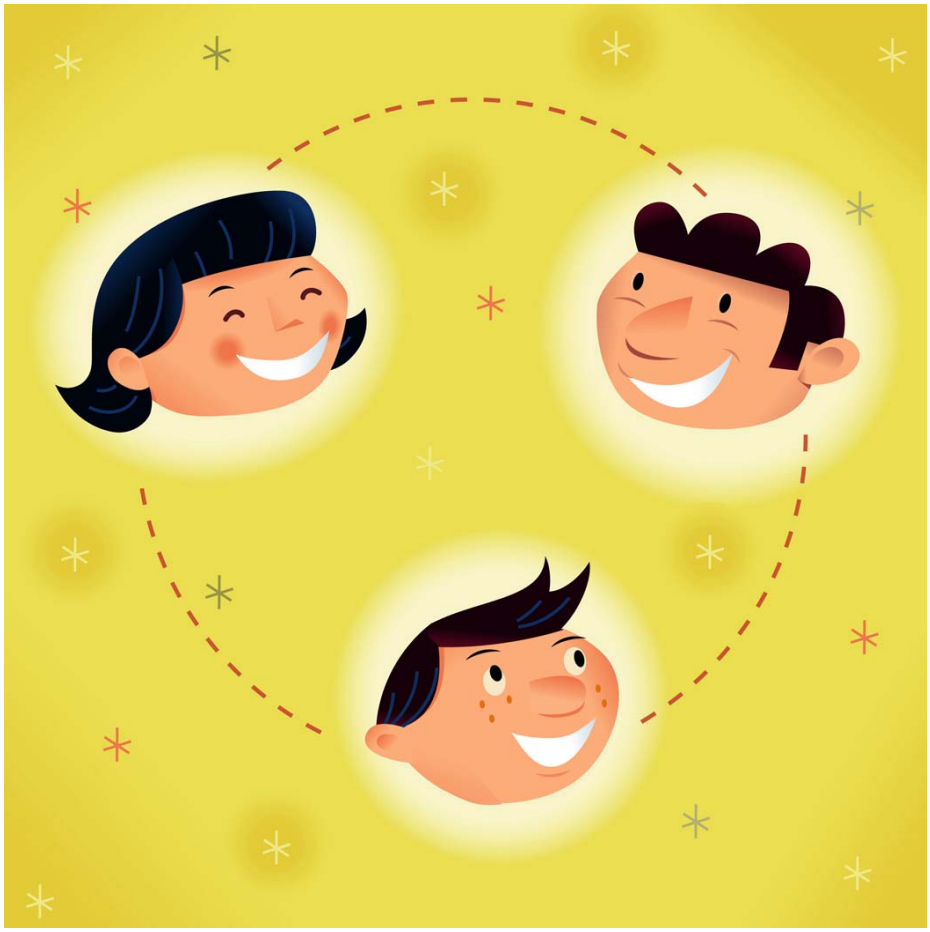


One, Two, One, Two, Mic Check!

Grade Levels 3-6

Unit Overview

Materials

- KWL chart
- Notebook/journal
- Timeline poster
- White construction paper
- Ruler
- Pencil
- Markers
- Crayons
- Glues
- Scissors
- Drinking cups
- String
- Wire
- Power-point software (computer)
- Articles on www.buzzle.com (Intelligent Life on the Web)
- Articles on http://en.wikipedia.org/wiki/Television
- Articles on www.unitedstreaming.com (printing press operations)
- Articles on www.unitedstreaming.com (types of music)
- Article on: http://www.saskschools.ca/~qvss/technology/2connect.htm
- Articles on http://en.wikipedia.org/wiki/Billboard
- http://player.discoveryeducation.com/index.cfm?guidAssetId=16E138E2-6120-499A-A8B0-09C62C265275&blnFromSearch=1&productcode=US
- Articles on http://www2.uic.edu/stud_orgs/cultures/daa/ASLHistory.html
- Articles on: http://library.thinkquest.org/04oct/01649/braille.htm
- Articles on: http://en.wikipedia.org/wiki/History of the telephone
- http://www.buzzle.com/articles/how-does-a-mobile-phone-work.html

Standards

Unit Content Standards	Unit Youth Development Standards
• HE.K.B.2.Pa.a: Associate communication with expression of a personal need. • LA.3.1.6.1: Use new vocabulary that is introduced and taught directly. • LA.3.1.6.2: Listen to, read, and discuss familiar and conceptually challenging text. • LA.3.2.2.2: Use information from the text to answer questions related to explicitly stated main ideas or relevant details. • LA.4.1.5.1: Demonstrate the ability to read grade level text. • LA.4.4.1.1: The student will write narratives based on real or imagined ideas, events, or observations that include characters, setting, plot, sensory details, a logical sequence of events, and a context to enable the reader to imagine the world of the event or experience. • LA.4.5.2.1: The student will listen to information presented orally and show an understanding of key points. • LA.4.6.1.1: The student will read informational text and text features (e.g., format, graphics, legends, illustrations, diagrams) to organize information for different purposes (e.g., being informed, following multi-step directions, creating a report, conducting interviews, preparing to take a test, performing a task). • LA.4.6.4.1: The student will use appropriate available technologies to enhance communication and achieve a purpose (e.g., video, presentations). • LA.4.6.4.2: The student will determine and use appropriate digital tools (e.g., word processing, multimedia authoring, web tools, graphic organizers) for publishing and presenting a topic. • SS.4.A.1.2: Florida history through print and electronic media.	External Assets: • 3 Other adult relationships • 5 Caring school climate • 10 Safety • 12 School boundaries • 14 Adult role models • 16 High expectations • 18 Child programs Internal Assets: • 21 Achievement motivation • 22 Learning engagement • 34 Cultural competence • 35 Resistance skills • 36 Peaceful conflict resolution • 37 Personal power • 38 Self-esteem

Lesson Table of Contents

Lesson 1: Basic Communication "A way of life"

Essential Question:

What type of communication is used most often in our daily lives?
How does communication impact our life?
What type of communication is most effective to us?

Content Standards:

- LA.3.1.6.1 - use new vocabulary that is introduced and taught directly.
- LA.3.1.6.2 - listen to, read, and discuss familiar and conceptually challenging text.
- LA.3.2.2.2 - use information from the text to answer questions related to explicitly stated main ideas or relevant details.
- LA.4.1.5.1 - demonstrate the ability to read grade level text.

Youth Development Standards:

- Support
  1. Family support
  2. Positive Family Communication
  3. Other Adult relationships
  4. Caring School climate

- Boundaries and Expectations
  12. School Boundaries
  16. High Expectations

Vocabulary

- Communication
- Information
- Knowledge
- Survival

Teacher Background Knowledge:

Students will learn that Communication is the process of transferring information from one source to another. Communication is commonly defined as "the imparting or interchange of thoughts, opinions, or information by speech, writing, or signs. Students will learn various ways to communication with the world.

Materials:

KWL chart, notebook/journal, www.unitedstreaming.com , articles on www.buzzle.com (Intelligent Life on the Web)

Procedure:

1. Class will review and develop a KWL chart on the topic "Communication".
2. Students will give their opinions of what communication means to them.
3. Students will give background knowledge of communication in their daily lives.

4. Class will create a list of various ways of communicating information to others.
5. Class will discuss how each type of communication and how they are beneficial to them and others.
6. Class will view a United Streaming video on communication.
7. Students will write a reflection of what they learned and complete the KWL chart.

Formative Assessment:

- List 4 different ways we communicate with others and give a brief description of a situation when we would use that type of communication.

Lesson 2: "Good morning America, This Your LTEZ Radio Coming to You Live…"

Essential Question:

What is the history of radio?
Why was the radio station invented?
How do radio stations make a difference in our daily commutes?

