

# Networking: An Unplugged Activity for Beginners

TOPIC: NETWORKING

GRADES 3-5, 6-8, 9-12

LESSON DURATION: TEACHER DISCRETION

SOFT SKILLS: COMMUNICATION, COLLABORATION, PROBLEM SOLVING

---

## Learning Outcomes:

- Students will demonstrate a basic knowledge of the history and workings of the internet as a means of mass communication and a network of connected users.
- Students will understand the issue of “trust” as it applies to networks.

---

## Materials:

- [Presentation on Networking basics](#)

---

## Activities:

1. The teacher should tell the class that today they will learn about networking. The teacher should ask students to define the term network.
2. The teacher should have all students stand. Students will need room to move around the classroom. The teacher should explain that they are going to take part in a networking activity. Each time the teacher states a hobby, students should move if they like to do the activity. If not, the student should remain standing at their chair.
3. The teacher should then list a wide variety of hobbies one at a time (playing sports, watching TV, reading, walking the dog, going to movies, etc.) Students who like the activity should move to a predetermined location in the room. The students should be allowed 30 seconds to chat with each other during each network. After each activity is stated, allow the students to return to their seats.
4. After the activity is over, explain that each of those groups was a network. Networks of people are those that interact around a common interest... The teacher should then explain that computer networks are the same thing: 2 or more computers that are linked together in communication to share resources.
5. The teacher should then ask for examples of different types of computer networks (home network, school networks, work networks, the internet)
6. Because of the sheer expansion of the internet, students can think of the computer networking just like they think of the [US interstate system](#). The analogy can be made that information is like the car traveling down the interstate.
7. Tangent topic that the teacher may choose to insert: Understanding how this information moves and investigating it when something goes wrong legally is called **digital forensics**. Digital forensics can be very difficult because there is SO much traffic moving that it is hard and timely to track.

© 2018 Teach Cyber



This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](#).

- Purdue University has a digital forensics lab. Professor Seigfried-Spellar suggested considering ordinary vehicular traffic as an analogy. “You’ve got your home, workplace, streets, traffic lights, other cars on the road, lanes to drive in, and places to park,” she said. “Some of the roads aren’t going to work due to construction or traffic accidents. Some cars have people carpooling and others have just the driver. Next, are you sending kids to school? Are you driving to work? We are trying to create a snapshot of all of that. Using our roads analogy, we want to capture all of the traffic which moves over a series of roads over a period in an entire area, and to know what radio station the driver was listening to or if he was talking to someone in the back seat.”
8. The teacher can then begin a very basic discussion on how identification is done on a network. Devices are identified through a unique IP address.
  9. Just like each person has a unique home address, each computer has a unique address. This address is called an “IP address” and it is how computers know what other computers they are “talking” to.
  10. More information can be found at <http://whatismyipaddress.com/ip/> including the ability to locate and monitor an IP address. If the teacher does not feel comfortable allowing student to determine their IP address (especially while at school); show them the standard format of an IP address (**nnn.nnn.nnn.nnn** where nnn must be a number from 0 - 255).
  11. To incorporate active student learning, at this point the students could be required to draw a typical day in the life of their network. Students should attempt to create a visual snapshot of their network traffic. On a plain sheet of paper, have students place a visual representation of the different devices that they use during a normal day. Next, they should connect each device to the networks that they utilize. By the time they are done, some will have a spider web of traffic while others will have a simplistic visual display. If the teacher is comfortable, a discussion and the inclusion of routers, data packets, ISP v LAN, etc can occur.
    - A detailed explanation can be found in this article from Stanford University: <https://web.stanford.edu/class/msande91si/www-spr04/readings/week1/InternetWhitepaper.htm> Or the teacher can use the [presentation available here.](#)
  12. Lastly, the teacher can wrap up the lesson with a discussion on safety. Just as we have trusted networks of people (parents, friends, religious leaders, etc.), there are trusted computer networks. It’s best to be able to recognize them and can recognize those we shouldn’t trust (open Wi-Fi, social media, etc.).

---

## Assessment/Enrichment:

1. Students can complete an activity at home. Have students determine how many computer networks they use during a day. For some it may just be two, home and school. However, some may go to church, get on the Wi-Fi or go to the public library to work, or go to the babysitter’s house after school. Have students keep a journal over the weekend regarding how many networks they used with one of their devices.
2. As a fun unplugged activity, students can write their IP address and decorate it as they wish (For example, someone may want to draw theirs within a flower, butterfly, football, dragon, etc.) making the address officially theirs (although it will change often). It is recommended that students develop a fake IP address by using the proper protocol (**nnn.nnn.nnn.nnn** where nnn must be a number from 0 - 255).

© 2018 Teach Cyber



This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/).