

Communication

“The successful transmission of information through a common system of symbols, signs, behavior, speech, writing, or signals.”

Communication is the process of sending and receiving information or messages.

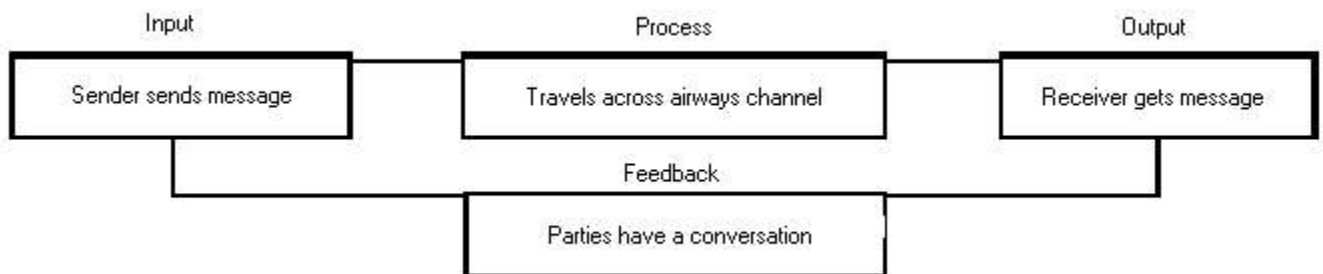
Communication Technology

Communication technology is using a variety of knowledge, tools and skills to transfer information. It extends the capabilities of our human senses. For instance, a telephone allows us to hear someone thousands of miles away. A photograph and article in a newspaper allows us to see and understand stories that take place without our actual presence.

Communication Systems

“A system that forms a link between a sender and a receiver, making possible the exchange of information.”

Communication can be described as a system with a goal of transferring information. Applying a systems approach can help in understanding the communication process. A home heating system is a good example of a systems model. The desired result is to maintain a constant temperature in the home. Inputs necessary for this include a furnace, energy (in the form of electricity or fuel), ductwork, wiring, and a thermostat to monitor the temperature in the home. Processing is the burning of the fuel to generate heat and using a fan to circulate the heat through the ducts. The thermostat provides the control and feedback. A signal is sent to turn off the heater when the desired temperature is reached.

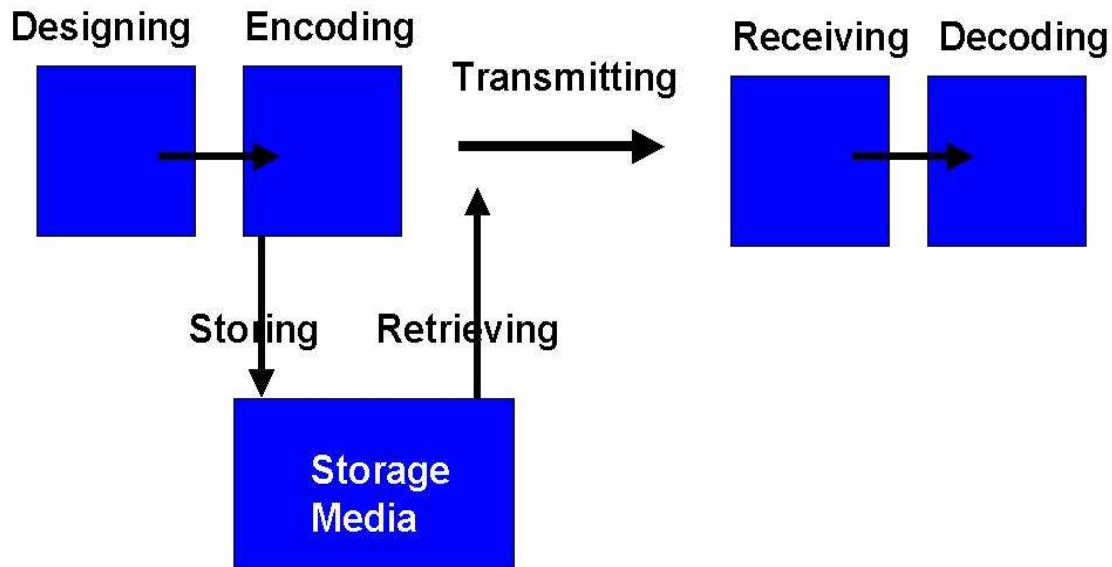


The reasons we communicate are to inform, educate, persuade, entertain, and control.

The purpose of communications systems are described as follows:

- Inform: Information is provided about people, events, and relationships through various media. People read books, newspapers and magazines to obtain information. Radio, television, and the Internet are other sources for information gathering.
- Educate: Individuals use textbooks, computer and video resources to convey information on many subjects to students.
- Persuade: Television commercials and magazine ads are produced to promote a certain product for people to purchase.
- Entertain: People listen to the radio, watch television and play electronic games for entertainment purposes. People are entertained as they participate in or observe events

Comm. System



Communication involves a Sender, Channel, Message, Receiver, Feedback. The process can be organized as seen in the model above. See the link below for a presentation that provides examples of encoding, storage, retrieval, transmission, receiving, decoding.

Categories of Communication

Communication can be divided into 6 categories: technical design, optics, data communication, and graphic production, audio and video, and integrated systems.

Data Communication

Involves sending and receiving information via computers. Nearly all major companies use some form of data communication. For example, a modem converts digital signals to analog signals and converts analog signals to digital signals.