Content Standards:

- LA.3.1.6.1: Use new vocabulary that is introduced and taught directly.
- LA.4.5.2.2: The student will plan, organize, and give an oral presentation and use appropriate voice, eye, and body movements for the topic, audience, and occasion.
- LA.3.2.2.2: Use information from the text to answer questions related to explicitly stated main ideas or relevant details.
- LA.4.5.2.1: The student will listen to information presented orally and show an understanding of key points.
- HE.1.B.1.3: Give examples of advertisements for health products.

Youth Development Standards:

External Assets:

- 3
- 5
- 10
- 12
- 14
- 16
- 18

Internal Assets:

- 21
- 22
- 34
- 35
- 36
- 37
- 38

Vocabulary

- Transmit
- Broadcast
- Wireless
- Frequency

Teacher Background Knowledge:

Materials:

KWL chart, notebook/journal, www.unitedstreaming.com (The Workings of a Radio: A Visit to a Radio Station), articles on http://en.wikipedia.org/wiki/Radio#Audio

Procedure:

1. Class will review and develop a KWL chart on the topic "Communication through radio".
2. Students will give their opinions of what communicating through radio means to them.
3. Students will give background knowledge of communication through radio in their daily lives.
4. Class will create a list of various ways radio communicates information to the world.
5. Class will discuss how radio communication is beneficial to them and others.
6. Class will view a United Streaming video on "A Visit to a Radio Station".
7. Students will write a reflection in their journals of what they learned and complete the KWL chart as a whole group.

   Activity

   Students will work with a partner and write a message of their choice (shout out, health product commercial, introduction of a recording artist and their song or an interview of a make-believe celebrity).

Formative Assessment:

- List 3 ways radio communication can be beneficial to our human race from the information learned**.**

Lesson 3: Communication through Newspapers "Read All About it!"

Essential Question:

Why was the newspaper invented?
How is the newspaper used to communicate with the world?
What are the different sections of a newspaper?

Content Standards:

- LA.3.1.6.1: Use new vocabulary that is introduced and taught directly.
- LA.4.6.1.1: The student will read informational text and text features (e.g., format, graphics, legends, illustrations, diagrams) to organize information for different purposes (e.g., being informed, following multi-step directions, creating a report, conducting interviews, preparing to take a test, performing a task).
- LA.4.1.5.1: Demonstrate the ability to read grade level text.
- SS.4.A.1.2: Florida history through print and electronic media.

Youth Development Standards:

External Assets:

- 3
- 5
- 10
- 12
- 14
- 16
- 18

Internal Assets:

- 21
- 22
- 34
- 35
- 36
- 37
- 38

Vocabulary

- Scandals
- Political
- Campaign
- Quotes

(The vocabulary words relate to the sample article provided).

Teacher Background Knowledge:

- Students will learn the history of the newspaper.
- Students will view a United Streaming video on how newspapers are made and operated.
- Students will design and name their own newspaper and write a headline and article of the choice with date, author's name and picture (if needed).

Materials:

KWL chart, notebook/journal, timeline poster, www.unitedstreaming.com (printing press operations), white construction paper, ruler, pencil, markers

Procedure:

1. Class will fill in their KWL chart on "Communication through newspaper".
2. Students will give their opinions of how effective a newspaper is in our community.
3. Class will discuss the different sections a newspaper has.
4. Class will view a United Streaming video on newspaper operation.
5. Students will article walk a newspaper and read an article of choice. Students will pair up with a partner and reflect with the class the (5-w's) about the article (who, what, when, where and why).

Activity

Students will design and name their own newspaper and write a headline and article of the choice with date, author's name and picture (if needed).

Formative Assessment:

- List the sections a newspaper has.
- Students will give a brief timeline of the history of the newspaper. (Can be a sequencing activity from a list of events.)
- Design their own newspaper title (News-Press, New York Times, etc.) and create an article on a topic of their choice.

Julius Caesar

- **59 B.C.:** Acta Diurna the first newspaper is published in Rome.
- **1556:** First monthly newspaper Notizie Scritte published in Venice.
- **1605:** First printed newspaper published weekly in Antwerp called Relation.
- **1631:** The first French newspaper published, the Gazette.
- **1645:** Post-och Inrikes Tidningar is published in Sweden and is still being published today, making it the world's oldest newspaper.
- **1690:** The first newspaper is published in America, Publick Occurrences.
- **1702:** The first English language daily newspaper is published called the Daily Courant. The Courant was first published (periodical)in 1621.
- **1704:** Considered the world's first journalist, Daniel Defoe publishs the Review.
- **1803:** First newspapers published in Australia, the Sydney Gazette and New South Wales Advertiser.
- **1830:** Number of newspapers published in the U.S. is 715.
- **1831:** The famous abolitionist newspaper The Liberator is first published by William Lloyd Garrison.
- **1833:** The New York Sun newspaper costs one cent - the beginning of the penny press.
- **1844:** First newspaper published in Thailand.
- **1848:** The Brooklyn Freeman newspaper is first published by Walt Whitman.
- **1850:** P.T. Barnum starts running newspaper ads for Jenny Lind, the "Swedish Nightingale" performances in America.
- **1851:** The Post Office starts offering a special cheap newspaper rate.
- **1855:** First newspaper published in Sierra Leone.
- **1856:** The first full-page newspaper ad is published in the New York Ledger. Large type newspaper ads are made popular by photographer Mathew Brady. Machines now mechanically fold newspapers.
- **1860:** A "morgue" in newspaper terms means an archive. The New York Herald starts the first morgue.
- **1864:** William James Carlton of J. Walter Thompson Company begins selling advertising space in newspapers. The J. Walter Thompson Company is the longist running American advertising agency.
- **1867:** The first double column advertising appears for the department store Lord & Taylor.
- **1869:** Newspaper circulation numbers published by George P. Rowell in the first Rowell's American Newspaper Directory.
- **1870:** Number of newspapers published in the U.S. is 5,091.
- **1871:** First newspaper published in Japan - the daily Yokohama Mainichi Shimbun. Famous newspaper interview with explorer Stanley Livingston published.
- **1873:** First illustrated daily newspaper published in New York.
- **1877:** First weather report with map published in Australia. The Washington Post newspaper first publishes with a circulation of 10,000 and a cost of 3 cents per paper.
- **1879:** The benday process improves newspapers. The first whole page newspaper ad placed by an American department store (John Wanamaker) is run.
- **1880:** First halftone photograph (Shantytown) published in a newspaper.
- **1885:** Newspapers are delivered daily by train.
- **1887:** The San Francisco Examiner published.
- **1893:** The Royal Baking Powder Company becomes the biggest newspaper advertiser in the world.

- **1903:** The first tabloid style newspaper, the Daily Mirror is published.
- **1931:** Newspaper funnies now include Plainclothes Tracy starring Dick Tracy.
- **1933:** A war breaks out between the newspaper and radio industries. American newspapers try to force the Associated Press to terminate news service to radio stations.
- **1954:** There are more radios than there are daily newspapers.
- **1955:** Teletypesetting is used for newspapers.
- **1967:** Newspapers use digital production processes and began using computers for operations.
- **1971:** Use of Offset presses becomes common.
- **1977:** First public access to archives offered by Toronto Globe and Mail

For centuries, civilisations have used print media to spread news and information to the masses. The Roman *Acta Diurna*, appearing around 59 B.C, is the earliest recorded "newspaper". Julius Caesar, wanting to inform the public about important social and political happenings, ordered upcoming events posted in major cities. Written on large white boards and displayed in popular places like the Baths, the *Acta* kept citizens informed about government scandals, military campaigns, trials and executions. In 8th century China, the first newspapers appeared as hand-written newsheets in Beijing.

