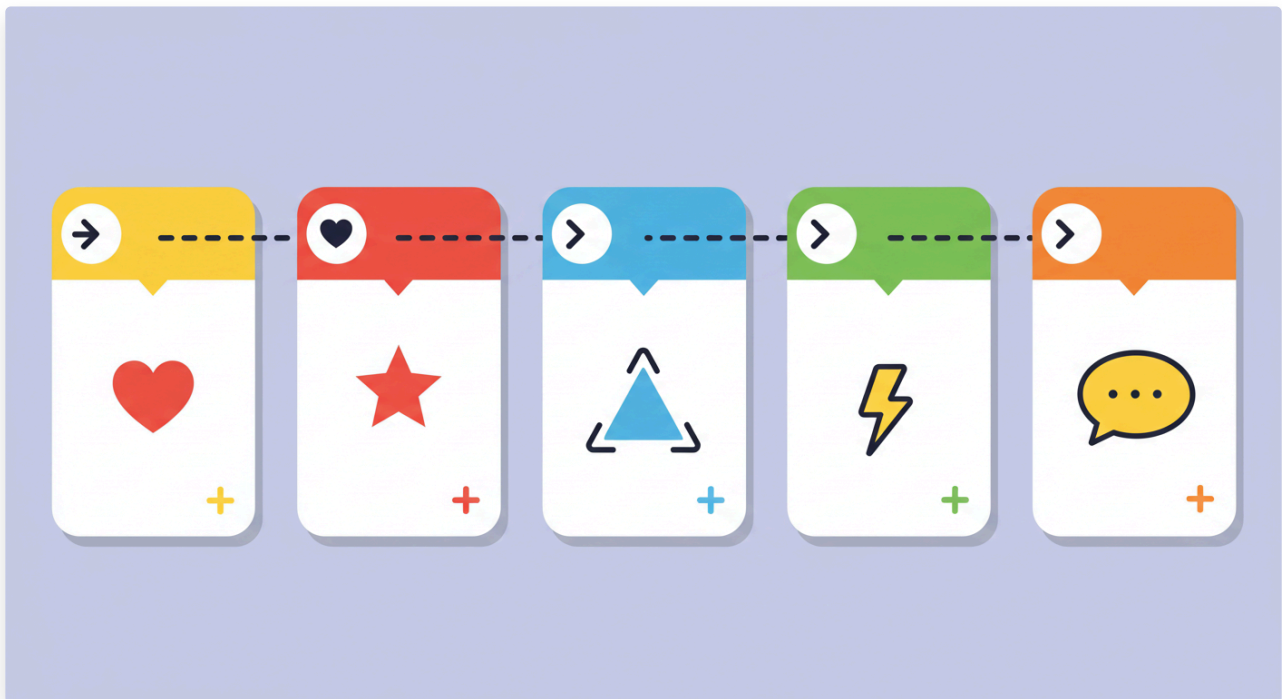


Presenting Data

Textbook

Presenting Data



When you want to share what you've learned or discovered, you'll often use presentation software like Google Slides, PowerPoint, or Keynote. These programs help you organize information, pictures, charts, and videos into good-looking slides.

Where Does Your Information (Data) Come From?

The information you use in your presentations can come from different places:

- **Probes and Sensors:** These are physical tools, like a thermometer, that gather real-world details.
- **Software Tools and Programs:** This includes digital sources, such as online surveys or computer simulations, that create data.
- **Handheld Devices:** Your smartphone can collect data using its built-in sensors.

Raw data, which is just numbers, becomes much easier to understand when you turn it into **data visualizations**. This means changing numbers into charts, graphs, and maps. Some of these visualizations can even be interactive, letting people explore the data themselves. Here are some common types:

- **Bar charts:** These are great for comparing different things side-by-side.
- **Line graphs:** Use these to show how something changes over time or to spot trends.

- **Pie charts:** These are perfect for showing parts of a whole, like how different pieces make up a total.
- **Scatter plots:** These charts show the relationship between two sets of numbers.

You can create these visuals using programs like Google Sheets or Microsoft Excel, or even online tools like ChartGo (www.chartgo.com). When you look at these visualizations, try to find **trends** (patterns), **outliers** (things that don't fit the pattern), **comparisons**, and then figure out what the data is telling you.

Making Something Digital: A "Digital Artifact"

A "**digital artifact**" is anything you create using digital tools, such as a document, a presentation, a video, or even an app. Making a good digital artifact involves a few key steps:

- **Collaboration:** This means working with others. You can brainstorm ideas together, divide tasks, and give each other feedback on your work.
- **Reflection:** Take time to think deeply about your project. Ask for feedback from others to see what can be improved.
- **Analysis:** Look closely at all the different parts of your project and understand how they work together.
- **Iteration:** This is about going back over your work and making improvements. You'll repeat steps based on your reflection and analysis until your creation is just right.

Sharing Your Work with Different Groups of People

When you share your work online, you're publishing it. Digital tools for publishing include sharing documents directly, using presentation websites, website builders (like Google Sites or Wix), or social media and blogs.

