

Web Unit Plan

Title: In the Numbers

Description: Students act as researchers to help their teacher find the most effective ways to communicate with students and parents. Students collect data from peers, parents, teachers, and community members using a variety of digital tools. After analyzing the data, students make recommendations on how teachers can most effectively communicate with the community.

At a Glance

Grade Level: 6–8

Subject sort (for Web site index): Language Arts, Math, Technology

Subject(s): Data Analysis, Communication

Topics: Data Analysis, Graphing, Communication, Technology

Higher-Order Thinking Skills: Analysis, Drawing Conclusions

Key Learnings: Communication

Time Needed: 3 weeks, 15 hours in class

Unit Summary

To help teachers find the most effective ways to communicate with students and parents, collaborative student teams look at how people are communicating with technology and study current technology communication tools and resources, such as social networking, RSS feeds, Web sites, instant messaging, videoconferencing, text messaging, e-mail, and newsletters. Students create and conduct surveys on preferences for communication technology. After analyzing data, students present their findings with recommendations on the tools and technology that will allow the teacher and school to most effectively communicate with the community.

Curriculum-Framing Questions

Essential Question

How can I communicate so others will understand?

Unit Questions

How do technology tools affect how we communicate?

Why is effective communication important?

Content Questions

How do organizations communicate with people?

What does data tell us about effective communication?

How do you choose the appropriate graphical representations for certain sets of data?

Assessment Processes

View how a variety of student-centered [assessments](#) are used in the Numbers Have It Unit Plan. These assessments help students and teachers set goals; monitor student progress; provide feedback; assess thinking, processes, performances, and products; and reflect on learning throughout the learning cycle.

Instructional Procedures

Introduction

In a whole class discussion, ask students how they have communicated with others in the past 24 hours. Display a list of their responses.

Discuss how students' communication has changed since their parents were in middle school. Review the class list of communication methods, and discuss how the adults in their lives use the same communication tools and resources. Mark the items that both students and parents use frequently.

Guide the discussion to mention the use of newer technologies and social media by asking questions such as:

- Did your parents have cell phones when they were your age? If they did, do you think they "texted" their friends and family members?
- Do your parents have a Facebook* or MySpace* page? Did they as students?

- What methods of communication do your parents use most frequently at work? Between friends and family?
- What are your opinions about the advantages and disadvantages of the newer methods of communication?

Next, ask students the Essential Question, *How can I communicate so others will understand?* Ask students to consider the different audiences, and the tools and resources available.

Getting Started with Research

Define communication tools.

Review the list of tools students generated during the introduction to the project and ask students to extend the list to all types of communication tools that use technology.

Discuss ways to divide the list of tools into logical categories, such as based on the type of communication itself. For example:

- **One-to-One Communication:** Typically, back-and-forth communication between two people, such as text messaging, chat, instant messaging (IM), e-mail, Voice Over IP (VoIP), online surveys, and polling.
- **Broadcast Communication:** Generally communication from one to many or many to many, such as blogs, social networking sites, Web sites, and video uploads.
- **Collaborative Communication:** Created collaboratively by many contributors using shared documents and Web pages, such as online calendars, wikis, shared spreadsheets, shared documents, and so forth.

Identify a Problem

Share with students the following scenario:

Given all the technology students, parents, and teachers access, your job is to find out how the class community can best communicate. The first step is to identify the question—*What is the best way teachers, parents, and students can use technology to communicate effectively with each other?* The second step is to collect data by creating a survey for your classmates and parents about their communication preferences and habits. The third and final step is to analyze the data, draw conclusions, and recommend the communication methods you believe should be used.

Use the Unit Questions, *How do technology tools affect communication?* and *Why is effective communication important?* to focus a short whole-class brainstorming session to refine the research question and identify the types of data to collect.

Collect Data on Technology Tools Used for Communication

Divide students into teams of two or three to explore technology tools designed for communication. Have each group collect information on a different tool. Ask students to define criteria for their research. Prompt students by offering possible ideas:

- How do users send and receive information with the tool?
- What is the cost of using the tool?
- What are the benefits and drawbacks of communicating with the tool?
- What time is involved with using the tool?

