PLTW COMPUTER SCIENCE

Activity 2.3.3

Security and Liberty

Introduction

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Balancing security with liberty has been a challenge for thousands of years. People want to be safe and be assured that other people follow the laws of the land. But people also want to be free to do as they wish and to be unafraid of being attacked for having their own opinions and personality. The Internet and the global nature of computing offer opportunities for both security and liberty.

In what ways can computing improve the safety of our society? In what ways can computing increase our liberty and our ability to preserve democracy? Will both security and liberty increase because of computing, or will one overtake the other? Can computing help us balance these two principles?

Materials

- Chapters 2 and 5 of *Blown to Bits* by Hal Abelson, Ken Ledeed, and Harry Lewis, available at
  - **http://www.bitsbook.com/wp-content/uploads/2008/12/chapter2.pdf**
  - **http://www.bitsbook.com/wp-content/uploads/2008/12/chapter5.pdf**

Procedure

Part I: Setting the Stage

1. Form groups of four as directed by your teacher. Meet or greet each other to practice professional skills.

   Note: This activity is a research, writing, and discussion activity. Be prepared to document your work and your discussions as directed by your teacher. Words marked with an asterisk in **bold*** are civics key terms, and their definitions are listed at the end of the document.

2. Of all the countries in the world, the United States offers some of the most extensive rights to citizens accused of a crime.

- In your group of four, list the constitutional rights guaranteed to people accused of a crime.
- Collect all of the rights that your class brainstormed into a single list. Group ideas together where appropriate. Add to your list with rights your group hadn't thought of.
- As a group of four, discuss and record why you think the founders of or leaders of our branches of government created those rights.

3. If a perfect lie detector were invented, one that never made mistakes, perhaps some of the rights of the accused would be unnecessary. Your teacher will identify a handful of these rights.

    - Focusing on a handful of these rights as identified by your teacher, discuss within your group whether you would want to eliminate these rights if a perfect lie detector were invented.
    - In writing, state and support your individual opinion on this question.

4. Read the Fourth Amendment to the United States Constitution aloud:

    Amendment IV

    The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.

    - Discuss within your group what this means.
    - Individually, write your interpretation in everyday modern language.

Part II: How Computing Affects the Balance of Order vs. Freedom

5. The Fourth Amendment was written at a time when government searches often tore a house apart. With technology, searches can be less physically disruptive. A person wouldn't even know if their email was searched!

    - *"Because technology makes searches less disruptive, searches should be permitted more now than 50 years ago."* Discuss in your group whether you think the government should have to have probable cause to conduct a search using technology that doesn't disrupt your things.
    - If your school provides students with an email address, under what circumstances do you think the school administration should be able to search your email? Discuss in your group.

6. Crimes sometimes go undetected. Even once detected, crimes often go unpunished. American culture places a high value on the opportunity to live freely and without micromanagement of our lives by government. A government is less likely to enforce a law strictly if it requires a large amount of time and effort to conduct a thorough investigation. However, computing can reduce that effort and help governments catch criminals.

    Computing can automate the collection and analysis of data about what people are doing. As

computing advances, governments can be more thorough in detecting and punishing crimes. Consider the following law enforcement tools.

- Phones, computers, and cars routinely have cameras and GPS sensors. Algorithms can identify and track people as they move between cameras (Hodson 2013).
- Computers now routinely process images and issue speeding tickets without human involvement (IIHS 2014).
- The National Security Administration routinely searches email for keywords. Phone conversations are transcribed to text and searched for keywords (FAS 2010).
- Databases of DNA profiles can increasingly identify people by flakes of skin they leave behind (Dodd 2013).
- Technology is even able to read minds (Singer 2008).

In George Orwell's novel *1984*, the Thought Police arrest people just for disagreeing with the government. Giving people a reasonable chance of getting away with crime is one way to prevent a government from enforcing unreasonable laws. The following statement is a variation of the statement from the previous step.

"Because technology makes it too easy for the government to enforce unreasonable laws, searches should be permitted less now than 50 years ago."

In your group, argue for or against this statement.

7. Consider the statement, *"Searches should be permitted less now than 50 years ago."* Individually, write a brief essay in which you agree or disagree with this statement and support your position in writing.

8. Computing strengthens law enforcement, and computing can also strengthen liberty. Dissidents* can more easily inform the public about government abuses. Networking and encryption make it easier for dissidents to communicate and organize. China has had a difficult time restricting its citizens' access to the uncensored Internet. Computing innovations are often credited with the Arab Spring in which governments of Tunisia, Egypt, Libya, and Yemen were overthrown (Sturm 2013).

