



# Exploring a Computing Innovation 2020-2021

## Unit 1. Your Virtual World

**Revision Date:** Jan 11, 2020

**Duration:** 2 50-minute sessions

### Lesson Summary

This is the first of three lessons where students research computing innovations.

This lesson will focus on what a computing innovation is and what the harmful and beneficial effects are.

### Learning Objectives

#### CSP Objectives

- *EU CRD-1 - Incorporating multiple perspectives through collaboration improves computing innovations as they are developed.*
  - LO CRD-1.A - Explain how computing innovations are improved through collaboration.
- *EU IOC-1 - While computing innovations are typically designed to achieve a specific purpose, they may have unintended consequences.*
  - LO IOC-1.A - Explain how an effect of a computing innovation can be both beneficial and harmful.
  - LO IOC-1.B - Explain how a computing innovation can have an impact beyond its intended purpose.

### Teacher Resources

### Lesson Plan

#### Session 1.

Explain that in this lesson students will investigate computing innovations and their impacts. The first session will be for research and presentation preparation. Our next session will be for the presentation of the research. The research and presentation will be done in groups of three.

#### Introduction

Brainstorm a list of innovations that might be computing innovations. Have the class vote on which innovations are computing innovations according to these guidelines:

- It requires a computing device to accomplish its prime function.
- It includes a program as an integral part of its function.

- It can be hardware (a physical device), software (a computer program), or a computing concept such as e-commerce that depends on hardware and software.

Note that hardware requires software in order to accomplish anything intelligent, and software requires hardware in order to run.

Have the class evaluate the innovations listed to see if any of them should be placed in a different category according to this definition.

Say: Like all innovations, computing innovations have an original purpose that motivated their design and guided their development but the innovation may have impacts and effects beyond that purpose. Whether intended or not computing innovations have changed how we communicate with our families and friends, how we obtain and collect news, how we investigate and prosecute crimes and how we conduct business.

## Activity 1

Place class members into teams of three.

Have each team select a computing innovation - not necessarily one previously discussed - and research answers to the following questions. Students should collect at least one reference for each answer.

- What was the function of the innovation intended by the developers?
- How does the innovation use computing and what information or data does it collect or use to perform its function?
- Who has been impacted in a positive way by the innovation and how were they impacted?
- Who has been impacted in a negative way by the innovation and how were they impacted?
- How has the use of the innovation changed the way people do things?

## Activity 2

Students use their research to prepare a poster presentation for their project. All team members must be involved in the presentation.

## Session 2

In this lesson, we will study and present views of beneficial and harmful impacts of computing innovations. The same effect may be beneficial to some and harmful to others. Each presentation must answer the following questions.

What is the name of the computing innovation?

What is the function of the innovation?

How does the innovation use computing?

How might the innovation impact fields other than computing such as the sciences or the arts?

What information does it need to perform its function?

Who has been impacted in a positive way by the innovation?

How were they impacted positively?

Who has been impacted in a negative way by the innovation?

How were they impacted negatively?



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