After students collect their information, allow time for each collaborative team to create a presentation about their communication tool, highlighting key features. Provide the [Presentation Scoring Guide](#) to students so they can ensure they include the required information in their presentations. Remind students that the goal is to clearly present tools so classmates and teachers can understand each tool's key features, functions, benefits, and communication challenges.

Survey the Audience

After the group presentations, students should be familiar with the available communication tools and resources. The next step is to guide students as they think about the needs of the audience. As a whole class, ask students to brainstorm survey questions that will help them better understand their audience and the audience's communication needs. Some guiding questions for the discussion include:

- What do parents want teachers to communicate?
- What do students want teachers to communicate?
- What do teachers want to communicate?
- What communication tools are you comfortable with?
- What features in communication are important to you? How would you like to receive the communication? Should communication come to the user or should the user have to go to the communication too?

Create new collaborative teams, mixing members so that each team has an "expert" on each tool. Have each new team create an [online survey](#) for parents and students to learn how they communicate and what their communication preferences are.

Share with students the [Survey Tips](#) resource. Remind students that their surveys should include ranges for each communication tool to account for all audience members—from those who text or e-mail daily to those who never use text messages or e-mail to communicate.

When surveys are completed, have students [peer review](#) their survey questions with other teams to get feedback. Once questions are finalized, allow each team to choose an online tool to create their survey and collect data.

After the online surveys are created, have students collect data from their targeted audience—parents, teachers, and students. Each team should attempt to collect more than 20 responses for their survey. As a class, create guidelines to make sure all audience members are represented and as few people as possible are asked to respond to multiple surveys.

Analyze Data

Once the data is collected, ask students to analyze their data. This is a good time to review statistical terms and spreadsheets. Also, discuss with students, *How do you choose the appropriate graphical representations for certain sets of data?*

Spreadsheets can help students sort and graph their data as well as see trends and patterns. Students need to look at their data objectively while they analyze, making sure to address concepts such as:

- Is a large enough sample represented to draw realistic and useful conclusions?
- What additional research or data collection might be needed?

Share with students the [Analysis Checklist](#) as a way for them to self-monitor their work and analysis.

Draw Conclusions

As students work in their collaborative teams, discuss with them how they draw conclusions from their data. Do they have more questions? Can they propose solutions? To help students draw their own conclusions, share the [Synthesis Checklist](#) to help them form the best conclusion and make a recommendation on which communication tool best meets the needs of their audience.

Share Findings

Have students choose an online collaboration tool to create a [presentation](#) that will

be shared with teachers on how they should communicate with families. Remind students when they share their data to recall thoughts and comments from the class discussion—*How do you choose the appropriate graphical representations for certain sets of data?*—so the data in the presentation is visually appropriate for the audience and best represents the data. Students make a recommendation on which tool and technology to use, and provide data that supports their recommendation. Along with recommending a tool, have students share key features of the tool, including ease of use and cost. Provide the [Presentation Checklist](#) to students so they can make sure all essential components are included in their presentations. Allow time for students to peer practice, peer review, and modify their presentations before they make their final presentations. Assess final presentations using the [Project Scoring Guide](#).

Extension: Creating a Communication Tool of the Future

Invite designers from a communication or technology company into the classroom to share with students about new developments or issues in communication technology. Then, as a class, brainstorm and design a new tool based on classroom data that would best meet the needs of all community members.

Prerequisite Skills

- Intermediate skills using presentation and desktop publishing applications (or set aside time for training students in the use of these tools)
- Basic understanding of spreadsheets, charting, and graphing applications (or set aside time for training students in the use of these tools)
- Ability to locate information in print and electronic sources
- Ability to work collaboratively with other students

Differentiated Instruction

Resource Student

- Pair the student with a peer coach
- Allow additional time to finish assignments