It's super important to change your content to fit who you're talking to. For example, you'd use more formal language if you're presenting to teachers, but simpler language if you're talking to the general public. Using media-rich resources like pictures, videos, audio, and interactive elements makes your published information more interesting and easier to understand for your audience.

How Teamwork Impacts Software Design

Collaboration, or working together, greatly affects software projects. It brings in many different ideas, shared knowledge, and better ways to solve problems.

Feature	Working Alone	Working Together
Ideas/Creativity	Only one person's vision.	Many more ideas from different people.
Workload	One person does all the tasks.	Tasks are shared among the team.
Quality/Bugs	Mistakes might be missed.	Multiple people checking means better quality.
Skill Set	Limited to what one person knows.	Combines different skills from everyone.

Working together on projects often leads to software that's more advanced, dependable, and of higher quality because of the combined smarts and effort of the group.

The Good and Bad of Teamwork

Working in a group has many **strengths**:

- Lots of different ideas.
- Tasks are shared, making the workload lighter.
- Problems can be solved faster.
- The quality of work is often better because of different viewpoints and feedback.

However, there can also be **weaknesses**:

- Communication can sometimes break down. 😞
- People might disagree.
- Different ways of working can cause friction.
- Sometimes, if there's no clear leader, things can slow down.

To get the most out of working together, you need **strong communication, clear roles for everyone, and mutual respect**.

Real Examples: Solo vs. Team Software Projects

Let's look at some examples to see how teamwork makes a difference:

Example of a Solo Software Project:

Imagine someone creates a simple app for themselves or a few friends to track daily spending. This is like a Personal Expense Tracker App. The creator would design its look, write all the code to add, sort, and view expenses, and manage where the data is stored. This project's size is usually limited by one person's time and skills, and all decisions, from what features to include to fixing bugs, are up to that one person.

Example of a Team Software Project:

Think about Developing a Major Operating System Update (like a new Windows or macOS version). This is a huge job that involves thousands of engineers, designers, testers, and project managers on many different teams.

- **Teams:** Special teams work on different parts, such as how it looks and feels (user interface), how files are stored, internet connections, security, and whether other apps will work with it.
- **Designers:** They work together to ensure the system looks and feels consistent everywhere.
- **Developers:** They write millions of lines of code. They use special systems (like Git) to manage changes from hundreds or thousands of people at the same time. Checking each other's code is super important to keep the quality high.
- **Testers:** They constantly look for and report bugs, often using automated tools to help them.
- **Project Managers:** They organize everyone's efforts, manage deadlines, and help solve problems that come up.

Project: Telling Data Stories for Our Community

This project will help you use all the skills you've learned: gathering and presenting data, creating a digital artifact, collaborating, and publishing for an audience.

Project Goal: Work with a small group (2–3 students) to find a local community problem, gather information (data), create visuals of that data, and then present your findings in a digital report for a specific audience.

Steps:

1. **Form Group & Choose Topic (Teamwork):** Brainstorm a local issue (like recycling or what students prefer for school lunch) and come up with a clear question to answer. Give out different jobs within your group.
2. **Gather Data (Tech Tools):** Collect your own data (like an online survey using Google Forms, simple sensor data, or observations with a smartphone) or find existing data from reliable online sources. Put this data into a spreadsheet to keep it organized.
3. **Analyze and Visualize Data (Interactive Visuals):** Look for patterns in your data. Create at least two different charts or graphs using a spreadsheet program or ChartGo (www.chartgo.com). Make them look good and easy to understand. Try to make them interactive if you can!
4. **Create Your Digital Report (Digital Creation, Thinking, Improving):** Make a presentation (like Google Slides) that summarizes your project and includes your data visuals. Work together on the presentation, think about what's working well, examine its parts closely, and make changes until it's polished.
5. **Publish Your Report (Sharing with Others & Rich Media):** Decide who your audience is (e.g., classmates, community leaders) and make sure your content fits them. Publish your presentation online (e.g., share a link, or put it on a simple website like Google Sites). Make sure it includes lots of media like pictures, videos, or audio to make it more engaging.
6. **Assess Collaboration (Reviewing Teamwork):** Talk about how working together helped design and create your report, comparing it to if one person had done it alone.

Critical Thinking Questions

1. The text describes how a team develops a major operating system, mentioning different jobs like designers, developers, and testers. How would the quality and success of such a complex software project suffer if a large number of these roles didn't work together effectively? Think about what each job contributes.
2. When making a "digital artifact" like the community data report, the text highlights "iteration" (doing things over and over, making improvements) and "reflection" (thinking critically about your work). Why is it more important for a group creating a digital report to go through many rounds of reviewing and improving their work (iteration) than if they were just collecting data by themselves? Consider the benefits of multiple viewpoints.
3. Imagine you're presenting data about recycling habits at school. Why might a pie chart be good for showing what percentage of waste is recycled, while a line graph would be better for showing how recycling rates have changed over time? Explain how choosing the right type of visualization affects how clearly you can understand the message of the data.

