TATA CONSULTANCY SERVICES | Discovery EDUCATION

IGNITE MY FUTURE

THINK | SOLVE | CREATE | CONNECT

SUBJECTS

Social Studies
English/Language Arts
Math

COMPUTATIONAL THINKING PRACTICE

Collaborating Around Computing

COMPUTATIONAL THINKING STRATEGY

Analyze Data

MATERIALS

Writing materials

Computers with Internet access

Material for creating and sharing visual presentations of quantitative data (graphs, charts, etc.). This could be done using multimedia (such as the NCES Create A Graph website) or with physical materials like graph paper, large-format sticky paper, or whiteboards.

Historical Government Data Collection student capture sheet

Modern Monarchies Data Collection student capture sheet

Democratic Nation Data Collection student capture sheet

LESSON TITLE

How Much Does One Vote Count?

Guiding Question: Is Life Fair?

Ignite Curiosity

- What is the difference between a "like" and a vote?
- How much of an impact does one vote have on changing the course of history?
- If you were in charge of a nation, how would you organize its voting system?

In this lesson, students will use the computational thinking strategy of analyzing data to examine the voting methods of various political systems around the world. They will consider different approaches to political decision making, access and analyze digital data, and explore possible suggestions for improving and refining the voting system. In **THINK**, students will evaluate the fairness and representativeness of different political systems around the world. They will also consider what the goals of a political system should be. In **SOLVE**, students will use the computational thinking strategy of analyzing data to interpret the available public data regarding the decision-making systems of various countries and assign a quantitative measure of fairness to each system. In **CREATE**, students will use their data analysis to construct an evidence-based argument that details how fair current democratic systems are and suggests potential improvements to the systems. In **CONNECT**, students will consider how using computational thinking practices to evaluate political systems could help us understand and improve our world today.

Students will be able to:

- **Understand** the basic principles of various political systems,
- Use available data to **analyze** the fairness of different political systems,
- Present quantitative data in visual form (such as a graph or chart) to **evaluate** information about political systems, and
- **Create** an evidence-based argument in favor of or against suggested changes to political systems, supporting their position with data.

Students will discuss and explore various political systems and their approaches to decision making.

1 **Introduce** the following question to the class for consideration and discussion:

Imagine you were one of the first members of a new country and had to choose what kind of government to develop. If you were responsible for organizing the political system of a new nation, what system would you choose? What information would you need to make the best decision?

- As students discuss their initial thoughts, emphasize the value of participation and deliberation within the political process.

2 **Ask** students to name or describe some different forms of government with which they are familiar. Record students' answers on the board or in a central location.

- Allow students to share initial thoughts about the system they believe to be fairest. Add students' ideas to the list on the board.

3 **If students do not name** or describe the following systems, introduce them to the class discussion: *monarchy, oligarchy, strict democracy, representative democracy*. If students have questions about specific countries' governments, the CIA World Factbook is a helpful resource.

- Discuss the basic nature of each of these systems. Emphasize the difference between strict democracy and representative democracy.
- Also emphasize that there are many forms of democratic systems that differ from one another in various details.

4 **Lead a whole-class discussion** about how to answer the following questions:

- What are the ideal goals for a political system?
- What should participation in a political system look like? How should citizens interact with their representatives?
- What does freedom mean? How would you define freedom? How would you measure freedom?
- What are the principles for a democracy? Are they different for different countries?
- How could you represent a concept like fairness using a quantitative measurement?

5 **Summarize and review**: Divide students into groups of three or four and have each group create a three-sentence summary of one of the types of government that has been discussed. When each group is finished, have them share their summary with the class.

Students will access and analyze available public data regarding the decision-making systems of various countries.

1. **Explain** to students that this portion of the lesson will focus on researching and gathering information about particular government systems. The first phase will focus on historical governments and modern governments that are not democratic. The second phase will focus on modern governments that are democratic.

2. **For each of the phases** of this assignment, emphasize the following aspects:
   - Collect appropriate numerical data concerning the political system(s) being considered.
   - Emphasize the context in which the collected data should be evaluated.
     - Are there any unique historical factors that relate to and/or explain the data?
     - Are there any unique cultural factors that relate to and/or explain the data?