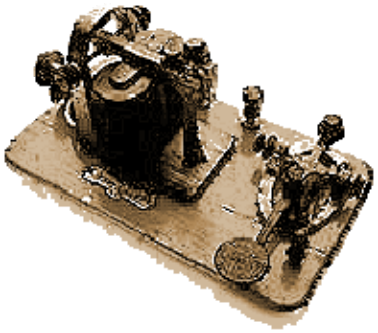
Johann Gutenberg

The printing press, invented by Johann Gutenberg in 1447, ushered in the era of the modern newspaper. Gutenberg's machine enabled the free exchange of ideas and the spread of knowledge -- themes that would define Renaissance Europe. During this era, newsletters supplied a growing merchant class with news relevant to trade and commerce. Manuscript newssheets were being circulated in German cities by the late 15th century. These pamphlets were often highly sensationalized; one reported on the abuse that Germans in Transylvania were suffering at the hands of Vlad TsepesDrakul, also known as Count Dracula. In 1556 the Venetian government published *Notizie scritte*, for which readers paid a small coin, or "gazetta".

In the first half of the 17th century, newspapers began to appear as regular and frequent publications. The first modern newspapers were products of western European countries like Germany (publishing *Relation* in 1605), France (*Gazette* in 1631), Belgium (*Nieuwe Tijdingen* in 1616) and England (the *London Gazette*, founded in 1665, is still published as a court journal). These periodicals consisted mainly of news items from Europe, and occasionally included information from America or Asia. They rarely covered domestic issues; instead English papers reported on French military blunders while French papers covered the latest British royal scandal.

Beheading of Charles I

Newspaper content began to shift toward more local issues in the latter half of the 17th century. Still, censorship was widespread and newspapers were rarely permitted to discuss events that might incite citizens to opposition. Newspaper headlines did announce the beheading of Charles I at the end of the English Civil War, although Oliver Cromwell tried to suppress all newsbooks on the eve of the execution. In 1766, Sweden was the first country to pass a law protecting press freedom.



The invention of the telegraph in 1844 transformed print media. Now information could be transferred within a matter of minutes, allowing for more timely, relevant reporting. Newspapers were appearing in societies around the world. Japan's first daily newspaper, *Yokohama Mainichi Shimbun*, appeared in 1870 (although printing from movable type was introduced in Japan in the late 16th century).

Joseph Pulitzer

By the middle of the 19th century, newspapers were becoming the primary means of disseminating and receiving information. Between 1890 to 1920, the period known as the "golden age" of print media, media barons such as William Randolph Hearst, Joseph Pulitzer, and Lord Northcliffe built huge publishing empires. These men had enormous influence within the media industry, and gained notoriety for the ways in which they wielded their power.

Newspapers have also played a role as disseminators of revolutionary propaganda. *Iskra* (The Spark), published by Lenin in 1900, is one notable example. On June 21, 1925, *Thanh Nien* made its debut in Vietnam, introducing Marxism to the country and providing information on the revolution's strategic policies.

Broadcast radio exploded onto the media scene in the 1920's. Newspapers were forced to re-evaluate their role as society's primary information provider. Like the new media technologies of today, the development of a low cost, alternative media source produced rumblings that radio would topple the newspaper industry. To respond to this new competition, editors revamped the paper's format and content in order to broaden their appeal, and stories were expanded to provide more in depth coverage.

No sooner had newspapers adapted to radio than they were forced to re-evaluate themselves in light of a new and more powerful medium: television. Between 1940 and 1990, newspaper circulation in America dropped from one newspaper for every two adults to one for

every three adults. Despite this sharp decline, television's omnipresence did not render the newspaper obsolete. Some newspapers, like *USA Today*, responded to the technological advancements by using color and by utilizing the "short, quick and to the point" stories that are usually featured on television.

The technological revolution of today is creating new challenges and opportunities for traditional media. Never before has so much information been so accessible to so many. By the end of the 1990s, some 700 had web sites; today there are thousands.

The amount and immediacy of information on the Internet is unparalleled, but it has not signaled the end of the newspaper's relevance. Newspapers in print remain a popular and powerful medium for the reporting and analysis of events that shape our lives. WAN estimates that one billion people in the world read a newspaper every day!

SOURCES

Barber, Phil. *"A Brief History of Newspapers."* Historic Newspapers and Early Imprints. 2002. www.historicpages.com/.

Bethelsen, John. *"Internet Hacks: Web News Cashes In."*Asia Times Online, April 2003. www.atimes.com

"Newspapers: The Continent" Columbia Encyclopedia, 6 Ed., 2003.

www.encyclopedia.com/html/section/n...

Lindoo, Edward C. *"The Future of Newspapers: A study of the World Wide Web and its relationship to the electronic publishing of newspapers."* May, 1998.

www.localfreepress.com/admin/resear...

Pfeffer, Robert J. *"The History of News Media"*. www.personal.psu.edu/users/r/j/rjp2...

Lesson 4: Communication through Television "What's on the tube?"

Essential Question:

How does communication through television impact our life?
What type of communication through television is used to communicate with us and which one effects us the most?

Content Standards:

- LA.3.1.6.1: Use new vocabulary that is introduced and taught directly.
- LA.3.2.2.2: Use information from the text to answer questions related to explicitly stated main ideas or relevant details.
- LA.4.5.2.3: The student will listen attentively to speakers and takes notes as needed to ensure accuracy of information.

Youth Development Standards:

External Assets:

- 3
- 5
- 10
- 12
- 14
- 16
- 18

Internal Assets:

- 21
- 22
- 34
- 35
- 36
- 37
- 38

Vocabulary

- Transmitters
- Programming
- Broadcast
- Analog
- High-definition

(Vocabulary words are found in the description of the history of the television)

Teacher Background Knowledge:

- Students will learn various ways to communication with the world through television.
- Students will learn the about the history of television and the process needed to make viewing television possible.

Materials:

KWL chart, notebook/journal, www.unitedstreaming.com , Articles on http://en.wikipedia.org/wiki/Television.

Procedure:

1. Class will review and develop a KWL chart on the topic "communication through television".
2. Students will give background knowledge of television communication in their daily lives and the impact it has.
3. Class will create a list of various ways television communicates information to the world.
4. Class will view a United Streaming video on how the television was invented.

   Activity
5. If time allows, students will cluster in a group of 2-3 students and role play a type of communication they see on television.
6. Students will write a reflection of what they learned and complete the KWL chart**.**

Formative Assessment:

- Students will list 4 different ways television communicate with them and their family and give an example of those ways.
- Students will be assessed on their role play presentation.

Television (**TV**) is a widely used telecommunication medium for transmitting and receiving moving images, either monochromatic ("black and white") or color, usually accompanied by sound. "Television" may also refer specifically to a television set, television programming or television transmission. The word is derived from mixed Latin and Greek roots, meaning "far sight": Greek *tele* (τῆλε), far, and Latin *visio*, sight (from *video, vis*- to see, or to view in the first person).

Commercially available since the late 1930s, the television set has become a common communications receiver in homes, businesses and institutions, particularly as a source of entertainment and news. Since the 1970s the availability of video cassettes, laserdiscs, DVDs and now Blu-ray discs, have resulted in the television set frequently being used for viewing recorded as well as broadcast material.

Although other forms such as closed-circuit television are in use, the most common usage of the medium is for broadcast television, which was modeled on the existing radio broadcasting systems developed in the 1920s, and uses high-powered radio-frequency transmitters to broadcast the television signal to individual TV receivers.

Broadcast TV is typically disseminated via radio transmissions in the 7-1000 megahertz-range of the FM frequency band[1]. Signals are now often transmitted with stereo and/or surround sound in many countries. Until the 2000s broadcast TV programs were generally recorded and transmitted as an analog signal, but in recent years public and commercial broadcasters have been progressively introducing digital television broadcasting technology.

A standard television set comprises multiple internal electronic circuits, including those for receiving and decoding broadcast signals. A visual display device which lacks a tuner is properly called a monitor,

rather than a television. A television system may use different technical standards such as digital television (DTV) and high-definition television (HDTV). Television systems are also used for surveillance, industrial process control, and guiding of weapons, in places where direct observation is difficult or dangerous.

