

Activity 10-2: Wireless Signal Strength

Big Idea

Students will map the relative strengths of a wireless network in a building. If possible, they can determine where a WiFi extender should best be placed to improve the signal and then test it out.

Materials

- Smartphone, tablet, laptop or Chromebook
- WiFi speed test app or website, such as [Speedtest by Ookla](#)
- Print or digital floor plan of the building you are testing in

Vocabulary

WiFi speed test app or website

Wireless access point

WiFi hub or router

Background

Simply installing a wireless access point is not enough to ensure everyone can access it. WiFi signals can be interfered with by building materials, appliances, and other common items that can impact your WiFi signal. Check out this list of [10 Things in Your Home that Interfere with and Block Wi-Fi signals](#) from networks. You can find similar lists with a quick Internet search.

Your district's IT Department may be reluctant to allow students to configure school building networks, but you can determine how well the signal is being delivered within any building with some simple tools. You can do this elsewhere, like at home, where you might even be able to improve your WiFi network.



Activity Directions

1. Floor Plan Sketching:

- Create a simple floor plan of the building where you'll be testing the WiFi network. This can be a hand-drawn sketch or a digital drawing.
- Identify and mark at least four different rooms for testing.

2. Locating the WiFi Hub/Router:

- Indicate the location of the WiFi hub or router on your floor plan.

3. WiFi Speed Testing:

- Use the WiFi speed test app or website to take readings in different parts of each room you've marked.
- Record these readings on your floor plan, noting the exact spots where each reading was taken.

4. Analyzing Signal Strength:

- Analyze the data to determine areas with weakened signal strength.
- Investigate potential causes for weak signals at different points, such as thick walls, electrical interference, or distance from the WiFi hub.

5. Optimization (Optional):

- If you have access to a WiFi extender and permission to use it, propose the best location for its placement based on your findings.
- Install the extender, test the results, and update your floor plan accordingly.

6. Re-evaluating Router Placement (Optional):

- Consider if the WiFi hub or router is ideally placed. Investigate whether moving it to a different location could improve overall performance.
- Take into account limitations such as necessary outlets or cabling.