3. **Split the class into groups** of three to five students, and assign each group one of the following categories of governmental systems for research. Important ancient governments are included in the list to help students gain historical perspective. Provide each group with the appropriate capture sheet, either the Historical Government Data Collection student capture sheet or the Modern Monarchies Data Collection student capture sheet.
   - Monarchy of Ancient Egypt
   - Democracy of Ancient Greece (Athens)
   - Republic of Ancient Rome (representative democracy)
   - Modern Monarchies: Compare the authority of rulers in modern countries that would be classified as monarchies.
     - What monarchs rule over the greatest amount of land, people, and wealth?
     - What restrictions on the power of monarchs are in place in certain monarchies?
     - How are constitutional monarchies similar to and different from democracies?

4 **Distribute** the Democratic Nation Data Collection student capture sheet to students and either assign each group a modern nation with a democratic form of government or allow groups to choose a democratic nation. Ask the groups to research their chosen nation's governmental system. Groups should record their findings on their capture sheets.

The key focus of the research is to collect information that will help the group assess how fair the nation's form of democracy is.

Here are some suggested nations that groups could be assigned or choose:

- United States
- United Kingdom
- Belgium
- France
- Germany
- Uruguay
- India

The Freedom in the World 2016 report by Freedom House is a good starting point for students to begin gathering data about their nation:

- The report and overall summary scores for each nation are found here, along with many graphical representations of regional freedom around the globe.
- Another report provides a breakdown of each nation's score into seven subcategories with accompanying ratings.
- Another potentially useful resource is provided by the Heritage Foundation in its Index of Economic Freedom, which provides scores for a nation's level of freedom in many economic categories.

As above, emphasize the collection of pertinent data and the recognition of important contextual factors.

- Remind students that while they are collecting data, they should keep in mind the fact that they will be creating visual representations of that data later in the assignment.

As a class, briefly discuss the types of information to look for during this research phase. For example:

- Population
- Number of voters
- Number of legislators and other government officials
- Electoral process
- Length of terms of office
- Distribution of wealth, land, and population across different regions

Instruct students to use government websites (and other reputable sources, such as .edu websites) for the collection of data and information concerning the chosen nations.

Instruct groups to focus on the distinctive features of each nation's democratic system.

After groups have completed their research and recorded their findings, reconvene for a whole-class discussion about what calculations could be done with these data to evaluate the fairness of a system (for example, citizens represented per legislator).

Students will construct three-minute speeches detailing how fair they think the current voting systems of democratic nations are and suggesting potential changes to those systems.

1. **Instruct** groups to summarize their research and prepare a three-minute speech with their assessment of how fair the democratic system of their chosen nation is.

2. **Each group should create** at least two visual aids for the purpose of presenting technical or numerical data in a clear and helpful form. Those aids could be tables of data, pie charts, bar graphs, or any other type of useful graph.
   - Emphasize to the students that effective visual displays can help clarify findings from research and emphasize salient points.
   - Suggest to the groups that one visual aid could be used to help present the basic structure of the government or the election process.
   - Multimedia components, if available, can be utilized in creating the visual aids.

3. **Each presentation should include** at least one suggestion for a possible change to the nation's voting system that the group feels would make the system fairer. The group should provide its rationale for the suggested change and support it with data.

4. **As each group makes its presentation**, ask the rest of the class to consider the presentation from the perspective of a citizen of that nation.
   - Ask students from the audience to summarize the key points of the group's presentation:
     - Summarize the overall system of democracy for the nation under consideration.
     - Summarize the proposed change(s).
   - Provide class members with an opportunity to participate in deliberation over the proposed change(s).
   - Are there aspects of the proposed change(s) that need clarifying?
   - Would the proposed change(s) be likely to please and encourage most citizens? Are there any groups of citizens that might be concerned by the proposed changes?

How can computational thinking help us improve political systems or understand our own?