References:

- http://en.wikipedia.org/wiki/Television

Lesson 5: Communication through the World Wide Web "Let your fingers do the talking"

Essential Question:

What type of communication is used most often in our daily lives?
How does communication impact our life?
What type of communication is most effective to us?

Content Standards:

- LA.3.1.6.1: Use new vocabulary that is introduced and taught directly.
- LA.3.2.2.2: Use information from the text to answer questions related to explicitly stated main ideas or relevant details.
- LA.4.6.4.1: The student will use appropriate available technologies to enhance communication and achieve a purpose (e.g., video, presentations).
- LA.4.6.4.2: The student will determine and use appropriate digital tools (e.g., word processing, multimedia authoring, web tools, graphic organizers) for publishing and presenting a topic.

Youth Development Standards:

External Assets:

- 3
- 5
- 10
- 12
- 14
- 16
- 18

Internal Assets:

- 21
- 22
- 34
- 35
- 36
- 37
- 38

Vocabulary

- Productive
- Audience
- Frustration
- Connect

Teacher Background Knowledge:

- Students will learn about the history of the internet and its intentions.
- Students will learn that Communication through the internet is the process of transferring information from one source to another via the World Wide Web.

- Students will learn various ways to use the internet to communication with the world and design a power-point of their own as if it was their own website/page.

Materials:

KWL chart, notebook/journal, power-point software (computer), www.unitedstreaming.com,
Article on**:** http://www.saskschools.ca/~qvss/technology/2connect.htm

Procedure:

1. Class will review and develop a KWL chart on the topic "*Communication through the internet*".
2. Class will have an open discussion on "How the internet has allowed them to communicate with the world or how the world has communicated with them.
3. Class will discuss various genres (types; entertainment, informational) of sites that they have visited and list them into categories along with the name of the site.
   Activity: students will pair up with a student and design a 3-4 page power-point.
   - page-1: cover page of item being presented (include title/name of site and brief history of site.
   - page-2 : purpose of presenting item
   - page-3: sample pictures of item and include any references and authors/seller's contact information

   Students will write a reflection of what they learned and complete the KWL chart.

Formative Assessment:

- Students will be assessed on participation and power-point project.

Introduction

Connecting and communicating through the Internet can be one of the most effective and simple ways to use technology in the classroom. For some classrooms, the Internet can open the door to real audiences and offer the prospect to communicate in real time to locations around the world. Teachers using Internet communications know that this can be extremely motivating to students and offer opportunities for students to be involved in productive learning experiences.

On the other hand connecting and communicating through the Internet can be a frustrating and unrewarding experience for both the teacher and students if there is a lack of understanding and organization regarding the expectations of the experience. Perhaps the frustration may stem from a lack of technical support or perhaps a lack of understanding in regards to using email programs or even disappointment in the process of the email exchange.

One factor that is common between a successful and unsuccessful communication attempt on the Internet is the fact that teachers understand that Internet communication is an important skill for students to acquire. In our technological world electronic communication offers numerous opportunities to develop literacy skills in motivational ways.

References:

- http://www.saskschools.ca/~qvss/technology/2connect.htm

Lesson 6: Communication through Billboards "I see you looking!"

Essential Question:

What type of communication through billboards do you see when you travel?
What type of billboards communicate is most effective to you?

Content Standards:

- LA.3.1.6.1: Use new vocabulary that is introduced and taught directly;
- LA.3.2.2.2: Use information from the text to answer questions related to explicitly stated main ideas or relevant details;
- LA.4.4.1.1: The student will write narratives based on real or imagined ideas, events, or observations that include characters, setting, plot, sensory details, a logical sequence of events, and a context to enable the reader to imagine the world of the event or experience.

Vocabulary

- Advertisement
- Embellishment
- Pedestrians

Youth Development Standards:

External Assets:

- 3
- 5
- 10
- 12
- 14
- 16
- 18

Internal Assets:

- 21
- 22
- 34
- 35
- 36
- 37
- 38

Teacher Background Knowledge:

- Students will learn that Communication is the process of transferring information from one source to another. Communication is commonly defined as "the imparting or interchange of thoughts, opinions, or information by speech, writing, or signs.

- Students will learn various ways to communication with the world.

Materials:

KWL chart, notebook/Journal, construction paper, markers/crayons, glues and scissors.
Articles on http://en.wikipedia.org/wiki/Billboard

Procedure:

1. Class will review and develop a KWL chart on the topic "Communication through billboards".
2. Students will give a list of billboards they see when they travel.
3. Students will discuss what type of messages they see most often in our area and what type of messages we would see here in Florida compared to other state. (Ohio State college in Florida) billboards?
4. Class will create a list of the most common message they see and discuss why this is so.

   Activity:
5. Class will design a billboard of their choice by using classroom materials using an 11x17 construction poster and post it in main hall way of the school. (Message must be appropriate)

   Students will write a reflection in their journals of what they learned and complete the KWL chart.

Formative Assessment:

- Students will describe in details a billboard that has impacted them the most.
- Students will work independent on a billboard message of choice as a follow-up graded activity.

A **billboard** is a large outdoor advertising structure (a billing board), typically found in high traffic areas such as alongside busy roads. Billboards present large advertisements to passing pedestrians and drivers. Typically showing large, ostensibly witty slogans, and distinctive visuals, billboards are highly visible in the top designated market areas. Bulletins are the largest, most impactful standard-size billboards. Located primarily on major highways, expressways or principal arterials, they command high-density consumer exposure (mostly to vehicular traffic). Bulletins afford greatest visibility due not only to their size, but because they allow creative "customizing" through extensions and embellishments. Billboards are a great place to advertise business because rather than you having to find your customers, your customers will find your advertising.

Posters are the other common form of billboard advertising, located chiefly in commercial and industrial areas on primary and secondary arterial roads. Posters are a smaller format than bulletins and are viewed principally by residents and commuter traffic, with some pedestrian exposure.

References:

- http://en.wikipedia.org/wiki/Billboard

Lesson 7: Communication through Sign Language – "My Hands have a lot to Say."

Essential Question:

Who developed sign language?
How do you sign the alphabet?

Content Standards:

- LA.3.1.6.1: Use new vocabulary that is introduced and taught directly.
- HE.K.B.2.Pa.a: Associate communication with expression of a personal need.

Youth Development Standards:

External Assets:

- 3
- 5
- 10
- 12
- 14
- 16
- 18

Internal Assets:

- 21
- 22
- 34
- 35
- 36
- 37
- 38

Vocabulary

- Symbol
- Deaf
- Gestures

Teacher Background Knowledge:

- Students will learn where sign language originated from and their history.
- Students will learn the basic alphabet sign language.
- Students will view the diversity of disabilities of children in the school setting.

Materials:

KWL chart, notebook/journal, www.unitedstreaming.com, http://player.discoveryeducation.com/index.cfm?guidAssetId=16E138E2-6120-499A-A8B0-09C62C265275&blnFromSearch=1&productcode=US,
Articles on http://www2.uic.edu/stud_orgs/cultures/daa/ASLHistory.html

Procedure:

1. Class will review and develop a KWL chart on the topic “Communication through sign language”.
2. Students will share their opinions of how life would be if they had to communicate using sign language.
3. Class will share any experience they’ve had with a deaf person.
4. Class will learn about the origination of sign language and the history.
5. Students will review the basic sign language alphabet.
6. Class will view a United Streaming video on communication with sign language in a diverse school setting.
7. Students will write a reflection of what they learned and complete the KWL chart.

Formative Assessment:

- Students will tell when and where Sign Language originated from and sign their first name using a sign language chart.

