**UNIT 3: Commonalities on Science**

As social and human sciences fall within the scientific area, it is necessary to provide students with commonalities on science in general.

**Science**

Science concerns the systematic knowledge of the physical or material world gained through observation and experimentation. Also, science is a branch of knowledge or study dealing with a body of facts or truths systematically arranged and showing the operation of general laws.

Modern science was born in the 17th century, it is based on facts which can be the object of findings. In other words, using methods and techniques, science seeks to explain reality as it is presented, by applying what is called methodical experimentation and empirical testing. In addition, science tries to identify general laws, and tries to prove that a particular event necessarily produces certain effects (Thomas, 1970).

Example: in the weather forecast, by analyzing certain number of atmospheric elements we can predict the weather for days to come.

**Scientific Research**

The aim of scientific research is to discover laws and postulate theories for scientific knowledge aimed at explaining natural, social and human phenomena.

**Scientific knowledge**

Knowledge is a natural activity unique to human beings. The scientific knowledge consists of collecting as much information and intelligence as possible to attempt to distinguish the elements closest to reality based on evidence and facts (Rutherford and Ahlgren, 1991). It is based on scientific methods which refer to a set of techniques for constructing valid and reliable theories and findings.

Example: Poverty, for some, is believed to be linked to destiny, but for economists is an index of the effectiveness of actions taken by political power of a given country.

Epilepsy is seen as the infiltration of evil spirits into the human body for some, but for a neurologist, it is a disease due to a dysfunction in the brain.

The objective of scientific knowledge is the understanding of nature and the universe from known, concrete and objective elements. In order to achieve this, the scientist must submit to very rigid rules, for scientific knowledge does not accept tastes, opinions and imagination.

**Scientific method**

The scientific method is a process for experimentation that is used to explore observations and answer questions about phenomena and problems. It involves developing and testing theories about the world based on empirical evidence under a series of prescribed steps to facilitate the independent and impartial testing of theories and findings to be placed further for open modifications or enhancements (Gimbel, 2011).

**Main steps of the scientific method**

1. Observation
2. Ask a Question
3. Do Background Research
4. Construct a Hypothesis
5. Test Your Hypothesis by Doing an Experiment
6. Analyze Your Data and Draw a Conclusion
7. Communicate Your Results

**Task 1:** What is the scientific revolution?