TECHNOLOGY RESOURCES

(Resources are Things we Need to get a Job Done)

Steve Krar

Resources are things we need to get a job done. Every technological system makes use of seven types of resources: people, information, materials, tools and machines, energy, capital, and time.

People

Technology comes from the needs of people and people's needs drive technology. Humans use what they know, try to learn more, design and create technology using their knowledge and intelligence. NASA scientists had to combine their knowledge with new ideas to come up with a space vehicle and a way to get it to the moon and back safely.

People provide the labor on which technology depends, they are needed to provide the products and services we use every day. People are also the consumers of technology and the ones that buy consumer goods produced such as food, cars, homes, etc.

Information

Technology requires information to solve problems and to create new knowledge. Information comes from raw data, that is processed by collecting, recording, classifying, calculating, storing, and retrieving it. Information can be found in many places: in computer files, books, etc., but it is only valuable when we make use of it. We process information by collecting it, thinking about it, and applying it to meet our needs and wants.

Materials

Natural resources found in nature are called raw materials. These include air, water, land, timber, minerals, plants, and animals. Synthetic materials are manufactured materials that may have useful characteristics natural materials do not have.

Raw Materials

There are two types of raw materials available for humans to use:

1. **Renewable raw materials** are those that can be grown and therefore replaced. These include trees, animals, and plants.
2. **Nonrenewable raw materials** are those that are used up and cannot be replaced, such as oil, gas, coal, and minerals.

Limited and Unlimited Resources

Some resources are available in great amounts, like sand, iron ore, and clay, while others such as fresh water are in short supply. Whenever it is possible, we should use plentiful materials instead of scarce ones.

Synthetic Materials

People have used technology to make synthetic materials as substitutes for scarce materials, helping to save our natural resources. Everyday products such as plastics, acrylic, nylon, Teflon, fibreglass, and gasoline are made from chemicals or oils. Industrial diamonds are made from a form of carbon. Synthetics may have qualities that are more useful than the natural materials they replace.

Tools and Machines

Humans have been using tools to create a better world for themselves for more than a million years. As newer tools were developed through the ages, they have made life easier and better for humans and are rightfully called the **Creators of Civilization.** Tools fall into two categories; hand tool and machine tools.

Hand Tools

Hand tools are the simplest tools and require human muscle power to make them work, they extend the power of the human muscle.

Machines Tools

Early machine tools were mechanical devices that changed the amount, speed, or direction of a force. Early machines used human, animal, or water power to operate.

Most modern machines have moving mechanical parts and use electrical energy as a power source to move mechanical parts (for example, those that have electric motors).

Electronic Tools and Machines

Electronic tools are widely used for consumer goods, entertainment, and manufacturing. Computers are electronic tools used to process information, operate household items such as microwave ovens, stereo centers, automobiles, and factory machinery. They provide savings on energy and labor that result in better quality products at lower costs for everyone.

Energy

For thousands of years energy came from animal and human power, later humans learned to use wind and water as sources of energy. The world uses a huge amount of energy to make

products, move goods and people, and to heat, cool, and light the places where people work and live.

Renewable energy sources are those that can be replaced such as human and animal muscle power, and wood. **Limited energy sources,** such as coal, oil, natural gas, and nuclear fission (atomic energy), cannot be replaced once they are used up. **Unlimited energy sources,** such as sun, wind, gravitational, tidal, geothermal, and nuclear fusion are those more plentiful than we can ever use.

Capital

Capital is a resource needed to build homes or factories, make toasters or automobiles, move people or goods. Any form of wealth, such as money, stock, buildings, machinery, and land, is called capital.

A company needs capital to operate or expand the business and may sell stock in the company to people. These investors become part owners (shareholders) in the company and they hope that the company will be successful so that their stock will become more valuable.

Time

Early humans measured time by the rising and setting of the sun and the change of seasons. It was much later that clocks were used to measure time in hours, minutes, and seconds. In the industrial era, time became more important because it sets the price of manufactured goods.