Gifted Student

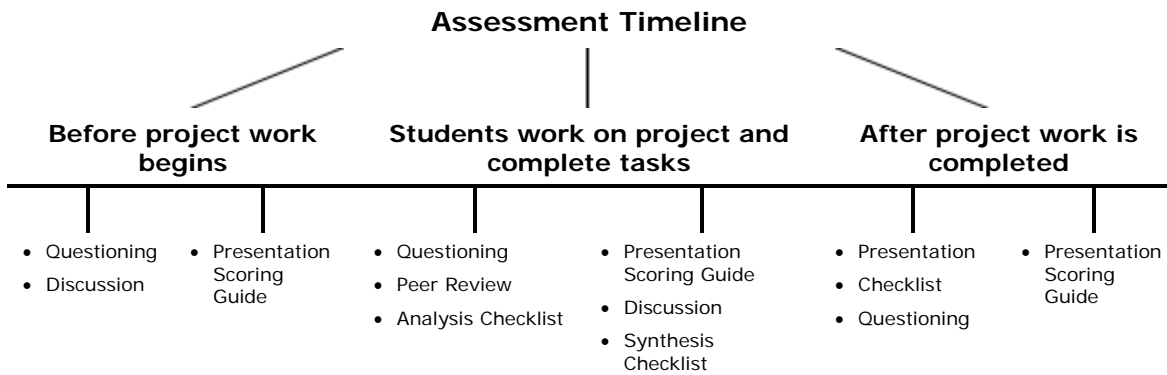
- Encourage advanced presentation work, such as including hyperlinks and creating a nonlinear presentation
- Encourage the student to create additional surveys using different data collection tools and analyze which tool works better for which audience

English Language Learner

- Have the ELL teacher explain difficult concepts and help the student complete assignments and conduct research
- Pair a bilingual student with the ELL student for tasks that require reading and writing
- Create a survey in the student's native language for parents who do not speak English
- Adapt assignments, or allow more time as necessary

THINGS YOU NEED

Assessment Plan



Questioning is used throughout the unit to help students develop their higher order thinking skills and process content. Have students use the [Presentation Scoring Guide](#) as a checklist for completing their communication tool presentations. The groups will participate in peer reviews to give and receive feedback on their surveys. Students will also use the [Presentation Checklist](#) and [Project Scoring Guide](#) to self-assess their final presentations.

Content Standards and Objectives

Targeted 7th grade Arizona Content Standards and Benchmarks

Language Arts Standards

Writing

- Writing Process: Publishing: Publishing includes formatting and presenting a final product for the intended audience.
- Writing Applications Research: Research writing is a process in which the writer identifies a topic or question to be answered. The writer locates and evaluates information about the topic or question, and then organizes, summarizes, and synthesizes the information into a finished product.

Educational Technology Standards:

- Use technology to generate knowledge and new ideas.
- Communicate and collaborate with others employing a variety of digital environments and media.
- Recognize, define, and use technology processes, systems, and applications.
- Select and use applications effectively and productively.
- Transfer current knowledge to learning of new technologies.

Math Essential Academic Learning Standards:

- Understand and apply data collection, organization, and representation to analyze and sort data.
- Evaluate situations, select problem-solving strategies, draw logical conclusions, develop and describe solutions, and recognize their applications.

Student Objectives

Students will be able to:

- Develop a thorough presentation to share and communicate information
- Create a survey using a data collection tool
- Analyze and interpret data
- Develop a recommendation based on analyzing results of data collection tools

Technology and Resources

Internet Resources

Data Collection Tools

Google Docs*

www.google.com/google-d-s/forms

Customized forms that can be used as an online survey creation tool

Poll Everywhere*

www.polleverywhere.com

Online survey creation tool

SurveyMonkey*

www.surveymonkey.com

Easy online survey creation tool

Online Collaborative Presentation Tools

Google Docs

www.google.com/google-d-s/presentations

Create an online collaborative presentation

Prezi*

<http://prezi.com>

Create interactive and engaging online presentations

Glogster

<http://edu.glogster.com>

Collaborative online learning platform used to create interactive posters

Technology—Hardware

- Computer(s) for conducting research and creating products
- Internet connection for conducting research and accessing Web 2.0/collaboration tools
- Printer to print materials for presentations
- Projection system for presentations

Technology—Software

- E-mail application for registering with data collection tools and the monitoring projects
- Web browser for conducting research
- Multimedia to create presentations
- Word processing to take notes or create data collection tool