

## PENINGKATAN PROFESIONALISME GURU MELALUI PENELITIAN PENDIDIKAN

Oleh:  
Pujiyanto  
pujiyanto@uny.ac.id

FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM  
UNIVERSITAS NEGERI YOGYAKARTA

### APA YANG ADA DALAM PIKIRAN GURU TENTANG PENELITIAN?

- Penelitian pendidikan itu apa saja?
- Topik atau objek apa saja yang (harus) diteliti?
- Bagaimana metode penelitian yang digunakan?
  - Lokasi penelitian dimana?
  - Penelitian 'menyulitkan' guru
- Guru tidak ada waktu untuk penelitian
  - Tidak ada dana penelitian
  - Dan lain-lain...



### 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



### MENGAPA PERLU PENELITIAN?

- Penelitian dilakukan untuk mencari 'jawaban atas persoalan'
- Penelitian berusaha memenuhi kebutuhan rasa ingin tahu setiap manusia yang 'mau berubah'



### APA YANG (AKAN) DITELITI?


- Permasalahan 'yang belum' ditemukan solusinya
- Permasalahan 'up to date'
- Upaya ke arah 'temuan baru' dalam rangka HKI, PATEN dll.
- Lainnya...



## MENGAPA PENELITIAN PENDIDIKAN?

- Perubahan **Permenpan No. 84/1993** menjadi **Permenpan No. 16/2009** yang diberlakukan mulai 1 Januari 2013 tentang jabatan fungsional guru dan angka kredit guru

"Guru wajib mengajukan DUPAK per tahun **dengan bukti fisik dari setiap unsur guna dinilai** dan nilai yang diperoleh dikumulatif sampai tercapai angka kredit untuk naik pangkat setingkat lebih tinggi, begitu juga pengembangan profesi guru yang akan naik pangkat dari III/b ke atas, **diwajibkan membuat karya inovatif** berupa penelitian, karya tulis ilmiah, alat peraga, modul, buku, atau karya teknologi pendidikan yang nilai angka kreditnya disesuaikan"



*Bagaimana memulai penelitian dalam pendidikan?*

- Pahami metode penelitian
- PEKA dengan permasalahan sekitar
- Mencoba berpartisipasi dalam setiap kesempatan (lomba, seminar, workshop dll.)

## PEKA

- Orang lain tidak dapat melihat keterkaitannya dengan ilmu kita, tapi kita **mampu menangkapnya sebagai fenomena yang dapat dijelaskan dengan ilmu kita.**



## DIMULAI DENGAN 'BERPIKIR'

- Berpikir kritis
- Berpikir kreatif



## KRITIS


- Fenomena yang tertangkap oleh mata mampu diolah dalam pikiran hingga **memunculkan berbagai pertanyaan yang menggelitik untuk dicari jawabannya**



## KREATIF

- Orang yg berpikir kreatif → **berpikir terbalik** dari orang pada umumnya






### PENGALIAN IDE


1. Banyak membaca jurnal ( hasil ) penelitian
2. Aktif di forum ilmiah
3. Tidak malu bertanya
4. (Belajar) menghargai karya orang lain

### MEMULAI DENGAN KARYA TULIS ILMIAH

- Setiap tahun (banyak) tawaran LKTI/KTI
- KTI merupakan awal yang baik dalam 'unjuk kerja'



### KARYA TULIS ILMIAH



- Ide kreatif didukung landasan teori yang sesuai
- Rasional dan logis
- Ikuti kaidah penulisan yang telah ditentukan

### BELAJAR DARI ANAK KECIL

- Rasa ingin tahu tinggi
- Tidak malu bertanya
- Tidak 'puas' dengan hanya satu jawaban atas pertanyaan



### PENTINGNYA KARYA ILMIAH

#### Karya Ilmiah Tingkatkan Daya Saing

**YOGYA OKID** - Sebanyak 50 orang mengikuti Pelatihan Pembisan Karya Ilmiah Nasional 2012 yang diadakan STIE Nusa Megarajayana di Hotel Pari Artha Yogyakarta baru-baru ini. Mereka terdiri dosen tetap yayasan, 10 dosen luar biasa, 7 tenaga kependidikan dan 19 mahasiswa.

"Dalam pelatihan ini kami menghadirkan beberapa narasumber yang berkompeten di bidangnya, seperti Dr Amir Husni SPi MP dari UGM, Jaka Sriyana PhD (UID dan Amsoi SH MM. Dengan pelatihan ini kami berharap bisa membekalkan motivasi kepada mahasiswa, dosen maupun peneliti, dalam meningkatkan karya ilmiah."

### PENTINGNYA KARYA ILMIAH

#### Banyak Dosen Tak Paham Menulis Karya Ilmiah

**MAGELANG**-Guru Besar Fakultas Ekonomi UGM, Prof Mulyono Kusno, menyatakan banyak dosen di kalangan dosen masih rendah. Karena banyak dosen yang tidak paham cara menulis buku dan karya ilmiah.