History of Sign Language

It was in the sixteenth century that Geronimo Cardano, a physician of Padua, in northern Italy, proclaimed that deaf people could be taught to understand written combinations of symbols by associating them with the thing they represented. The first book on teaching sign language to deaf people that contained the manual alphabet was published in 1620 by Juan Pablo de Bonet.

In 1755 Abbe Charles Michel de L’Epee of Paris founded the first free school for deaf people. He taught that deaf people could develop communication with themselves and the hearing world through a system of conventional gestures, hand signs, and fingerspelling. He created and demonstrated a language of signs whereby each would be a symbol that suggested the concept desired.

The abbe was apparently a very creative person, and the way he developed his sign language system was by first recognizing, then learning the signs that were already being used by a group of deaf people in Paris. To this knowledge he added his own creativeness which resulted in a signed version of spoken French. He paved the way for deaf people to have a more standardized language of their own--one which would effectively bridge the gap between the hearing and nonhearing worlds.

Another prominent deaf educator of the same period (1778) was Samuel Heinicke of Leipzig, Germany. Heinicke did not use the manual method of communication but taught speech and speechreading. He established the first public school for deaf people that achieved government recognition. These two methods (manual and oral) were the forerunners of today's concept of total communication. Total communication espouses the use of all means of available

communication, such as sign language, gesturing, fingerspelling, speechreading, speech, hearing aids, reading, writing, and pictures.

In America the Great Plains Indians developed a fairly extensive system of signing, but this was more for intertribal communication than for deaf people, and only vestiges of it remain today. However, it is interesting to note some similarities existing between Indian sign language and the present system.

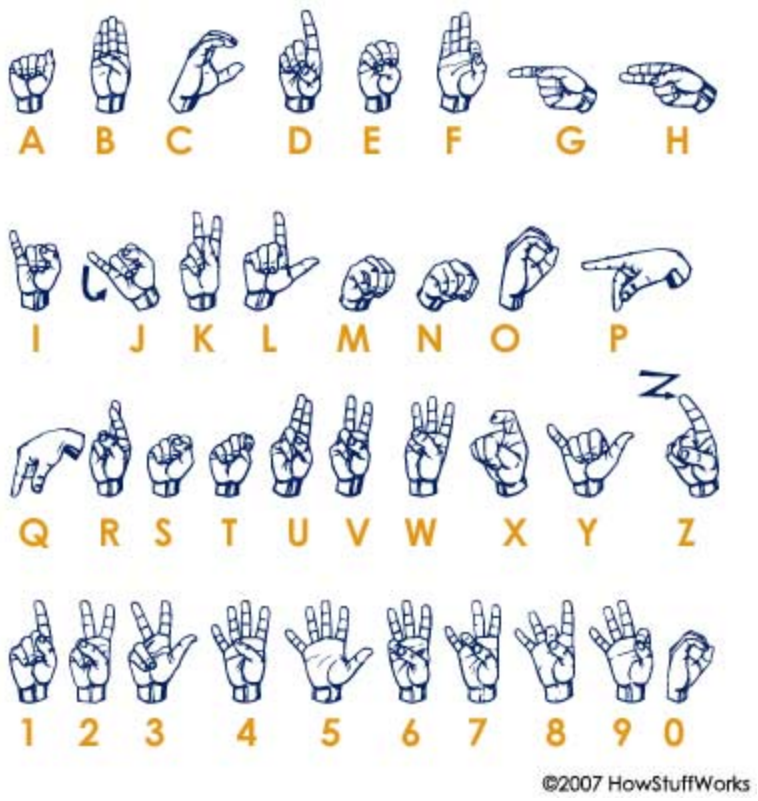
America owes a tremendous debt of gratitude to Thomas Hopkins Gallaudet, an energetic Congregational minister who became interested in helping his neighbor's young deaf daughter, Alice Cogswell. He traveled to Europe in 1815, when he was twenty-seven, to study methods of communicating with deaf people. While in England he met Abbe Roche Ambroise Sicard, who invited him to study at his school for deaf people in Paris. After several months Gallaudet returned to the United States with Laurent Clerc, a deaf sign language instructor from the Paris school.

In 1817 Gallaudet founded the nation's first school for deaf people, in Hartford, Connecticut, and Clerc became the United States' first deaf sign language teacher. Soon schools for deaf people began to appear in several states. Among them was the New York School for the Deaf, which opened its doors in 1818. In 1820 a school was opened in Pennsylvania, and a total of twenty-two schools had been established throughout the United States by the year 1863.

An important milestone in the history of education for deaf' people was the founding of Gallaudet College, in Washington, D.C. in 1864, which remains the only liberal arts college for deaf' people in the United States and the world.

Thomas Hopkins Gallaudet passed on his dream of a college for deaf people to his son, Edward Miner Gallaudet, who with the help of Amos Kendall made the dream a reality. Edward Miner Gallaudet became the first president of the new college.

Today we are fortunate to have one of the most complete and expressive sign language systems of any country in the world. We owe much to the French sign system, from which many of our present-day signs, though modified, have been derived.



References:

- http://www2.uic.edu/stud_orgs/cultures/daa/ASLHistory.html
- http://people.howstuffworks.com/sign-language2.htm

Lesson 8: Communication Braille "I may not see, but I can feel."

Essential Question:

Who invented Braille?

Content Standards:

- LA.3.1.6.1: Use new vocabulary that is introduced and taught directly.
- LA.4.5.2.1: The student will listen to information presented orally and show an understanding of key points.
- LA.4.5.2.3: The student will listen attentively to speakers and takes notes as needed to ensure accuracy of information.

Youth Development Standards:

External Assets:

- 3
- 5
- 10
- 12
- 14
- 16
- 18

Internal Assets:

- 21
- 22
- 34
- 35
- 36
- 37
- 38

Vocabulary

- Transcribe
- Code
- Combination

Teacher Background Knowledge:

- Students will learn the history of Braille and its importance for blinding people communicating in their everyday living.
- Students will learn basic Braille alphabet and numbers.

Materials:

KWL chart, notebook/journal, www.unitedstreaming.com (identifying many codes),
Articles on: http://library.thinkquest.org/04oct/01649/braille.htm

Procedure:

1. Class will review and develop a KWL chart on the topic “Communicating with Braille”.
2. Teacher will read history of Braille and demonstrate examples of Braille alphabet and numbers.
3. Teacher will make Braille codes on board and students will give knowledge of what letter or number is written.
4. Class will share opinion on how Braille would be beneficial to them if they were blind and needed to communicate with people.
5. Class will view a United Streaming video on Braille codes and discuss video.
6. Students will make up their own code representing letters and numbers.
7. Students will write a reflection of what they learned and complete the KWL chart.

Formative Assessment:

- Students will develop their own code for communicating numbers and letters.

Braille

Braille is a code which enables blind people to read & write. It was invented by a blind Frenchman, Louis Braille, in 1829. Braille is comprised of a rectangular six-dot cell, with up to 63 possible combinations using 1 or more of the 6 dots. Braille is embossed by hand (or with a machine) onto thick paper, & is read with the fingers moving across on top of the dots.
Braille is used by blind people whose vision is sufficiently impaired that they cannot ordinarily read print. Braille is the only reliable method of literacy for blind people because it enables them to read & write & can actually be substituted for print in most circumstances. Blind people use Braille in the same ways that sighted persons use print.

The Story of Louis Braille

Most people used to think that blind people could never learn to read and that the only way to read was to look at words with your eyes. But Louis Braille thought otherwise. Blind from the age of 3, he desperately wanted to read. He realized the vast world of thought & ideas that was locked out to him because of his disability; but he was determined to find a way for him & for all other blind people to read.
Louis Braille was born in 1809, in a small village near Paris. His father made leather goods to sell to the other villagers, so his father often used sharp tools to cut & punch holes in the leather. One of the tools he used to makes holes was a sharp awl; a tool that looks like a short pointed stick, with a round, wooden handle. While playing with 1 of his father's awls, Louis' hand slipped & he accidentally poked one of his eyes. At first the injury didn't seem serious, but then the wound became infected. A few days later young Louis lost sight in both his eyes. The first few days after becoming blind were very hard. But Louis learned to adapt & learned to lead an otherwise normal life. He went to school with all his friends & did well at his studies. He was both intelligent & creative & he wasn't going to let his disability slow him down.

