

### Threats with Online Gaming

#### Lesson Overview:

In this lesson, students will explore the risks and vulnerabilities of online gaming.

#### Students will:

- Identify potential cyber threats.
- Create a way to inform others about cyber threats.
- Discuss that software has vulnerabilities.
- Understand the need for keeping apps and devices up to date.

**Guiding Question:** What type of attacks can occur when using online games?

**Suggested Grade Levels:** 3 - 5

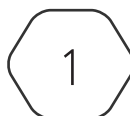
**Approximate Time Required:** 30 - 45 minutes

#### Standards:

##### CYBER.ORG Cybersecurity Standards

- 3-5.SEC.INFO - Define events that are related to threats and vulnerabilities.
- 3-5.SEC.NET - Discuss vulnerabilities of open methods for exchanging information.
- 3-5.CS.SOFT - Understand the need for keeping apps and devices up to date.
- 3-5.CS.APPS - Discuss how all software may have vulnerabilities.

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# Lesson Background

## Background Information:

All across the world cyber attacks occur on a regular basis. While there are many different types of attacks with varying levels of impact, we will focus on only 4 different kinds during this lesson. Most importantly, we introduce students to concepts of cyber attacks, because it is critical even for young students to understand things they can do to make themselves less vulnerable to these attacks. There is a lesson for 6-8th grade students called Malware Attacks that can be referenced for a deeper understanding with older students.

## Materials Needed:

Materials per Class	<ul style="list-style-type: none"><li>• Lesson Guide</li><li>• slides</li></ul>
Materials per Group	<ul style="list-style-type: none"><li>• poster board or paper</li><li>• markers</li></ul>

## Cyber Terms:

Term	Definition
backdoor	an attack that finds a way into a device or app that is not expected
brute force	an attack that tries all kinds of letter and number combinations until it finds the correct password
DDoS (Distributed Denial of Service)	an attack that has multiple devices trying to access the system at a time until the system crashes
ransomware	an attack that asks someone to pay or do something to get their information back

GRADES  
**3-5**

# Threats with Online Gaming



**Guiding Question:** What types of attacks can occur when using online games?

## Lesson Launch: Online Games vs Other Games (2 - 5 minutes)

Display slide 1 and 2

- **Display** the cover slide as students enter and you begin to introduce the lesson.

Display slide 3

- **Ask:** "Who can tell me the name of a game that requires internet access?"

Students may say: Fortnite • Reflex Math • Code.org • your school may have an app or online game

- **Ask:** "How is an online game different from other types of games?"

Students may say:

When the internet is not working, the game will not work.

Many online games require a login and password of some kind.

A board game has actual cards and pieces instead of using a device.

I have a game that I downloaded that can work even when I am not online.

- **Show** on a teacher computer an online game that gives an error message when the internet is turned off and a game or program that works fine without the internet..
- **Say:** "When playing online games, we need to be aware that there are threats or risks that are a part of those games. Let's find out more."

## Online Game Scenario (10 - 15 minutes)

Display slide 4 -6

- **Say:** "Let's imagine you go to login to your favorite game, but it keeps saying "invalid password". Why is this happening?"
  - Maybe... You forgot your password or you are typing it in wrong.
  - Maybe... Someone figured out your password and logged into your account and changed the password. That person is able to go into your settings and see any information that you have listed. For some games, your parent's credit card information is saved in your settings. With that number, a person can buy things with your parents' money.
    - Behind the scenes attack: How can your password be figured out?

- Lucky Guess - Someone can keep trying to guess different things, or maybe they know things about you that they think you might have included in your password. Maybe someone even saw your password written down.
- Brute Force Attack - Someone can write a computer program that will guess all kinds of letter and number combinations until something works.
- Phishing Email - Someone sent you an email with a link that tricked you into entering your password for the game. It is then stolen to get your game tokens.

### Display slide 7

- What could have been done to prevent this?
  - Change your passwords every 3-6 months. Use a mixture of uppercase and lowercase letters, numbers, and symbols. Longer passwords are usually more secure, but don't make them so hard that you are not able to remember them.
  - Don't share your password with others.

