

Cyber Elementary School

4th Grade Lesson Plan Book

Lesson 4: Understanding Malware and Viruses: Germs for Your Computer

Lesson Title: Understanding Malware and Viruses: Germs for Your Computer

Lesson Number: 4 of 36

Grade/Age: Elementary School (Grade 4)

Subject: Cyber Security and Safety

Duration: 30–40 Minutes

Learning Objectives

- Students will be able to define malware and explain how it can harm a device or the information on it.
- Students will be able to identify common ways malware spreads (downloads, links, infected files, attachments).
- Students will be able to describe at least two habits that help prevent malware infections.
- Students will be able to explain what to do if they suspect a device has been infected with malware.

Skills

Digital literacy, cause-and-effect reasoning, prevention-minded thinking, personal responsibility, basic cyber hygiene habits.

Warm-Up / Hook (5 minutes)

"Germs vs. Malware" Comparison. Ask students: "How do germs spread from person to person?" (touching, coughing, sharing food, etc.) List their answers on the board. Then explain that malware — short for "malicious software" — spreads in a similar way, but between computers and devices instead of people: through infected downloads, bad links, infected USB drives, or email attachments. Just like washing your hands helps stop germs, safe online habits help stop malware from spreading to your devices.

Recommended Teacher Talking Points (Introduction)

- Malware is short for 'malicious software' — software that is designed to harm a device, steal information, or cause problems without your permission.
 - A computer virus is one type of malware — it's called a virus because, like a real virus, it can copy itself and spread from file to file or device to device.
 - Malware usually sneaks in disguised as something else — a free game, a cool app, a video link, or a file attachment that looks harmless.
 - Today we'll learn how malware spreads, how to avoid it, and what to do if you think a device might be infected.
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Direct Instruction with Recommended Teacher Talking Points

Core Concept:

- Malware can do many bad things: slow down a device, delete or steal files, spy on what you type, or let a stranger control the device remotely.
- Malware often spreads through: clicking unknown links, downloading free programs or games from untrusted websites, opening email attachments from strangers, or plugging in an infected USB drive.
- To stay safe: only download apps and programs with a parent's or teacher's permission from official app stores, don't click suspicious links, and never open attachments from people you don't know.
- If a device starts acting strange — very slow, popping up strange ads, or doing things on its own — tell a trusted adult right away.

Increased Learning — 4th Grade Level:

- Introduce specific malware types: a virus (attaches to files and spreads when the file is shared or opened) and a worm (spreads on its own across networks without needing a person to open anything).
- Talking point: "A virus needs a person to open an infected file to spread, kind of like a cold spreading when someone sneezes near you. A worm can spread on its own across a network, without anyone clicking anything."
- Reinforce that antivirus software (used with a parent's or IT department's help) acts like a digital immune system, scanning for and removing malware.

Guided Practice — 4th Grade Skill Activity

(Skill activity to complement the learning objective)

Virus vs. Worm Diagram

- Students draw or label a simple diagram showing how a virus spreads (person opens infected file → spreads to next file/person) versus how a worm spreads (device to device automatically across a network).

Independent Practice or Homework Handout — 4th Grade Worksheet

"Virus or Worm?"

- Read 3 short scenarios and label each as describing a virus or a worm.
- Explain in 1–2 sentences what antivirus software does.
- Short answer: Why is it risky to open an attachment from someone you don't know?

Closure (5 minutes)

Bring the class back together and ask 2–3 volunteers to share one type of malware they learned about. Reinforce the key takeaway: "Just like washing your hands helps stop germs from spreading, safe download habits and caution with links and attachments help stop malware from spreading to your devices." Preview that the next lesson will cover safe Wi-Fi and network habits — another important layer of keeping devices protected.

Assessment — 4th Grade Quiz

5 questions

1. What is the difference between a virus and a worm?
2. What does antivirus software do?

3. Which of these is a safe way to get a new app? a) Download it from a pop-up ad b) Get it from the official app store with a parent's permission c) Download it from a random website
4. True or False: A computer virus can spread when an infected file is opened or shared.
5. Short answer: Why is it risky to open an email attachment from someone you don't know?

Answer Key (Teacher Use) — 4th Grade

1. A virus needs a person to open an infected file to spread; a worm can spread on its own across a network without anyone opening anything.
2. Antivirus software scans for, blocks, and removes malware, acting like a digital immune system.
3. b) Get it from the official app store with a parent's permission.
4. True.
5. Open-ended — accept answers noting that attachments from strangers could contain hidden malware that infects the device once opened.

Teacher Reflection / Notes

- What worked well in this lesson? _____
- Which grade level needed more scaffolding or support? _____
- Did students grasp the "germs" analogy for malware spread? _____
- Adjustments for next time: _____