As he grew older, he realized that the small school he attended did not have the money & resources he needed. He heard of a school in Paris that was especially for blind students. Louis didn't have to think twice about going.

When he arrived at the special school for the blind, he asked his teacher if the school had books for blind persons to read. Louis found that the school did have books for the blind to read. These books had large letters that were raised up off the page. Since the letters were so big, the books themselves were large & bulky. More importantly, the books were expensive to buy, so the school only had 14 of them.

Louis set about reading all 14 books in the school library. He could feel each letter, but it took him a long time to read a sentence. It took a few seconds to reach each word & by the time he reached the end of a sentence, he almost forgot what the beginning of the sentence was about. Louis knew there must be a better way. There must be a way for a blind person to quickly feel the words on a page. There must be a way for a blind person to read as quickly & as easily as a sighted person.

That day he set himself the goal of thinking up a system for blind people to read. He would try to think of some alphabet code to make his 'finger reading' as quick & easy as sighted reading. Then 1 day somebody at the school heard about an alphabet code that was being used by the French army. This code was used to deliver messages at night from officers to soldiers. The messages could not be written on paper because the soldier would have to strike a match to read it.

The light from the match would give the enemy a target at which to shoot. So the alphabet code was made up of small dots & dashes. These symbols were raised up off the paper so that soldiers could read them by running their fingers over them. Once the soldiers understood the code, everything worked fine.

Louis got hold of some of this code & tried it out. It was much better than reading the books with gigantic raised letters. But the army code was still slow & cumbersome. The dashes took up a lot of space on a page. Each page could only hold 1 or 2 sentences. Louis knew that he could improve this alphabet.

On his next vacation home, he spent all his time working on finding a way to make this improvement. Louis sat down to think about how he could improve the system of dots & dashes. He liked the idea of the raised dots, but could do without the raised dashes. As he sat there in his father's leather shop, he picked up 1 of his father's blunt awls. The idea came to him in a flash. The very tool which had caused him to go blind could be used to make a raised dot alphabet that would enable him to read. The next few days he spent working on an alphabet made up entirely of 6 dots. The position of the different dots would represent the different letters of the alphabet. Louis used the blunt awl to punch out a sentence. He read it quickly from left to right. Everything made sense. It worked...

Braille Codes

The basic braille symbol/cell is composed of 6 dots arranged in 2 vertical columns, each column being 3 dots high. These dots are numbered as follows:

1 o o 4
2 o o 5
3 o o 6

Because this pattern produces only 63 one-cell symbols (plus the blank cell, which is used as a space), some symbols have multiple meanings, & many symbols which take only 1 character in print require more than 1 cell in braille.

There are at least 4 different braille codes currently used in the U.S., & the use of a particular code is dependent upon the type of material being transcribed. These codes are Literary Braille Code, Nemeth Code, Computer Braille Code (CBC), & Music Braille Code. Other codes are under development, some of which require the use of 8 dots and/or other raised symbols. DotsPlus is 1 such system. In addition, there are differences in the codes used in various English-speaking countries, especially in mathematics, thus inhibiting the exchange of braille materials. There is currently an attempt underway to produce a Unified Braille Code (UBC) which would eliminate some of the problems of both producing & reading braille. In instances where symbols are used that might not be familiar to the reader, transcriber's notes and/or lists of symbols are included to explain their meaning.

Braille Alphabet:

 a	 b	 c	 d	 e	 f	 g	 h	 i	 j	
 k	 l	 m	 n	 o	 p	 q	 r	 s	 t	
 u	 v	 w	 x	 y	 z					
 !	 '	 ,	 -	 .	 ?	 Capital				

Numbers:

 #	 0	 1	 2	 3	 4	 5	6	7	8	9

References:

- http://www.afb.org/braillebug/braille_print.asp
- http://library.thinkquest.org/04oct/01649/braille.htm

Lesson 9: Communication through Song."That's my jams!"

Essential Question:

How does music communicate with us in our daily lives?

Content Standards:

- LA.3.1.6.1: Use new vocabulary that is introduced and taught directly.
- LA.4.5.2.1: The student will listen to information presented orally and show an understanding of key points.
- LA.4.5.2.3: The student will listen attentively to speakers and takes notes as needed to ensure accuracy of information.

Youth Development Standards:

External Assets:

- 3
- 5
- 10
- 12
- 14
- 16
- 18

Internal Assets:

- 21
- 22
- 34
- 35
- 36
- 37
- 38

Vocabulary

- Genre
- Tempo

Teacher Background Knowledge:

- Students will learn various genres of music throughout the world.
- Class will identify messages in songs from different genres.
- Students will pick a favorite song and describe the message within the song and how it communicates with them. (Teacher will provide lyrics to some songs from www.lyrics.com)

Materials:

KWL chart, notebook/journal, www.unitedstreaming.com (types of music)

Procedure:

1. Class will review and develop a KWL chart on the topic “Communication through song”.
2. Students will give their opinions of how some songs communicate with them.
3. Students will list different type of music genres (hip-hop, R&B, Rock, Top-40, love songs, Christian contemporary, Country, etc.).
4. Class will listen to different types of songs and discuss the message behind some songs.
5. Students will write a reflection of what they learned and complete the KWL chart.

Formative Assessment:

- Students will pick two songs of choice and describe how it communicates with them. Student will tell if it’s a song that motivates them, make them sad or think of someone.

Lesson 10: Communication through Telephone/Cell-Phone "I heard through the grapevine!"

Essential Question:

Who invented the telephone?
How does our voice travel through wires and air?

Content Standards:

- LA.3.1.6.1: Use new vocabulary that is introduced and taught directly.
- LA.3.1.6.2: Listen to, read, and discuss familiar and conceptually challenging text.
- LA.4.1.5.1: Demonstrate the ability to read grade level text.

Vocabulary

- Electro-magnetic
- Vibrations
- Diaphragms
- Telegraph

Youth Development Standards:

External Assets:

- 3
- 5
- 10
- 12
- 14
- 16
- 18

Internal Assets:

- 21
- 22
- 34
- 35
- 36
- 37
- 38

Teacher Background Knowledge:

- Students will learn the history of the telephone.
- Students will learn how our voices travel through the air.

Materials:

KWL chart, timeline chart, notebook/journal, articles on: http://en.wikipedia.org/wiki/History of the telephone, http://www.buzzle.com/articles/how-does-a-mobile-phone-work.html, drinking cups, string, wire, scissors

Procedure:

1. Class will review and develop a KWL chart on the topic "Communication through the telephone."
2. Students will review lesson vocabulary words.
3. Students will give prior knowledge of the history of the telephone (who invented it).
4. Students will give their opinions of how the telephone/cell-phone impacts their lives.
5. Class will create a list of various ways they communicate information to others through the telephone/cell-phone.
6. Class will read the history of the telephone/cell-phone and view pictures of the various models of telephones through the years.
7. Class will research in groups of 3, how our voices travel through the air using cell-phones.
8. Students will make their kid version of telephones using cups, strings, and scissors.
9. Class will view a United Streaming video on communication.
10. Students will write a reflection of what they learned and complete the KWL chart.

Formative Assessment:

- List 4 different ways they communicate using the telephone and cell-phone (if they have one or family member has one).
- Students will pair and make their own version of a kid phone and see if they can hear each others voices.