Select one of the strategies listed below to help students answer these questions:

- **How do this problem and solution connect to me?**
- **How do this problem and solution connect to real-world careers?**
- **How do this problem and solution connect to our world?**

1. **Write** the three questions on PowerPoint or flip chart slides and invite students to share out responses.
2. **Display** pieces of chart paper around the room, each with one question written on it. Ask students to write down their ideas related to the questions on each sheet.
3. **Assign** one of the questions to three different student groups to brainstorm or research, and then share out responses.
4. **Invite** students to write down responses to each question on a sticky note, and collect them to create an affinity diagram of ideas.

How does this connect to students?

Our personal lives are strongly impacted by the form of government under which we live.

How important is the level of freedom each of us enjoys? How important is it that our system of government be as fair as possible? Are we satisfied with the current level of freedom and equality in our nation?

How does this connect to careers?

Political Scientists study the origin, development, and operation of political systems. They research political ideas and analyze governments, policies, political trends, and related issues.

Legislators develop, introduce, or enact laws and statutes at the local, tribal, state, or federal level.

Sociologists study society and social behavior by examining the groups, cultures, organizations, social institutions, and processes that develop when people interact and work together.

Statisticians use statistical methods to collect and analyze data and to help solve real-world problems in business, engineering, healthcare, and other fields.

How does this connect to our world?

Is there one ideal government system that is best for all peoples and all times? How can we understand why different nations find different systems better for their situations?

If we wanted to initiate and pursue change in our government system, how would we do it?

Does modern technology influence what system of government is possible or best? Should technology be allowed to influence it? To explore this idea, discuss with students how technology might be utilized to make direct democracy more practicable in nations with millions of citizens. Discuss practicality as one key factor in the historical development of democracy. Discuss whether direct democracy would be desirable if technology makes it reasonably practicable.

How might the prominence of social media in everyday lives have an impact on political proceedings?

National Standards

COMMON CORE STATE STANDARDS CONNECTIONS

ELA/Literacy RST.6-8.7
Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-LS2-1)

ELA/Literacy SL.8.5
Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points. (MS-LS2-3)

Mathematics MP.2
Reason abstractly and quantitatively. (MS-ETS1-1),(MS-ETS1-2),(MS-ETS1-3),(MS-ETS1-4)

Mathematics MP.4
Model with mathematics. (MS-LS2-5)

Mathematics 6.SP.B.5
Summarize numerical data sets in relation to their context. (MS-LS2-2)

THE COLLEGE, CAREER, AND CIVIC LIFE (C3) FRAMEWORK FOR SOCIAL STUDIES STATE STANDARDS: GUIDANCE FOR ENHANCING THE RIGOR OF K-12 CIVICS, ECONOMICS, GEOGRAPHY, AND HISTORY

Dimension 2, Participation and Deliberation
By the end of grade 8:

D2.Civ.13.6-8.
Analyze the purposes, implementation, and consequences of public policies in multiple settings.

D2.Civ.14.6-8.
Compare historical and contemporary means of changing societies, and promoting the common good.

K-12 COMPUTER SCIENCE FRAMEWORK

Practice 2. Collaborating Around Computing
Collaborative computing is the process of performing a computational task by working in pairs and on teams. Because it involves asking for the contributions and feedback of others, effective collaboration can lead to better outcomes than working independently. Collaboration requires individuals to navigate and incorporate diverse perspectives, conflicting ideas, disparate skills, and distinct personalities. Students should use collaborative tools to effectively work together and to create complex artifacts.

Historical Government Data Collection

Historical Nation:

Description of Government System:

Key Data and Facts About the Political System:

Modern Monarchies Data Collection

1 Monarchy #1

Nation:

Key data and information:

2 Monarchy #2

Nation:

Key data and information:

3 Monarchy #3

Nation:

Key data and information:

4 Monarchy #4

Nation:

Key data and information:

Democratic Nation Data Collection

Nation:

Description of Government System:

Summary of the Historical Formation of the Democracy:

Basic Data & Information:

- Population:
- Number of voters:
- Number of federal legislators:
- Voting age:
- Number of regions/districts/states/etc.:
- Average office term length:

Democratic Nation Data Collection Cont.

Additional Facts of Importance:

Additional Data of Importance: