



Into the Light: How Computers and the Internet Enhance Innovation

Unit 1. Your Virtual World

Revision Date: Jan 11, 2020

Duration: 3 50-minute sessions

Lesson Summary

Summary

Computing greatly affects the everyday lives of today's teens, but many of them are not consciously aware of these influences. In this lesson, students investigate the impact of the Internet on their lives.

Using a presentation about modern computers as an example, the teacher models the process of asking questions, organizing ideas, doing research, and giving a presentation. Students will then work in assigned groups to create presentations on the Internet and its impact using online collaboration tools.

Students will experience some of the many collaborative tools available online and develop effective group communication skills.

Learning Objectives

CSP Objectives

- *EU CRD-1 - Incorporating multiple perspectives through collaboration improves computing innovations as they are developed.*
 - LO CRD-1.B - Explain how computing innovations are developed by groups of people.
 - LO CRD-1.C - Demonstrate effective interpersonal skills during collaboration.
- *EU CSN-1 - Computer systems and networks facilitate how data are transferred.*
 - LO CSN-1.A - Explain how computing devices work together in a network.
 - LO CSN-1.B - Explain how the Internet works.
- *EU IOC-1 - While computing innovations are typically designed to achieve a specific purpose, they may have unintended consequences.*
 - LO IOC-1.E - Explain how people participate in problem-solving processes at scale.
- *EU IOC-2 - The use of computing innovations may involve risks to your personal safety and identity.*
 - LO IOC-2.A - Describe the risks to privacy from collecting and storing personal data on a computer system.

NGSS Practices:

- 3. Planning and carrying out investigations
- 7. Engaging in argument from evidence
- 8. Obtaining, evaluation, and communicating information

NGSS Content:

- HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

- HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

Key Concepts

Students should understand more about what the Internet is, what a computer is, and how the Internet affects our daily lives.

Students should develop an improved understanding of the power of the Internet as a positive agent of change.

Students should use collaborative online tools to work in effective groups using good research skills to deliver a worthwhile presentation.

Students describe ways that greater speed, detail and precision in processing information is possible because of computation.

Outcomes

- Students will describe multiple ways that the Internet impacts our lives.
- Students will use good research techniques to find and cite high-quality sources and to synthesize an original understanding of topics researched online.
- Students will define basic vocabulary about the Internet (cloud, server, etc.).
- Students will describe various tools that enable online collaboration.
- Students will collaborate using online tools to develop and refine a presentation.
- Students will collaborate and access information with speed and precision using computational tools.

Teacher Resources

Student computer usage for this lesson is: **required**

Teacher Resources

1. Unit 1 Lesson 2 LIGHT.pptx (overview of the lesson)
2. Modern Computerx.pptx (example of a short pecha kucha)
3. Script for Modern computers.docx
4. Bad presentation for contrast.pptx (example of how NOT to create a presentation)
5. Script for bad presentation.docx
6. Research and Collaboration Assessment.docx
7. Pecha Kucha student handout.docx
8. Pecha Kucha Assessment.docx

Student Resources:

1. Access to computers for using online collaboration resources.

Crowdsourcing Resources:

- Article on how crowdsourcing with GPS cellphone data might predict earthquakes: <http://mashable.com/2015/04/10/smartphones-earthquake-early-warning-system/> (<http://mashable.com/2015/04/10/smartphones-earthquake-early-warning-system/>)

Lesson Plan

Session 1

Getting Started (5 min)

Journal

Instruct students to think about the following questions and journal about their thoughts. Afterwards, have them pair up and share their answers with each other. (See slide 2 of the presentation in the lesson folder: "Unit 1 lesson 2 LIGHT".)

- How big is the Internet?
- What kind of information is on the Internet?
- What kinds of communication does the Internet make possible?

Teacher Overview and Student Activity Introduction (20 minutes)

(Use the Unit 1 Lesson 2 LIGHT presentation for this activity.)

Part 1 - Teacher Presentation and discussion (10 min)

1. Use slides 3-4, and the students' ideas from the journaling exercises, to guide a class discussion on the Internet: what is out there and how does it affect our lives?
 - Try to get an idea of how much students know about what is on the Internet beyond email and social media.
 - If students need more idea starters, show the presentations on Communication Changes or Business Changes in the teacher folder.
 - Encourage students to continue to write down the things they know or could look up.
 - *Suggestion for follow-up activity:* Have students create "memes" and try to spread them through social networking to see the power of communication and collaboration.
2. Slides 5-7: Introduce the question of what a computer is. Then, using the script in the teacher folder, deliver the pecha kucha presentation on Modern Computers. Finally, discuss with the students what their assignment will be and give them some tips for creating their own presentation.
3. **Notes for teachers on presentation:**
 - "Pecha kucha" was originally used to refer to a specific talk format that contains 20 presentation slides, each of which are presented for exactly 20 seconds, using an auto-advance timer. The goal is to create a tight, effective presentation that moves quickly and conveys a lot of information in a short period of time.
 - For this exercise, you will be demonstrating a "half pecha kucha" that includes 10 slides -- presented at 20 seconds a slide, the presentation will last for 200 seconds (just over 3 minutes).
 - You will need to practice this presentation ahead of time, especially if you are not familiar with the "pecha kucha" format!