Telephone Prehistory

Mechanical devices

Before the invention of electro magnetic telephones, there were mechanical devices for transmitting spoken words over a greater distance than ordinary speech. The very earliest mechanical telephones were based on sound transmission through pipes or other physical media. Speaking tubes long remained common, and can still be found today. A different device, the lover's telephone or string telephone has also been known for centuries, connecting two diaphragms with string or wire which transmits the sound from one to the other by mechanical vibrations along the string and not by electric current. The classic example is the children's toy made by connecting the bottoms of two paper cups, metal cans, or plastic bottles with string.

Electrical devices

Main article: Electrical telegraph

The telephone began as improvements to the telegraph. Samuel Thomas von Soemmering constructed his electrochemical telegraph in 1809. An electromagnetic telegraph was created by Baron Schilling in 1832. Carl Friedrich Gauß and Wilhelm Weber built an electromagnetic telegraph in 1833 in Göttingen. The first *commercial* electrical telegraph was constructed by Sir William Fothergill Cooke and entered use on the Great Western Railway in Britain. It ran for 13 miles from Paddington station to West Drayton and came into operation on April 9, 1839.

The electrical telegraph owned and built by Samuel F. B. Morse

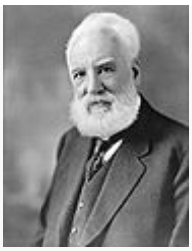
An electrical telegraph was independently developed and patented in the United States in 1837 by Samuel Morse. His assistant, Alfred Vail, developed the Morse code signaling alphabet with Morse. America's first telegram was sent by Morse on January 6, 1838, across two miles of wiring.

During the late 19th century inventors tried to find ways of sending multiple telegraph messages simultaneously over a single telegraph wire by using different audio frequencies for each message. These inventors included Charles Bourseul, Thomas Edison, Elisha Gray, and Alexander Graham Bell. Their efforts to develop acoustic telegraphy to reduce the cost of telegraph wires led to the telephone.

Invention of the telephone

Main article: invention of the telephone

Credit for inventing the electric telephone remains in dispute. Charles Bourseul, Antonio Meucci, Johann Philipp Reis, Alexander Graham Bell and Elisha Gray, amongst others, have all been credited with the invention. The early history of the telephone is a confusing morass of claim and counterclaim, which was not clarified by the huge mass of lawsuits which hoped to resolve the patent claims of individuals. The Bell and Edison patents, however, were forensically victorious and commercially decisive.

 Antonio Meucci 1854 constructed prototype telephones.	 Johann Philipp Reis 1860 constructed prototype telephones, today called Reis' telephone.	 Alexander Graham Bell was awarded the U.S. patent for the invention of the telephone in 1876.	 Tivadar Puskás, who invented the telephone exchange in 1876.	 Elisha Gray 1876 designed a telephone prototype in Highland Park, Illinois.

Alexander Graham Bell is often credited as the inventor of the telephone, and the Italian Antonio Meucci was recognized by US Congress on June 11, 2002 for his pioneer work on the telephone. However, the modern telephone is the result of work done by many people, all worthy of recognition of their contributions to the field. Bell was merely the first to patent the telephone, an "apparatus for transmitting vocal or other sounds telegraphically", 16 years after Meucci, who did not have sufficient funds to file a patent application, demonstrated his "teletrofono" in New York in 1860.

The *Elisha Gray and Alexander Bell controversy* considers the question of whether Bell and Gray invented the telephone independently and, if not, whether Bell stole the invention from Gray. This controversy is more narrow than the broader question of who deserves credit for inventing the telephone, for which there are several claimants.

Early telephone developments

Main article: Timeline of the telephone

The following is a brief summary of the history of the development of the telephone:

Copy of the original phone of Graham Bell at the *Musée des Arts et Métiers* in Paris

- 1667: Robert Hooke invented a string telephone that conveyed sounds over an extended wire by mechanical vibrations.
- 1844: Innocenzo Manzetti first mooted the idea of a “speaking telegraph” (telephone).
- 1854: Charles Bourseul writes a memorandum on the principles of the telephone.(See the article : "Transmission électrique de la parole", *L'Illustration*, Paris, 26 August 1854).
- 1854: Antonio Meucci demonstrates an electric voice-operated device in New York; it is not clear what kind of device he demonstrated.
- 1861: Philipp Reis constructs the first speech-transmitting telephone
- 1872: Elisha Gray establishes Western Electric Manufacturing Company.
- July 1, 1875: Bell uses a bi-directional "gallows" telephone that was able to transmit "voicelike sounds", but not clear speech. Both the transmitter and the receiver were identical membrane electromagnet instruments.
- 1875: Thomas Edison experiments with acoustic telegraphy and in November builds an electro-dynamic receiver, but does not exploit it.
- 1875: Hungarian Tivadar Puskas (the inventor of telephone exchange) arrived in the USA.
- April 6, 1875: Bell's U.S. Patent 161,739 "Transmitters and Receivers for Electric Telegraphs" is granted. This uses multiple vibrating steel reeds in make-break circuits, and the concept of multiplexed frequencies.
- February 11, 1876: Elisha Gray designs a liquid transmitter for use with a telephone, but does not build one.
- March 7, 1876: Bell's U.S. patent 174,465 for the telephone is granted.
- March 10, 1876: Bell transmits the sentence "Mr. Watson, come here, I want to see you" using a liquid transmitter and an electromagnetic receiver.
- January 30, 1877: Bell's U.S. patent 186,787 is granted for an electro-magnetic telephone using permanent magnets, iron diaphragms, and a call bell.
- April 27, 1877: Edison files for a patent on a carbon (graphite) transmitter. The patent 474,230 was granted May 3, 1892, after a 15-year delay because of litigation. Edison was granted patent 222,390 for a carbon granules transmitter in 1879.
- 1877: First long-distance telephone line

Early commercial instruments

This section **does not cite any references or sources**. Please help improve this article by adding citations to reliable sources. Unverifiable material may be challenged and removed. *(January 2008)*

Early telephones were technically diverse. Some used a liquid transmitter which soon went out of use. Some were dynamic: their diaphragm wriggled a coil of wire in the field of a permanent magnet or vice versa. This kind survived in small numbers through the 20th century in military and maritime applications where its ability to create its own electrical power was crucial. Most, however, used the Edison/Berliner carbon transmitter, which was much louder than the other kinds, even though it required an induction coil, actually acting as an impedance matching transformer to make it compatible to the impedance of the line. The Edison patents kept the Bell

monopoly viable into the 20th century, by which time the network was more important than the instrument anyway.

Early telephones were locally powered, using a dynamic transmitter or else powering the transmitter with a local battery. One of the jobs of outside plant personnel was to visit each telephone periodically to inspect the battery. During the 20th century, "common battery" operation came to dominate, powered by "talk battery" from the telephone exchange over the same wires that carried the voice signals. Late in the century, wireless handsets brought a revival of local battery power.

Early telephones had one wire for both transmitting and receiving of audio, with ground return as used in telegraphs. The earliest dynamic telephones also had only one opening for sound, and the user alternately listened and spoke (rather, shouted) into the same hole. Sometimes the instruments were operated in pairs at each end, making conversation more convenient but also more expensive.

At first, the benefits of an exchange were not exploited. Telephones instead were leased in pairs to the subscriber, for example one for his home and one for his shop, who must arrange with telegraph contractors to construct a line between them. Users who wanted the ability to speak to three or four different shops, suppliers etc would obtain and set up three or four pairs of telephones. Western Union, already using telegraph exchanges, quickly extended the principle to its telephones in New York City and San Francisco, and Bell was not slow in appreciating the potential.

Signaling began in an appropriately primitive manner. The user alerted the other end, or the exchange operator, by whistling into the transmitter. Exchange operation soon resulted in telephones being equipped with a bell, first operated over a second wire and later with the same wire using a condenser. Telephones connected to the earliest Strowger automatic exchanges had seven wires, one for the knife switch, one for each telegraph key, one for the bell, one for the push button and two for speaking.