   Brainstorm as a whole class why computing might make it more difficult for governments to be oppressive.

9. Read the following sections from Chapter 2 in *Blown to Bits,* pages 48-72:

   - *Big Brother, Abroad and in the U.S.*
   - *Beyond Privacy*
     - As a class, brainstorm a list of decision makers who determine what data are collected about you based on your Google searches and how long those data are retained about you.
     - As a class, brainstorm a list of the stakeholders that are affected by the decision to mine Google search data.
     - With your group of four, consider and discuss the collection and retention of data about all of your purchases. Who makes the decisions about the collection and retention of that data? Who are the stakeholders affected?

10. Read the following sections from Chapter 5 in *Blown to Bits* pages 187-193 and answer the

questions below.

- *Cryptography for Everyone*
- *Cryptography Unsettled*
  - Is email commonly encrypted?
  - Who determines whether most email is encrypted?
  - Who are the stakeholders affected by whether email is encrypted?

11. Computing can affect democracy by making government both more accessible and more accountable to people. The **Open Data Movement** argues that making raw data available in standardized formats is especially powerful because third parties can create applications that use the data. As directed by your teacher, complete one of the following two tasks:

    - Citizens can more easily participate in decision making because of networked computing. The status of bills being considered by the legislature is posted on the U.S. Legislature's site, **congress.gov**, and on private sites like **govtrack.us**. Use one of these websites to identify and describe a bill currently being considered by the legislature.
    - Citizens can more easily get the data that inform government decisions. The website **http://catalog.data.gov/dataset** serves as a clearinghouse of government-collected data. Identify and describe one data set.

12. Does the average citizen know enough to make the decisions that are made by government? Or should the job of policy-making be left to informed representatives elected by the population? When people vote directly on a policy, it is called a referendum*. When people only vote on candidates for office, and the elected representatives then vote on policies, it is called representative democracy*. Which is better: democracy by referendum or democracy by representation? This question has been debated since the American Revolution.

    Modern availability of information allows democracy by direct referendum more frequently than was previously possible.

    - Discuss the above statement as a whole class.
    - In your group of four, create one or more stick-figure cartoon strips which agree or disagree with the above statement.

13. For the AP CS Principles *Explore* Performance Task you must find three recent, credible sources of information about a computing innovation that:

    - Has or could benefit and harm society, economy, or culture
    - Consumes, produces, or transforms data
    - Raises a storage, privacy, or security concern regarding data.

    In each unit of this course, you will investigate particular impacts of computing innovations on society. In this activity, find one or more articles referenced in the ACM TechNews archive, **http://technews.acm.org/archives.cfm**, about the impact of a computing innovation on:

    law enforcement, privacy, or democracy.

    Other topics may be explored at the discretion of your teacher. Find relevant summaries of news article from the ACM TechNews and read the original articles being summarized. Complete some portions of the *Explore* task described below as directed by your teacher.

Task part 1. Create an audio, video, or visual artifact that illustrates, represents, or explains the computing innovation's purpose, function, or effect. (3 page/1 minute/30MB max)

Task part 2. Essays

- Name the innovation and its purpose and function. Describe how your artifact illustrates, represents, or explains the computing innovation's purpose, function, or effect. (Approximately 100 words.)
- Describe the tools, technique, and process you used to produce the artifact. (Approximately 100 words.)
- Explain the beneficial AND harmful effect(s) the innovation has or could have on society, economy, or culture. (Approximately 250 words.)
- Describe the data; the consumption, production, or transformation of data; and the storage, privacy, or security concern(s) directly related to the innovation. (Approximately 250 words.)
- Use APA-style citations to correctly reference the article(s).

Note: This step is adapted from the official College Board Explore Performance Task but it does not duplicate the content of College Board Task or Rubric. The task provided here contains elements that are different than the College Board Performance Task and Rubric. Please reference official College Board materials.

Conclusion

1. Reflect on the group and class discussions in this activity. Some comments were probably thought-provoking and made the discussion lively, while other comments tended to shut down the discussion. When a person spoke up, what characteristics of their comments or style engaged people? Why? What characteristics led people to disengage? Why?
2. Review an essay and an artifact from Step 13. Describe what you learned or took away from each one. Describe the questions each of them raised for you.
3. How will computing increase our liberty? How will computing increase the rule of law and order?

*** Civics Key Terms**

Term	Definition
Dissident	A person who disagrees with the government.
Democracy by Referendum	Citizens vote directly on proposals; proposals become law if the majority of voters vote yes.
Representative Democracy	Citizens vote for politicians who then represent the citizens on a legislature; proposals are approved by the legislature to become law.