

Research Methods

Res 800


Introduction



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What We Will Cover in This Section

- Course requirements.
- Approaches to knowledge.
- Assumptions in the scientific method.
- Hypothesis testing, a review.



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Course Requirements

- Text.
- Syllabus.
- Study Guide.
- Attendance.
- Contacting me

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Course Web Site

- Syllabus.
- How to contact me.
- PowerPoint slides.
- Interesting sites.
- Pictures of me.



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Evaluation, Part 1

- Quiz after each section.
 - Each quiz worth about 15-25 points.
 - Drop lowest quiz in computing grade.
 - Drop the first missed quiz as the lowest quiz.
 - Make up subsequent quizzes with excuse.
- No extra credit.
- No final examination.

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Evaluation, Part 2

- Research portfolio.
 - Worth 60 points.
- Homework
 - See Study Guide
 - 25 - 30 points

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What Quizzes May Look Like



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Sample Multiple Choice Item.

- 1. This course is called**
 - A. Elementary physics**
 - B. Fun with sushi.**
 - C. Research methods.**
 - D. Existential phenomenology.**

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Typical TRUE FALSE items.

- 1. TRUE FALSE California University of Pennsylvania is located in the Commonwealth of Pennsylvania.**
- 2. TRUE FALSE Your professor is Wolley Segap.**

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Typical Definition

Define and give an example of the term CHEATING.

CHEATING occurs when a person copies another person's work and turns it in as his/her own. An example would be copying someone's quiz answers or turning in someone else's paper and taking credit for it.

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Examples of Bad Definitions.

CHEATING is when you cheat and do bad things. Like taking your friend's pencil.

CHEATING is illegal stuff people do in class and they get caught.

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Typical Essay Question

What are the practical, ethical, and legal issues surrounding the study of the development of drugs on the development of intelligence in children?

What are the two key requirements for a true experiment?

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Integrity

- I expect that all of the work that you do was done by you alone.
- Plagiarism or cheating will result in a failing grade for the course.

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What is Research?



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Approaches to Knowledge

TENACITY
Acquiring knowledge on the basis of superstition or habit.

INTUITION
Acquiring knowledge on the basis of feelings, instinct or inspiration.

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Approaches to Knowledge

AUTHORITY

Accepting knowledge because it is acquired from a highly credible source.

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Current Approaches

RATIONALISM

Acquiring knowledge on the basis logic and reasoning.

EMPIRICISM

Acquiring knowledge on the basis of experience.

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Working Assumptions of Science

DETERMINISM

The belief that events are caused by specific natural phenomena.

RATIONALITY

There is a set of knowable rules.

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Working Assumptions of Science

REGULARITY

Events follow the same laws and rules and occur in the same way at all times and in all places.

DISCOVERABILITY

We can discover the uniformities that exist.

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Goals of Research

DESCRIPTION

The accurate portrayal of a situation or phenomenon.

EXPLANATION

The statement of the cause of some situation or phenomenon.

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Goals of Research

PREDICTION

The ability to anticipate the occurrence of some event.

CONTROL

Manipulation of some condition(s) to produce a change in behavior.

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CAUSATION?

The manipulation of one event to produce another event.

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Organizing Our Knowledge

THEORY
 ↓
 Hypothesis
 Observation
 Observation
 Observation

↓
 Hypothesis
 Observation
 Observation
 Observation

↑
 Hypothesis
 Observation
 Observation
 Observation

↓
 Deductive

Inductive

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How the System Works

THEORY
 Behavior that is reinforced will be repeated.

MAJOR HYPOTHESIS
 If I give a reward after a behavior that behavior will be strengthened.

MAJOR HYPOTHESIS
 If I punish a behavior that behavior will be forgotten.

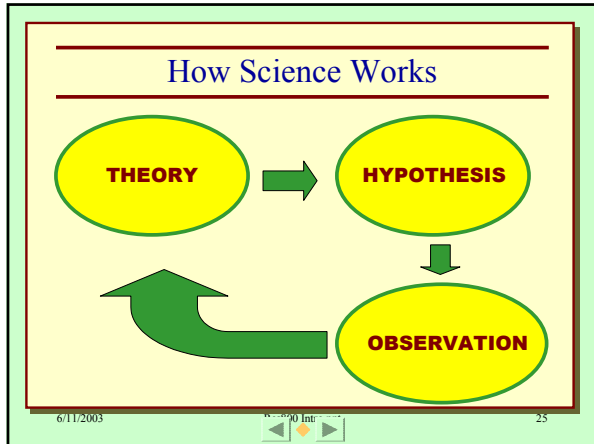
RESEARCH HYPOTHESIS
 Rewarding a dog for getting your slippers will result in his getting your slippers more frequently.

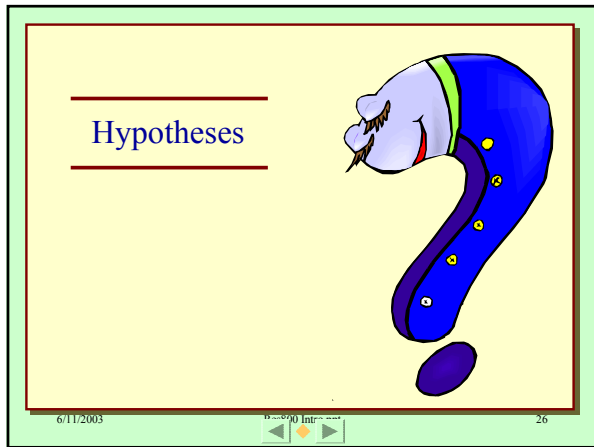
RESEARCH HYPOTHESIS
 Smiling at a professor when he lets you out of class early will result in more early dismissals.

OBSERVATION
 Half of the class smile at a professor each time he lets you out of class early.

OBSERVATION
 People in the front row smile at a professor when he lets you out of class early.

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Research Hypothesis

- A statement of what the researcher expects to find expressed in words.
 - The heart of the research project.

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Testable vs. Untestable Hypotheses

- **Testable**
 - A hypothesis that can be evaluated as being either correct or incorrect.
- **Untestable**
 - A hypothesis that cannot be evaluated as being either correct or incorrect.

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Where Research is Done

- **Laboratory**
 - **Benefits**
 - Control
 - Clear measurement
 - No extraneous variables.
 - **Problems**
 - Generalizability.
 - Realism.
- **Field**
 - **Benefits**
 - Realism
 - Generalizability.
 - **Problems.**
 - Control.

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Types of Research

- **Basic Research**
 - Research where the goal is to discover some basic scientific principles
- **Applied research.**
 - Research where the goals is to solve some practical, day-to-day problem.

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Types of Research #2

- **Program Evaluation.**
 - Research whose goal is to evaluate the effectiveness of some major social intervention.
- **Replication**
 - Research that duplicates another study with the goal of verifying its results.

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Major Goal of the Course

*GIVE YOU THE BASIC KNOWLEDGE
NEEDED TO UNDERSTAND, INTERPRET,
AND EVALUATE ROUTINE RESEARCH.*

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The End

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