Paradigma Penelitian Kuantitatif Dalam Penelitian Pendidikan

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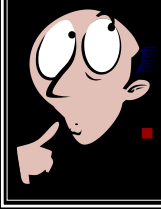
Apa keuntungan ikut penelitian?



Membiasakan:

- Berpikir kritis
- Berpikir rasional
- Menghargai karya orang lain
- Menghargai 'proses & produk'
- Makin mensyukuri ciptaan Tuhan

Mengapa Meneliti?

- Syarat menyelesaikan suatu jenjang pendidikan
- *Problem-solving* permasalahan yang *up to date*
- Beasiswa S1, S2 & S3
- '*Poin & Coin*'
- Lainnya

Penelitian: Mengapa penting?

- Banyak beasiswa yang ditawarkan adalah *scholarship by research*
- Ada peluang S2 langsung S3 (4 tahun) melalui PDSU *by research*

- Aplikasi beasiswa

(Hampir) Seluruh beasiswa yang ditawarkan kepada lulusan S1 mensyaratkan adanya rancangan awal penelitian (*research*) dalam bentuk proposal

Latar Belakang Penelitian

- Kesadaran keterbatasan pengetahuan, pemahaman, dan kemampuan
- Pemenuhan rasa ingin tahu
- Pemecahan masalah
- Pemenuhan pengembangan diri.

Paradigma Penelitian

- Penelitian Kuantitatif
- Penelitian Kualitatif
- *Mixed Methods*

Source: Donald Ary et all. (2010)

	Quantitative	Qualitative
Purpose	To study relationships, cause and effect	To examine a phenomenon as it is, in rich detail
Design	Developed prior to study	Flexible, evolves during study
Approach	Deductive; tests theory	Inductive; may generate theory
Tools	Uses preselected instruments	The researcher is primary data collection tool
Sample	Uses large samples	Uses small samples
Analysis	Statistical analysis of numeric data	Narrative description and interpretation

Experimental Research

- Experimental research involves a study of the effect of the systematic manipulation of one variable(s) on another variable.
- The manipulated variable is called the experimental treatment or the independent variable.
- The observed and measured variable is called the dependent variable
- In experiments, you seek to control all other variables that might influence the dependent variable.

Experimental Research

- To have a "true" experiment, researchers must use a random process such as a coin toss to assign available subjects to the experimental treatments.
- With random assignment, each subject has an equal and independent chance of being assigned to any group;
- thus, the assignment is independent of the researcher's personal judgment or the characteristics of the subjects themselves.

Experimental Research

- Sometimes, however, researchers cannot randomly assign subjects to experimental treatments for a study.
- The experimenter must use already assembled groups such as classes. In this case, the research is called **quasi-experimental**

The Type of Definition

- A **constitutive definition** is a formal definition in which a term is defined by using other terms. It is the dictionary type of definition.
- An **operational definition** ascribes meaning to a construct by specifying operations that researchers must perform to measure or manipulate the construct.

Variable

- A **variable** is a construct or a characteristic that can take on different values or scores
- There are several ways to classify variables. Variables can be categorical, or they can be continuous
- The simplest type of categorical variable has only two mutually exclusive classes and is called a **dichotomous variable**

Variable

- When an attribute has an infinite number of values within a range, it is a **continuous variable.**
- As a child grows from 40 to 41 inches, he or she passes through an infinite number of heights. Height, weight, age, and achievement test scores are examples of continuous variables.

Variable

- Independent variables are antecedent to dependent variables and are known or are hypothesized to influence the dependent variable, which is the outcome.
- The treatment is the independent variable and the outcome is the dependent variable (in an experimental research).
- The opposite of variable is **constant.** A constant is a fixed value within a study.

Research Problem

Characteristics of a Good Research Problem

- The problem is significant (it will contribute to the body of knowledge in education).
- The problem is one that will lead to further research.
- The problem is researchable (it can be investigated through the collection of data).
- The problem is suitable (it is interesting and suits the researcher's skills, time, and available resources).
- The problem is ethical (it will not cause harm to subjects).