Questions (5)

1. A student is creating a presentation to show the different categories of school waste (paper, plastic, organic) as parts of a whole. Which type of data visualization would be most effective for this purpose?

MULTIPLE CHOICE

Choose the correct answer:

- A. Bar chart
- B. Line graph
- C. Pie chart
- D. Scatter plot

2. A student has collected data on local temperatures over a month using a temperature sensor. They want to create a visualization that clearly shows how the temperature changed day by day. Which type of data visualization should they use?

MULTIPLE CHOICE

Choose the correct answer:

- A. Pie chart
- B. Bar chart
- C. Line graph
- D. Scatter plot

3. When creating a 'digital artifact' like the community data report, the text emphasizes 'iteration' and 'reflection.' Why is it more critical for a group creating a digital report to go through multiple rounds of reviewing and refining their work (iteration

MULTIPLE CHOICE

Choose the correct answer:

- A. Iteration is only necessary for individual projects, not group projects.
- B. Group work always has more errors than individual work, so iteration is mandatory.
- C. Multiple perspectives from group members provide varied feedback, requiring iteration to integrate improvements and ensure collective quality.
- D. Individual data collection does not require any review or refinement.

4. A group is trying to identify a local community issue for their 'Data Storytelling' project. The passage states that collaboration brings diverse ideas and shared expertise. How does brainstorming as a group at this initial stage contribute to the project'

MULTIPLE CHOICE

Choose the correct answer:

- A. It limits the ideas to only the most obvious ones.
- B. It ensures that one person's vision dominates the project.
- C. It allows for a broader range of creative ideas and helps define a clearer question by combining different perspectives.
- D. It makes the initial stage of the project slower and less efficient.

5. You are analyzing data about school recycling habits. You want to show how recycling rates have changed over the past five years. Based on the passage's explanation of data visualization types, which chart would be most effective for this task?

MULTIPLE CHOICE

Choose the correct answer:

- A. Pie chart
- B. Bar chart
- C. Line graph
- D. Scatter plot

Answer Keys & Solutions

Questions

1. A student is creating a presentation to show the different categories of school waste (paper, plastic, organic) as parts of a whole. Which type of data visualization would be most effective for this purpose?

MULTIPLE CHOICE

Correct Answer:

- | | |
|-----------------|-------------|
| A. Bar chart | ✗ Incorrect |
| B. Line graph | ✗ Incorrect |
| C. Pie chart | ✓ Correct |
| D. Scatter plot | ✗ Incorrect |

Explanation:

Consider which chart type visually divides a total into proportional slices.

2. A student has collected data on local temperatures over a month using a temperature sensor. They want to create a visualization that clearly shows how the temperature changed day by day. Which type of data visualization should they use?

MULTIPLE CHOICE

Correct Answer:

- | | |
|-----------------|-------------|
| A. Pie chart | ✗ Incorrect |
| B. Bar chart | ✗ Incorrect |
| C. Line graph | ✓ Correct |
| D. Scatter plot | ✗ Incorrect |

Explanation:

Consider which graph type is best for showing how something changes continuously.

3. When creating a 'digital artifact' like the community data report, the text emphasizes 'iteration' and 'reflection.' Why is it more critical for a group creating a digital report to go through multiple rounds of reviewing and refining their work (iteration

MULTIPLE CHOICE

Correct Answer:

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- B. Group work always has more errors than individual work, so iteration is mandatory. ✗ Incorrect
- C. Multiple perspectives from group members provide varied feedback, requiring iteration to integrate improvements and ensure collective quality. ✓ Correct
- D. Individual data collection does not require any review or refinement. ✗ Incorrect

Explanation:

Think about the added complexity and benefit of multiple people contributing to and reviewing a shared creation.

4. A group is trying to identify a local community issue for their 'Data Storytelling' project. The passage states that collaboration brings diverse ideas and shared expertise. How does brainstorming as a group at this initial stage contribute to the project'

MULTIPLE CHOICE

Correct Answer:

- A. It limits the ideas to only the most obvious ones. ✗ Incorrect
- B. It ensures that one person's vision dominates the project. ✗ Incorrect
- C. It allows for a broader range of creative ideas and helps define a clearer question by combining different perspectives. ✓ Correct
- D. It makes the initial stage of the project slower and less efficient. ✗ Incorrect

Explanation:

Consider how multiple minds working together impact the generation of ideas.

5. You are analyzing data about school recycling habits. You want to show how recycling rates have changed over the past five years. Based on the

passage's explanation of data visualization types, which chart would be most effective for this task?

MULTIPLE CHOICE

Correct Answer:

- | | |
|-----------------|-------------|
| A. Pie chart | ✗ Incorrect |
| B. Bar chart | ✗ Incorrect |
| C. Line graph | ✓ Correct |
| D. Scatter plot | ✗ Incorrect |

Explanation:

Think about which chart effectively illustrates progression or regression.