### Teacher Note

For more about passwords, have your students do the lesson on passwords under AAA: Passwords and Beyond.

### Display slide 8 - 9

- **Say:** "Graphics on the screen are glitching and the bluetooth keeps disconnecting from the controller."
  - Maybe... Your device needs to be updated.
  - Maybe... The controller needs to be updated.
  - Maybe... The game or app needs to be updated.
    - Behind the scenes attack: A device or app that needs an update can start not working correctly, but sometimes you may not notice that the update is needed.
    - Backdoor Attack - When a person finds a way into the device or app that is not expected. To fix this, software developers create an update that will keep more hackers from getting in that way. Any information that you have stored on the game or device can be stolen.

### Display slide 10

- What could have been done to prevent this?
  - A secure password will not help prevent a backdoor attack, but keeping your devices and apps updated will better protect you.

### Display slide 11 - 12

- **Say:** "There is an error message on the screen saying the game is down."
  - Maybe... The game developers are creating a new updated version that will be back up and running soon.
  - Maybe... Someone crashed the game servers using one of the attacks below.
    - Behind the scenes attack: The game server has too many systems trying to access it at one time, so it can not work correctly.

- DDoS attack: This stands for Distributed Denial of Service (DDoS) attack. It is similar to constantly getting phone calls from unknown numbers so you can't receive a call from your parents. The system can only handle a certain number of people trying to play the game.

### Display slide 13 - 14

- **Say:** "You receive an email saying you have to pay \$100 to get your game account back."
  - Maybe...It is just a scam, and you can actually still get into your game account.
  - Maybe... When you try to log into your game, it will not work.
    - Behind the scenes attack: Someone will not give you your game until you give them money or points. This is a ransomware attack.
  - What could have been done to prevent this?
    - Do not click on links in emails. Do not share your password with anyone, and change your password every few months.

### Display slide 15

- Show your student the CYBER.ORG Cyber Safety Video about online gaming from <https://www.youtube.com/watch?v=V1b4odH-20g>

## Share What You Learned (10 - 15 minutes)

### Display slide 16 - 17

- **Say:** "Now that you understand some of the risks with online gaming, it is important to let your friends and family know how to stay safe while having fun using online games. You will design a poster warning others about one kind of cyber attack."
- **Arrange** students in teams of 3-4 or have them work individually.
- **Say:** "With your team, pick one of the situations that we talked about using online gaming."
  - Think about what you want to tell other kids. Is there something that you want to teach them? Is there something that you want to make them aware of?
  - What words do you want to put on your poster?
    - Remember to make the words big enough to read.
  - What should you draw on your poster to help other kids understand how to stay safe with online gaming?
  - You may use one full page for your drawing or divide the page up into 4 different pictures like a comic.
- Have students share their posters with their classmates or other students at your school. You may want to hang them up in the hallways around the school if possible.

### Teacher Note

Sample cybersecurity posters made by kids can be found at <https://sitsd.mt.gov/Cybersecurity/Poster>

- **Say:** "Tell a partner something that you learned from one of the posters."

Students answers will vary based on the posters that were created.

## Cyber Career Spotlight (3 - 5 minutes)

Display slide 18

- **Say:** "A Threat & Warning Analyst is a cybersecurity professional who helps to identify possible threats and ways to prevent them."
- **Allow** students 5 minutes to explore the Cybersecurity Engineer career profile. You may download the Cyber Career Profile Card and Poster for Threat & Warning Analyst at <https://cyber.org/careers/threat-warning-analyst>



## Putting It All Together (5 minutes)

Display slide 19

- **Ask:** "What is something that you will do to be safer when using an online game?"

Students may say:

Keep my apps and devices up to date.

Use a more secure password

Do not share my password with others.

Do not click on links in emails or text messages.

### Extension (optional)

You may want to incorporate a lesson about copyright laws. The posters that were created should not contain trademarked images, brands, or cartoons.

Another suggestions is to have students present their posters to students in another grade level.

If your school has a morning news report, consider having teams take turns on different days explaining a threat with online gaming.