

## **Mixed Methods for Evaluation** **Educational Foundations 6464 (3 credits)**

### **Topic 1: The nature of educational research**

#### **A. Four kinds of knowledge that research brings to education**

1. **Description**: The description of natural or social phenomena.
2. **Prediction**: Being able to predict phenomena that will occur based upon evidence collected at an earlier time.
3. **Improvement**: Concerned with the effectiveness of interventions.
4. **Explanation**: Subsumes the previous three kinds of knowledge.
  - a. **Theory**: an explanation of a certain set of observed phenomena in terms of a system of constructs and laws that relate these construct to one another.
  - b. **Theoretical construct**: a concept that inferred from observed phenomena
  - c. **Constitutively defined construct**: a construct defined by referring to other constructs
  - d. **Operationally defined construct**: a construct defined by specifying the activities used to measure or manipulate it.
  - e. **Variable**: a quantitative expression of a construct, usually measured in terms of scores on an instrument such as an achievement test or attitude scale or in terms of categories of a construct (e.g., public versus private schools, females versus males, "in reading program" versus "not in a reading program").
  - f. **Law**: a generalization about the causal, sequential, or other relationships between two or more constructs.

#### **B. Basic versus Applied Research**

Comroe and Dripps's study to identify 2,500 scientific reports that led to the development of the 10 most important advances in the treatment of cardiovascular and pulmonary diseases.

### C. Philosophy of Science

1. **Epistemology**: A branch of philosophy that studies the nature of knowledge and the process by which knowledge is acquired and validated.
2. **Objective reality**: Features of our environment exist independently of the individuals who observe or create them.
3. **Positivism**: the epistemological doctrine that physical and social reality is independent of those who observe it, and that observations of this reality, if unbiased, constitute scientific knowledge.
4. **Postpositivism** (i.e., constructivism): epistemological doctrine that social reality is constructed and that it is constructed differently by different individuals as they interact in a social environment. So there are multiple **constructed realities**. Many educational researchers who subscribe to this constructivist position believe that these realities cannot be studied by the analytic methods of positivist research.
5. **Positivist research**: grounded on the assumption that features of the social environment constitute an independent reality and are relatively constant across time and settings. But what's more positivists believe that if features of the environment exist, they can be measured or observed.
6. **Postpositivist research**: grounded on the assumption that features of the social environment are constructed as interpretations of individuals and that these interpretations tend to be transitory and situational.
7. **Quantitative research**: many researchers believe that this is virtually synonymous with positivist research.
8. **Qualitative research**: many researchers believe that this is virtually synonymous with postpositivist research.
9. Review Table 1.2, p 32

## **Topic 2: Conducting a Review of the Research Literature**

### **A. The five stages of a research study**

1. Identify a significant research problem
2. Write a research proposal that describes what you plan to study and how you plan to study it (This includes the Literature Review and Method section).
3. Conducting a pilot study in order to develop and try-out data collection methods and other procedures
4. Conduct the main study
5. Prepare a report

### **B. Purposes of Reviewing the Literature**

1. Delimiting the research problem
2. Seeking new lines of inquiry
3. Avoiding fruitless approaches
4. Gaining methodological insights
5. Identifying recommendations for future research

### **C. Strategies for identifying a research problem**

1. Formulate a research problem that tests a theory that you or someone else developed.
2. Replicate and extend the study of a problem investigated by other researchers.

Extensions of a study include

- a. Checking the findings of a "breakthrough" study.
- b. Checking the validity of research findings across different populations.
- c. Checking trends or change over time.
- d. Checking important findings using different methodology.
- e. Developing more effective or efficient interventions than previously used.

### **D. Four Major steps in a literature review**

1. Search preliminary sources
2. Use secondary sources.
3. Search primary sources.
4. Synthesize the literature

## E. Basic Definitions

1. **Preliminary source**: An index or bibliography or nearly any non-professional printed source (Magazines, Newspaper clippings, Web sites, etc.) that refer to or summarize research findings reported more officially elsewhere. Often, the intended audience is nonprofessionals (outside of bibliographies or indices).
2. **Secondary source**: A published review or summary of published research addressing a particular topic. This review or summary is presented by an expert in the area for other professionals, usually in a journal or book. The most trustworthy secondary sources have survived the scrutiny of other experts (outside reviewers). The intended audience is professionals who are interested in an overview of an area.
3. **Primary source**: A publication written by the individual(s) who actually conducted the research or witnessed the events presented in the publication. A primary source is most trustworthy when the publication survived the scrutiny of other experts (outside reviewers) and when it provides the procedural details of the research conducted and a professional presentation of the findings, along with a theoretical discussion of the meaning of the findings. The intended audience is other professionals.

## F. Types of scores (4 levels of Measurement)

Measurement: the assignment of numbers to properties of persons, objects or events according to rules. Consider the scales of measurement.

1. Categories / Nominal scales: scales in which numbers are used purely as labels. The labels represent the Categories.
2. Rank scores / Ordinal scales: scales in which numbers are assigned to designate the order (or rank). The values you get by the procedure are called Rank scores.
3. Continuous scores / Interval scales: scales that possess the qualities of ordinal and nominal scales, but also require that distances between the numbers have meaning with respect to the property being measured. The values you get by the procedure are called Continuous scores.
4. Continuous scores / Ratio scales: scales that possess the qualities of all other scales, but also possess a fixed origin or zero point. In other words, on such scales, a score or measurement of zero means total absence of the property being measured. The ratio is so named because once the location of the absolute zero is known, nonzero measurements on this scale may be expressed as ratios of one another. The values you get by the procedure are called Continuous scores.