

Upon completion of this unit, the student will be able to: - List 6 approaches to acquiring knowledge. - Characterize the Scientific approach to knowledge acquisition. - Characterize the scientist/researcher. - List the 5 purposes of scientific research. - List the characteristics of sound theory. - Discuss the limitations of scientific research. - Define the 2 basic types of research. - Describe the research process.

Approaches to Knowledge Tradition Authority Human Experience Trial and Error Logical Reasoning Scientific Approach

Characteristics of the Scientific Approach Order and Systemization Control Empiricism Generalization

Characteristics of Scientists Objective and Impartial Skeptical Factually-Based Systematic and Orderly HSCC 470 Conceptual Framework of Research

Purposes of Scientific Research Description Exploration Explanation Prediction and Control Development of Theory

Science and Theory The ultimate goal of scientific inquiry is to formulate theory. Theories provide a way to conceptualize, organize, integrate, and classify the facts that scientists accumulate.

Characteristics of a Sound Theory

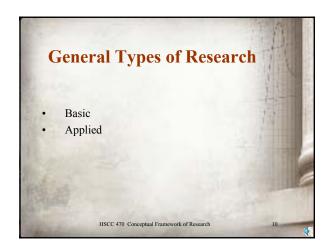
- A theory should be able to explain the observed facts.
- A theory should be consistent with observed facts and with the already established body of knowledge.
- A theory should provide a means for its verification.
- A theory should stimulate new discoveries and indicate further areas in need of investigation.

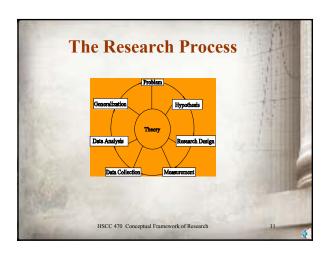
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Limitations of Scientific Research

- The scientific method cannot be used to answer questions of a moral or ethical nature.
- · Problems arise in measuring variables.
- · Every study contains design flaws.

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