



# Research – A Definition

- ◆ Educational Research



## Purpose – Primary

- ◆ To gain understanding about issue
- ◆ To explain or understand



## Purpose - Secondary

- ◆ Helping others understand the research results
- ◆ Using results to predict or improve future research & practice
- ◆ Raising new topics or questions



# Important

- ◆ Research is on-going
- ◆ Rarely does a single study generalize to all settings



# Inductive Reasoning

- ◆ Developing generalizations from a limited number of specific observations or experiences
- ◆ Quality of reasoning depends on the number and representativeness of the specific observations used
- ◆ Ref Aristotle
- ◆ Brain research of Gay Men



# Inductive Reasoning

- ◆ Provides no guide for number of examples
- ◆ Provides for no guide for quality of examples



# Deductive Reasoning

- ◆ Developing specific predictions from general principals, observations, or experiences



# Deductive Reasoning

- ◆ Depends on truth of generalizations it uses as basis for logic
- ◆ If generalization is false specific instances will not be accurate





# Inductive & Deductive

- ◆ Limited value separately
- ◆ Combined are important



# Inquiry Approach

- ◆ Combines features of Inductive and Deductive
- ◆ More valuable than:
  - Tradition
  - Experts
  - Personal experience
  - Inductive reasoning
  - Deductive
    - Not error free
    - Check & balance



# All Research

- ◆ Flawed
- ◆ Biased
- ◆ Beliefs



## 4 Steps to Inquiry Research

- 1) Recognize and identify the topic
- 2) Describe and execute procedures
- 3) Analyze the data
- 4) State the results or implications



Your Turn



Read Topics pgs. 5 - 6



# Turn to Partner

- ◆ Jot down 3 topics
  - 2 min 47 sec



# Research

- ◆ Compares
  - ◆ Describes
  - ◆ Relates
  - ◆ Historically describes
- 
- ◆ What kinds of research questions did you have?





## Data comes from:

- ◆ People (case studies)
- ◆ People (large groups)
- ◆ Performances / activities of people
- ◆ Artifacts
- ◆ Documents
- ◆ Pictures



# Data Collection & Analysis

- ◆ Formal tests
- ◆ Questionnaire
- ◆ Personal observation
- ◆ Interviews
- ◆ Statistics
- ◆ Interpretations
- ◆ Integration



# Basic Research

- ◆ Develop or enhance a theory



# Pure – Theory Development

- ◆ Theory development
- ◆ Resembles laboratory
- ◆ Conditions & controls assoc w/ scientific research



## Basic

- ◆ Provides the theory that produces concepts for learning educational problems



# Applied Research

- ◆ Applies or Tests theories
- ◆ Evaluates



# Pure – Solve current Educational Problems

- ◆ Most educational research studies are applied
- ◆ Resembles laboratory conditions
- ◆ Controls associated with scientific research



# Applied

- ◆ Provides data to support, guide and revise the development of theory





# Evaluation Research

- ◆ Making decisions about:
  - Quality of Educational Programs
  - Effectiveness of Educational Programs
  - Value of Educational Programs
- ◆ Main Purpose:
  - Monitors the ongoing progress of programs or product
  - Judge the overall impact of programs or product



# Quantitative & Qualitative Research

- ◆ Fundamental purpose of educational research:
  - Increase understanding of educational
    - processes
    - practices
    - issues



# Historically Educational Research

- ◆ Based on scientific method
- ◆ Well defined
- ◆ Widely accepted procedures for:
  - Research topics
  - Research processes
  - Analyzing data
  - Verifying quality of study
  - Verifying conclusions



# Quantitative Research

- ◆ Collection and analysis of numerical data from:
  - Questionnaire
  - Checklists
  - Tests
  - Formal pencil and paper instruments



# Quantitative Approach

- ◆ Numerical data
- ◆ Stating hypothesis
- ◆ Stating research procedures
- ◆ Maintain controls
- ◆ Large sample size
- ◆ Statistical data analysis



# Underlying Belief in Quantitative Research

- ◆ World is stable, uniform, and coherent that can be measured, understood, and generalized about
- ◆ Dominate approach in research



# Qualitative Research

- ◆ Collection and analysis of non-numerical data
  - Observations
  - Interviews
  - Discursive sources



# Qualitative

- ◆ World not stable, uniform
- ◆ Meaning saturated in particular situations and perspectives
- ◆ Several meanings in world – none more valid than other





# Qualitative

- ◆ Tends not to state hypothesis or procedure before any data collected
- ◆ Research problems and methods evolve as understanding of research context deepens
  - Context not controlled
  - Number of participants small
  - Data organized into categories identifying patterns
  - Produces descriptive narrative synthesis
  - Research interacts with participants



# Which Approach?

- ◆ Depends on nature of topic or question
- ◆ Both can be used in many research designs



## Your Turn !

- ◆ Look at Table 1.1 page 10
- ◆ Turn to partner and talk about comparison between Quantitative & Qualitative research
- ◆ Have you seen either type of research? Explain....



# Quantitative Research Approaches

- ◆ Descriptive
- ◆ Correlational
- ◆ Causal – Comparative
- ◆ Experimental



# Descriptive

- ◆ Survey data
  - Questionnaire
  - Telephone interviews
- ◆ Preferences
- ◆ Attitudes
- ◆ Practices
- ◆ Concerns



# Descriptive Instruments

- ◆ Specific to study
  - ◆ Clarity
  - ◆ Consistency
  - ◆ Tact
- 
- ◆ Rely on participants willingness to completed



# Correlational

- ◆ The relationship between two or more variables

NOT

- ◆ Cause – effect relationships \* a variable can assume a range of values – height, weight, income....



# Correlation Coefficient

-1.00 to +1.00

- ◆ No relationship among variables = 0.0
- ◆ Positive relationship (when one variable increases so does the other) = +1.00
- ◆ Negative relationship (when one variable increases the other decreases) = -1.00





# Causal – Comparative (ex post facto)

- ◆ Makes cause- effect statements between or among groups
- ◆ Researcher does NOT control the independent variables.
- ◆ Independent variable has already occurred or can not be manipulated
- ◆ Groups often formed before research begins



# Experimental

- ◆ Makes cause- effect statements between or among groups
- ◆ Researcher controls the independent variables.
- ◆ Links the cause to the effect



# Definitions

- ◆ Independent variable - the cause characteristic believed to make a difference between or among groups
- ◆ Dependent variable – the effect  
The difference of the independent variable  
The dependent variable is dependent on what the independent variable does or what happens to it



# Qualitative Approach

- ◆ Attempt to understand the way things are
- ◆ Why things are the way they are
- ◆ How participants perceive things



# Historical Methods

- ◆ Past oriented
- ◆ Study, understand, and interpret past events
- ◆ Provides insights or conclusions
- ◆ Most data already exists
- ◆ Data is primary or secondary



Turn to page 19 in the Text

Examine the common features of  
Qualitative Research Table 1.2

The final project in Qualitative Research  
studies is a rich description or narrative



# How to choose a method

The problem or question to be addressed determines the type of study