

Lesson 1.6: Computing Technologies Are Changing the World

Objectives

In this lesson, students will:

- ❖ Gain an awareness of how computing technologies are changing our world.
- ❖ Be able to identify how specific devices have changed the way we operate in the world.
- ❖ Be able to brainstorm and express ideas of devices that can impact and improve human lives.

Preparation

- Print student activity worksheet, one per team of 2-3.
- Students will need their journal or a piece of paper for the first student activity.
- Although the video content is more advanced, you may want to watch the listed videos in resources as background information.

Agenda

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| 1. How Computing Technologies Have Changed the Way We Live | 10 mins |
| 2. Student Activity: Student Activity: From 'Happy Birthday Dear Eric' to  | 10 mins |
| 3. Can a Mobile Device Know You Have a Cold? | 10 mins |
| 4. Student Activity: Life Changing Electronic Devices | 20 mins |
| 5. Wrap Up and Reflections | |

Resources & Links

- Video link as teacher background/education (TEDx talk on electronic nose and disease detection - 10 mins long): <https://tinyurl.com/y26syy3>
- How does an electronic nose work video (1:22 mins): <https://tinyurl.com/y2ohhof2>

1. How Computing Technologies Have Changed the Way We Live



Engage students in a teacher led discussion:

Technology has changed so many things we do almost on a daily basis, such as making phone calls, communicating with others, traveling, watching movies,....



Note: Some of the prior methods of doing things may need to be explained to students that are not familiar with them such as film cameras.

Examples:

Activity	Before	Now
Watching Movies	VCR, TV, DVDs	Streaming Video
Phones	Cable Home phones and rotary phones	Cell phone, Smart phone
Photos	Load camera with film	Smart phone
Written Communication	Mailed letters, telegram.	Text, Chat, Instagram
Driving	Traditional car	Self driving car
[Prompt students to come up with their own examples]	Further ideas after students come up with their own:	
Written communication	Handwritten	Text, Chat, email
Navigation	Paper maps	GPS navigation
Games	Board games	Video games

2. Student Activity: From “Happy Birthday Dear Eric” to



Students discuss how written communication has changed the way people communicate

Instructions to give to students:

1. In your team discuss how written communication has changed the way we communicate. During the American Revolution, people sent letters to each other which was slow and unreliable. The recipient would have to wait a few days to weeks for a letter to arrive depending on the destination of the letter. Many people still write letters, but it has mostly been replaced thanks to new technologies.
2. Discuss what types of written communication people use today and which technologies have allowed this to change. Write down 2- 3 of your ideas.
3. Discuss and write down the benefits of the new way of communicating.
4. Be prepared to share your ideas with the class.

After the activity, **prompt** students to share their ideas with the class.

3. Can a Mobile Device Know You Have a Cold?



Dogs are some of our best friends. That’s especially true after a disaster, such as an earthquake. When buildings collapse, search-and-rescue dogs help find people trapped beneath the rubble. Dogs’ amazing noses can pick up the scent of survivors. Dogs can also sniff hidden drugs and explosives.



Unfortunately, it is very expensive to train a dog, they may not always be up for the task and they can’t work for very many years.

Because smells can tell us so much about ourselves and our environment, scientists are developing the sense of smell in machines, sometimes called an electronic nose. Lots of tiny sensors are able to pick up

scents, process the information and decide what the smell is. These tiny sensors that ‘smell’ are small enough to fit inside a smartphone and other mobile devices, feeding information about the scent to a computer system that can analyze the data and tell us what the scent is.

These electronic noses will hopefully be able to be used to find survivors like dogs do, but scientists are also developing them to detect diseases in humans. We might be able to breathe into a smartphone or a handheld electronic device and it might be able to tell us if we are sick. As one scientist put it, “Your phone might know you have a cold before you do.”

Optionally show the “How Does an Electronic Nose Work” video if appropriate for your class (<https://tinyurl.com/y2ohhof2>).

4. Student Activity: Life Changing Electronic Devices



We learned how an electronic nose can be useful and how it might help in the medicine field. What if we had an electronic eye device?

Students may work as a team or on their own for this activity (simply tell them to replace ‘our’ with ‘my’ if working alone). Explain the activity to students and distribute the activity worksheet.

Allow time for students to share and discuss their ideas with the class.

5. Wrap Up and Reflections



Reflection Points:

- How is technology changing the way we live?
- Do you think technology is making our lives easier or harder?
- How are our lives different because of technology?

Student Activity: Life Changing Electronic Devices

You learned about an electronic nose. Now you will share your own invention! Be prepared to share with the class. Every team member will share at least one item.

What to do:

- 1) Your team had an amazing breakthrough and your new electronic eye is ready to see where no eye has seen before!



Our electronic eye is called _____

Our electronic eye can see (examples: in the dark, x number of feet away, in certain places where it is difficult to see,.....)

People can use our device to _____

Our eye can solve the following problem(s) _____