Rural and other telephones that were not on a common battery exchange had a "magneto" or hand cranked generator to produce a high voltage alternating signal to ring the bells of other telephones on the line and to alert the exchange operator.

In 1877 and 1878, Edison invented and developed the carbon microphone used in all telephones along with the Bell receiver until the 1980s. After protracted patent litigation, a federal court ruled in 1892 that Edison and not Emile Berliner was the inventor of the carbon microphone. The carbon microphone was also used in radio broadcasting and public address work through the 1920s.

1896 Telephone (Sweden)

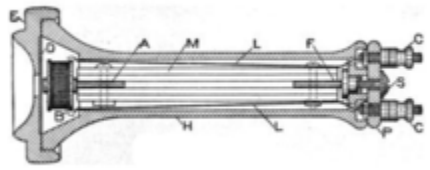
In the 1890s a new smaller style of telephone was introduced, packaged in three parts. The transmitter stood on a stand, known as a "candlestick" for its shape. When not in use, the receiver hung on a hook with a switch in it, known as a "switchhook." Previous telephones required the user to operate a separate switch to connect either the voice or the bell. With the new kind, the user was less likely to leave the phone "off the hook". In phones connected to magneto exchanges, the bell, induction coil, battery and magneto were in a separate bell box called a "ringer box." In phones connected to common battery exchanges, the ringer box was installed under a desk, or other out of the way place, since it did not need a battery or magneto.

Cradle designs were also used at this time, having a handle with the receiver and transmitter attached, separate from the cradle base that housed the magneto crank and other parts. They were larger than the "candlestick" and more popular.

Disadvantages of single wire operation such as crosstalk and hum from nearby AC power wires had already led to the use of twisted pairs and, for long distance telephones, four-wire circuits. Users at the beginning of the 20th century did not place long distance calls from their own telephones but made an appointment to use a special sound proofed long distance telephone booth furnished with the latest technology.

20th Century developments

Please help improve this section by expanding it. Further information might be found on the talk page. *(May 2007)*



Old Receiver schematic, c.1906

A German rotary telephone, the W48

Top of cellular telephone tower

By 1904 there were over three million phones in the US, still connected by manual exchanges.

What turned out to be the most popular and longest lasting physical style of telephone was introduced in the early 20th century, including Bell's Model 102. A carbon granule transmitter and electromagnetic receiver were united in a single molded plastic handle, which when not in use sat in a cradle in the base unit. The circuit diagram of the Model 102 shows the direct connection of the receiver to the line, while the transmitter was induction coupled, with energy supplied by a local battery. The coupling transformer, battery, and ringer were in a separate enclosure. The dial switch in the base interrupted the line current by repeatedly but very briefly disconnecting the line 1-10 times for each digit, and the hook switch (in the center of the circuit

diagram) permanently disconnected the line and the transmitter battery while the handset was on the cradle.

After the 1930s, the base also enclosed the bell and induction coil, obviating the old separate ringer box. Power was supplied to each subscriber line by central office batteries instead of a local battery, which required periodic service. For the next half century, the network behind the telephone became progressively larger and much more efficient, but after the dial was added the instrument itself changed little until touch tone replaced the dial in the 1960s.

The *history of mobile phones* can be traced back to two-way radios permanently installed in vehicles such as taxicabs, police cruisers, railroad trains, and the like. Later versions such as the so-called transportables or "bag phones" were equipped with a cigarette lighter plug so that they could also be carried, and thus could be used as either mobile two-way radios or as portable phones by being patched into the telephone network.

In December 1947, Douglas H. Ring and W. Rae Young, Bell Labs engineers, proposed hexagonal cells for mobile phones.[Philip T. Porter, also of Bell Labs, proposed that the cell towers be at the corners of the hexagons rather than the centers and have directional antennas that would transmit/receive in 3 directions (see picture at right) into 3 adjacent hexagon cells.[4] [5] The technology did not exist then and the frequencies had not yet been allocated. Cellular technology was undeveloped until the 1960s, when Richard H. Frenkiel and Joel S. Engel of Bell Labs developed the electronics.

On April 3, 1973 Motorola manager Martin Cooper placed a cellular phone call (in front of reporters) to Dr. Joel S. Engel, head of research at AT&T's Bell Labs. This began the era of the handheld cellular mobile phone.

Cable television companies began to use their fast-developing cable networks, with ducting under the streets of the United Kingdom, in the late 1980s, to provide telephony services in association with major telephone companies. One of the early cable operators in the UK, Cable London, connected its first cable telephone customer in about 1990.

21st Century developments

Internet Protocol (IP) telephony (also known as internet telephony) is a service based on Voice over IP (VoIP), a disruptive technology that is rapidly gaining ground against traditional telephone network technologies. In Japan and South Korea up to 10% of subscribers, as of January 2005, have switched to this digital telephone service.

IP telephony uses a broadband internet connection to transmit conversations as data packets. In addition to replacing POTS, IP telephony is also competing with mobile phone networks by offering free or lower cost connections via WiFi hotspots. VoIP is also used on private wireless networks which may or may not have a connection to the outside telephone network.

How Does a Mobile Phone Work?

The ubiquitous mobile phones have revolutionized the communication industry. But how does a mobile phone work? Want to know? Then read on…

A mobile phone, popularly known as a cell phone, is a mobile device used for voice and data communication over the network of base stations, sites where antennas and electronic communication equipment together create a cell in a mobile phone network. As we all know, the mobile phones of today are used for many other purposes than the standard voice function, which is the primary purpose of a mobile phone. Today, mobile phones are used for text messaging by means of SMS, for sending and receiving videos and photographs by means of MMS and for email and Internet services by means of GPRS. The mobile phones of the modern times also support technologies like infrared and bluetooth, thus enabling inexpensive ways of communication. For most of us, our mobile phone is one technological devise that we cannot do without. We need it with us everywhere!

How does a mobile phone work?

A mobile phone is a two-way radio, as it sends and receives radio signals with cell site base stations. When a person talks on a cellular phone, the voice message gets converted into radio waves. The radio waves travel through air until they reach a base station close by. The base station sends the call across the communication network after which the call reaches the intended receiver of the call. The base station in the vicinity of the mobile phone being called sends the radio waves for the receiver's devise to detect them. The mobile phone of the receiver converts the signals into voice and the phone call takes place.

Base stations that form the telephone network for mobile phones are fitted with microwave antennas and are usually mounted on high structures such as a pole or a tower. They have low powered radio transmitters, which relay communications between the mobile phones and the switch. The switch connects the call to the other subscribers of the same service provider.

Cellular technology has evolved through generations. The first generation mobile phones used analog networks and evolved in Japan in 1979. The second-generation systems began in Finland in 1991 and made use of digital technologies such as GSM and CDMA. The third generation systems began in Japan in 2001. They support high-speed data and voice services.

Mobile phones obtain power from batteries, which can be recharged from mains power. Nickel metal-hydride batteries or lithium ion batteries are used for mobile phones. Many mobile phones have recently shifted to using lithium-polymer batteries as they are light in weight and offer flexibility in their shapes. Under the mobile phone battery lies a small microchip known as the Subscriber Identification Module, which all of us know as the SIM card. This small chip stores the mobile phone's configuration details and the information about the phone.

When a mobile phone is turned on, it registers with the switch that can then alert the mobile phone of incoming calls. The mobile device listens to the signals being sent by the surrounding base stations and switches smoothly between sites. A device can switch between networks without disturbing an ongoing call by transferring a call from one channel to another. This process is known as a handoff.

While you conveniently roam about carrying your mobile phone, the telecommunication network across the world is at work, making and maintaining your calls and helping you stay 'connected'!

References:

- http://en.wikipedia.org/wiki/History_of_the_telephone
- http://www.buzzle.com/articles/how-does-a-mobile-phone-work.html

Appendix