The Problem Statement (in Quantitative Research)

- The **problem statement** in quantitative research specifi es the variables and the population of interest.
- The problem statement can be a declarative one such as "This study investigates the effect of computer simulations on the science achievement of middle school students."

An example:

- Problem Statement: "This study investigates the effect of computer simulations on the science achievement of middle school students."
- The statement can ask a question about a relationship between the two (or more) variables.

"What is the relationship between use of computer simulations and achievement in middle school science?"

The Hypothesis in Quantitative Research

- Hypothesis tells the researcher what procedure to follow and what type of data to gather and thus may prevent a great deal of wasted time and effort on the part of the researcher.

The Hypothesis in Quantitative Research

Two reasons for stating a hypothesis before the data-gathering phase of a quantitative study are

- (1) a well-grounded hypothesis indicates that the researcher has sufficient knowledge in the area to undertake the investigation, and
- (2) the hypothesis gives direction to the collection and interpretation of the data;

Deriving Hypotheses

- Inductive Hypothesis
- In the inductive procedure, the researcher formulates an **inductive hypothesis** as a generalization from apparent observed relationships;
- That is, the researcher observes behavior, notices trends or probable relationships, and then hypothesizes an explanation for this observed behavior.

Deriving Hypotheses

- Deductive Hypothesis
- A hypothesis derived from a theory is known as a **deductive hypothesis.**

These hypotheses have the advantage of leading to a more general system of knowledge because the framework for incorporating them meaningfully into the body of knowledge already exists within the theory.

Characteristics of a Usable Hypothesis

- A hypothesis states the expected relationship between variables
- A hypothesis must be testable
- A hypothesis should be consistent with the existing body of knowledge
- A hypothesis should be stated as simply and concisely as possible

Type of Hypothesis

- The Null Hypothesis (h_0)
- The null hypothesis is a statistical hypothesis.
- It is called the null hypothesis because it states that there is no relationship between the variables in the population.
- A null hypothesis states a negation (not the reverse) of what the experimenter expects or predicts.

The Null Hypothesis

- A researcher may hope to show that after an experimental treatment, two populations will have different means, but the null hypothesis would state that after the treatment the populations' means will *not* be different.
- Statistical tests are used to determine the probability that the null hypothesis is true.

The Alternative Hypothesis

- The alternative hypothesis is the opposite of the null hypothesis

The Quantitative Research Plan

- Problem
- Hypothesis
- Methodology, include the proposed research design, the population of concern, the sampling procedure, the measuring instruments, and any other information relevant to the conduct of the study
- Data analysis

Classifying Experimental Design

Pre Experimental Design

- Design-1 One-group pretest-posttest design

Design 1: One-Group Pretest–Posttest Design

Pretest	Independent	Posttest
Y_1	X	Y_2

Pre Experimental Design

- Design-2 Static group comparison

Design 2: Static Group Comparison

Group	Independent Variable	Posttest
E	X	Y_2
C	—	Y_2

True Experimental design

- Design 3: Randomized Subjects, Posttest-Only Control Group Design

Design 3: Randomized Subjects, Posttest-Only Control Group Design

	Group	Independent Variable	Posttest
(R)	E	X	Y_2
(R)	C	—	Y_2

True Experimental design

- Design 4: Randomized Matched Subjects, Posttest-Only Control Group Design

Design 4: Randomized Matched Subjects, Posttest-Only Control Group Design

	Group	Independent Variable	Posttest
(M_c)	E	X	Y_2
	C	—	Y_2

True Experimental design

- Design 5: Randomized Subjects, Pretest–Posttest Control Group Design

Design 5: Randomized Subjects, Pretest–Posttest Control Group Design

	Group	Pretest	Independent Variable	Posttest
(R)	E	Y_1	X	Y_2
(R)	C	Y_1	—	Y_2

Dan design lainnya..

Terimakasih