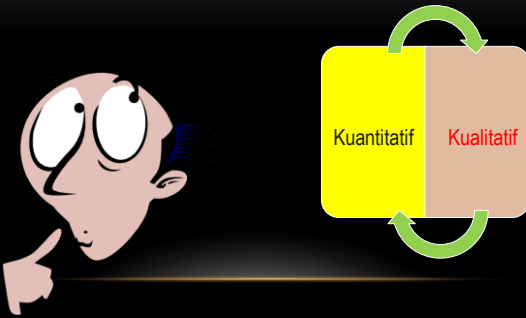
"Untuk menulis, seorang dosen yang baik haruslah dibekali dengan ilmu yang memadai. Hal ini akan sangat membantu dalam meningkatkan kualitas penelitian, tulisan, dan karya ilmiah lainnya, termasuk karya ilmiah yang akan dipublikasikan di jurnal internasional."

"Pendidikan merupakan salah satu faktor yang sangat penting dalam meningkatkan kualitas sumber daya manusia. Oleh karena itu, dosen sebagai tenaga kependidikan harus terus meningkatkan kualitas diri dan profesionalitasnya."

"Dosen sebagai tenaga kependidikan harus memiliki kemampuan yang memadai, baik itu dalam hal akademik maupun non akademik. Dengan demikian, dosen dapat memberikan pelayanan yang terbaik kepada mahasiswa dan masyarakat."

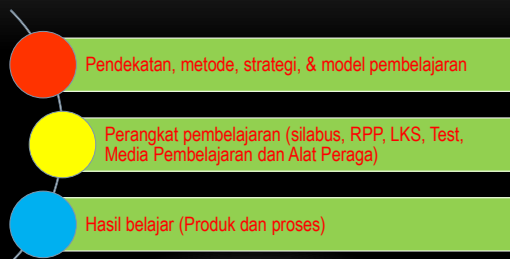


## PARADIGMA PENELITIAN

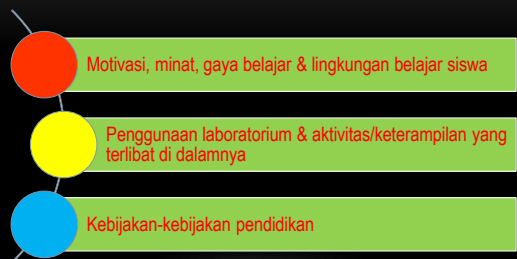


	Quantitative	Qualitative
<b>Purpose</b>	To study relationships, cause and effect	To examine a phenomenon as it is, in rich detail
<b>Design</b>	Developed prior to study	Flexible, evolves during study
<b>Approach</b>	Deductive; tests theory	Inductive; may generate theory
<b>Tools</b>	Uses preselected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

## APA SAJA YANG DAPAT DITELITI DALAM PENDIDIKAN?



## APA SAJA YANG DAPAT DITELITI DALAM PENDIDIKAN?



## 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 specifies 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 <sub>i</sub> )	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..

## PENELITIAN TINDAKAN KELAS (PTK)

- Guru (pasti) lebih memahami karakteristik siswanya selama proses pembelajaran dan mampu mengidentifikasi "permasalahan" selama PBM berlangsung
- Setiap guru yang aktif mengajar selalu memiliki kesempatan melakukan PTK
- PTK bukan menilai kinerja guru tetapi upaya untuk meningkatkan kualitas proses pembelajaran
- PTK tidak berorientasi pada hasil belajar siswa namun lebih ke arah aktivitas siswa selama proses pembelajaran

Harapannya, **apabila aktivitas siswa meningkat maka hasil belajarnya pun lebih baik**



#### BAGAIMANA KALAU PENELITIAN KUALITATIF?

- Profil gaya belajar siswa kelas .... SMA dalam pembelajaran .... materi ....
- Proses berpikir kritis siswa SMA kelas .... dalam penyelesaian soal essay materi .....
- Pola penyelesaian soal ..... materi ... oleh siswa SMA kelas ....

#### BAGAIMANA KALAU PENELITIAN KUALITATIF?

- Profil laboratorium kimia SMA yang mendukung implementasi Kurikulum 2013 studi kasus area Sleman Yogyakarta
- Profesionalisme guru Kimia SMA pasca sertifikasi studi kasus area Bantul Yogyakarta

#### PENELITIAN PENGEMBANGAN

- Pengembangan Modul Kimia berorientasi pada keterampilan proses untuk memfasilitasi kemandirian aktif siswa SMA kelas ...
- Pengembangan alat peraga eksperimen kimia untuk mendukung implementasi Kurikulum 2013 di SMA
- Pengembangan Perangkat Pembelajaran Kimia Bermuatan Pendekatan Saintifik di SMA
- dan lain-lain

TERIMAKASIH