Optics

Involves systems that use light to transmit and record messages. The most common type of optic system is photography. The principles, materials, and equipment used are

mirrors, those in other optic systems such as principles of light, lenses and light-sensitive materials.

Technical Design

Involves drawings that describe technical devices or systems such as drafting, mechanical drawing, and engineering design. Tools and equipment used in technical design range from T-squares and drawing boards to computers using CAD systems.

Graphic Production

Involves communicating through printed images such computer graphics, screen printing, lithography, gravure printing. Originally, “Ink on paper” was the way graphic production systems were described but there are many more methods used today. For example, a photocopy machine fuses a powder to paper to form an image. Often, the image is reproduced on a surface other than paper such as metal, plastic, and fabric.

Audio and Video

Involves communicating through broadcasting images and sound such as radios, televisions, telephones, record players, tape players, compact disc players, etc.

Integrated Systems

Is a term that refers to communicating through a variety of systems that overlap such as digitization of telecommunications. It is important to realize that no communication system exists alone. For example, telephone lines can be used to transmit computer data as well as human voices. The telephone lines may be optic fibers rather than copper wires.

Types of Communication Systems

1. People communicate with other people (example: speech, signs, body language, touch, and smell).
2. People communicate with machines (example: keyboard, joystick, e-mail systems, mouse, timers, and switches).
3. Machines communicate with machines (example: commands to printers, sensors, CNC, robots, thermostat to furnace, auto pilot on planes).
4. Machines communicate with people (example: alarm systems, traffic signals, smoke detectors, computer bill boards, monitors, answering machines, pagers, voice mail signals).

Forms of communications technology

A. Graphic communication occurs when the message conveys pictures or printed words.

1. **Writing** – The process of recording language.
2. **Drawing and sketching** – A quick way to show an idea that would be difficult to describe with words alone. Quick, pen or pencil pictures to communicate an idea.
3. **Electronic** – We use electronic systems to communicate graphically through such processes as web page design, video production, computer animation, 3-D graphics, etc.
4. **Technical Drawing** – Drawing techniques that accurately represent the size, shape and structure of objects.
5. **Photography** – The process that creates pictures whether through the use of conventional film and chemical means, or by using digital cameras and producing output using computers and various types of printers.
6. **Printing** – All of the tasks necessary to the process of transferring images to a printed page. Printing is called graphic reproduction.

B. Electronic communication – can be represented in two types of signals.

Analog signals create a change in signal strength based on the information that it represents. If it is representing a voice signal and the volume increases then the signal strength will increase. The signal strength is an analog similar to the person's speech volume. A continuous electronic signal is an analog signal. New digital ones, such as the conversion from analog transmission of television signals to HDTV signals, are replacing many analog devices.

Digital signals are create by converting analog signals into bits of digital information. Digital bits are a series of microscopic switches. The switches can be "on" or "off." The "on" switches are represented by the number one (1) and "off" switches are represented by the number zero (0). Each "one" or "zero" is called a bit, short for binary digit. Binary refers to the number system that uses only "ones" and "zeros". Digital signals are pulsating electronic signals that are carrying digital code.

Analog or Digital Signals Transmission can be through the air, over cables (copper or fiber optic), over telephone lines, or over wired or wireless computer networks.

Wave Communication is electronic communication that uses radio waves to carry signals. To send radio and video signals a system converts images and

sound into pulses of electrical energy that are carried through the air by electromagnetic waves. Your television stations, radio stations, wireless phones, and CB radios are all assigned different portions of the available electromagnetic spectrum so they won't interfere with each other. In a sense you see this assignment when you choose a particular radio station or TV station.

After the signals leave the TV or radio towers they are eventually picked up by an antenna on a radio, TV or other communications device and changed back into sound, still, or motion pictures. Examples of wave communication include radio, television and wireless phone systems. Today's trend is to switch from analog to digital signals because the digital signals have better clarity and are more reliable.

The Evolution of Communication Technology

Many methods of communication have evolved throughout the years, from primitive language of cavemen to sophisticated computer language. We can find examples of communication in every area of our lives. Our lives are affected by communication from the moment the alarm clock rings in the morning until we turn off the lights in the evening. Communication technologies have enhanced our way of life in an ever-changing world. It has enabled us to communicate with people instantaneously and make decisions around the world.

Developments in communication systems have had positive and negative impacts. Students need to be aware of the impact of inventions on society along with various innovations developed from the inventions.

Examples of Technology	Impact
Alphabet (phonetic)	Enabled people to store information and communicate with each other without having to be physically present.
Printing Press	Enabled the mass production of books and sharing of knowledge.
Moveable Type	The first significant invention that made mass production of written material possible.
Photography	Developed in the 1800's, this invention enabled people to see for the first time the horrors of war.
Telegraph	Samuel Morse's telegraphy formed the basis for the transmitting of electronic signals over wire at the speed of light.
Telephone	Enabled voice messages to be transmitted electronically over long distances.
Phonograph	First audio storage and retrieval invention.
Radio	In 1910, Marconi invented the radio, which eliminated the need for transmission wires to communicate, enabled instantaneous mass communication, and brought about broadcasting.
Television	Mass produced after WWII, it provided both picture and sound and greatly increased the impact of mass communication.
Transistor	Enabled electronic devices to be reduced in size with increased reliability.
Microchip	Invented in 1958, this device permitted the development of smaller and more powerful computers.
Satellite Communication	Enabled an individual to speak with others around the world within seconds through networking of worldwide communication (cable TV and news events).