Part 2 - Introducing Student Activity (10 min)

1. In the remainder of the lesson, student groups will create their own "half pecha kuchas" on a topic about the Internet that they select.
2. Ask students what they learned:
 - About the content: modern computers.
 - About delivering a pecha kucha presentation: you need a script; you need to practice; it's automatically timed; you don't read from the screen.
3. Slides 8-10: Tell students they will be working for the next few days to create presentations about the Internet. Encourage some brainstorming of good questions to ask and write them down. (Slides 9-10 illustrate how this was done for the Modern Computer pecha kucha. Slide 11 includes some tips on doing good research. Lastly, slide 12 introduces the criteria that will be used to assess the presentation.)
 - As you are doing this, give students the "Pecha Kucha Student Handout."
 - Have students consider what online collaborative platforms are available to them to create a product together (Office 365, Google Drive, etc.)
 - **Note:** *If your students need more clarification on making a good presentation, you may want to deliver the "bad presentation for contrast" presentation (in the lesson folder, along with corresponding scripts) and have them describe why the presentation is bad.*

Group Activity: Collaboration and Organizing Ideas (30 minutes)

(See Research and Collaboration Assessment Rubric.) Since this is the first significant collaborative activity of the course, discuss team dynamics and norms, communication skills and conflict resolution, in addition to an overview of what online collaborative tools can be used. Review the collaborate assessment rubric together and creatively introduce the good interpersonal skills you expect (see below)

If possible, act out examples of how NOT to use good interpersonal skills. (a cooperative student with some drama experience can be a great partner to plan in advance with)

1. Communication: talk a lot, talk when others are talking, don't listen, be distracted, be completely unclear and confusing, talk off-topic, etc.

2. Consensus building: make all the decisions yourself, be pushy about a particular idea without getting feedback or other ideas, etc.
3. Conflict resolution: be angry, offended, sad, etc. when anyone disagrees
4. Negotiation: flip a coin to make a decision, go to the teacher immediately without trying to resolve a problem, etc.

Assign students to investigate and use online collaboration tools to:

- Collect the best questions on what they will research (Google docs, Office 365, etc.).
- Create a mind map to organize the questions. MindMup (<https://www.mindmup.com/>) is recommended for creating mind maps because it requires no signup. A list of tools is available here: <http://elearningindustry.com/the-5-best-free-mind-mapping-tools-for-teachers>
- Collect images and links to research on platforms like Pinterest, Google drive, or links in a document. (There are many other options.)

Sessions 2 - 3

Group Activity: Research and Presentation Preparation (65 minutes)

Part 1 - Preliminary research and collaborative development of pecha kucha on the impact of the Internet (20 min)

Part 2 - Preliminary presentations/sharing and feedback (10 min)

Part 3 - Research and collaborative development of complete pecha kucha presentations on the impact of the Internet (35 min and homework / out-of-class time as desired)

Class Activity: Presentation of Research (20 min)

(See the self and group assessments and "Pecha Kucha Student Handout" in the lesson folder.)

- The timing for this session assumes that there are 4-5 group presentations, each in the pecha kucha 3.5-minute format.
- Every student should present some of the slides; the assessment includes both individual and group components.
- Give feedback and get comments about the advantages of working as a team, highlight teams that demonstrate good teamwork skills.

Wrap up (10 min)

Share Student Learning

- Review knowledge gained from student presentations about facts learned, the research process, collaboration, and presentation skills.
- Ask how each student was able to reflect their own, personal ideas as part of a collaborative group.
- Discuss how computation facilitates the creation and modification of computational artifacts with enhanced detail and precision.

Options for Differentiated Instruction

- Suggestion: Have students create memes and try to spread them through social networking to see the power of communication and collaboration.

Evidence of Learning

Formative Assessment

Teachers are encouraged to have students present single slides and give each other feedback before continuing to do the research for the complete presentations.

Students are working in collaborative teams for the first time, use reflections and dialog to assess how effectively they are using online tools to collaborate and how they are resolving issues working as a team.

Summative Assessment

Students create a presentation while working in groups and using online collaboration tools. A rubric will be used to assess the student group presentations along with self-reflections.



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