EDUCATION RESEARCH (PEN 212)
Semester VI

Bahan Kuliah*

Dosen: Ari Purnawan

Prodi Pendidikan Bahasa Inggris

FBS UNY

*Ekstrak dari buku Conducting educational research (Tuckman)

Course Description

- This course provides sets of knowledge, trains a set of skills. This unit is an attempt to arouse students' awareness toward scientific researches particularly those of educational researches related to language education. The knowledge covers ontology, epistemology and axiology of the researches. The skills cover the search, the titling and the theoretizing research problems and the choosing of the form and the content of instruments with the discussion and the summarizing of data analysis. The set of attitudes cover rational, objective, and critical, sceptical (open), cooperative, and responsible related to the attitude to do the research.

Topic Coverage

- Research: definition
- Validity: internal and external
- The research process
- Research paradigms: quantitative, qualitative, mixed
- Stages of research
- Research Proposal writing
- Reporting research result

Some definitions

- Research is a systematic attempt to provide answers to questions.
- Two provinces: basic and applied research
- Basic research is concerned with the relationship between two or more variables. It does not provide immediately usable information for altering the environment.
- The findings of basic research enables us to develop a product.
- Demonstration is the step to test the porduct ➔ the area of applied research.

Validity: internal and external

- Internal validity: if the outcome of the study is a function of the program or approach being tested rather than the result of other causes not systematically dealt with in the study.

  (e.g. the process of doing an experiment)

- External validity: if the results obtained would apply in the real world to other similar programs and approaches.

  (e.g. producing some (de)limitations)

Factors affecting internal validity

- History
- Selection
- Maturation
- Testing
- Instrumentation
- Statistical regression
- Experimental mortality
- Stability
- Expectancy
- combination

Factors affecting external validity

- Reactive effects of testing
- Reactive effects of selection bias
- Reactive effects of experimental arrangements
- Multiple treatment interference

Characteristics of research process

- Logical
- Empirical
- Reductive
- Replicable and transmittable

Ethical considerations

- The right to privacy or nonparticipation
- The right to remain anonymous
- The right to confidentiality
- The right to expect experimenter responsibility

Steps in research process

- Identifying a problem
- Reviewing the literature
- Constructing a hypothesis
- Identifying and labeling variables
- Constructing operational definition
- Manipulating and controlling variables
- Constructing research design
- Identifying and constructing devices for observation and measurement

Steps in research process (cont.)

- Constructing questionnaires and interview schedules
- Carrying out statistical and data analyses
- Writing the research report (may stop here)
- Conducting evaluation studies (this can be a new start, as a part of the demonstration stage)
- Conducting qualitative research (can be another study)

The research problem

- Should ask the relationship between variables
- Stated in question form
- Empirically testable
- Avoiding moral or ethical judgements

The literature review

- Discovering important variables
- Distinguishing what has been done from what needs to be done
- Synthesizing and gaining perspective
- Determining and supporting meanings and relationships
- Establishing the context
- Establishing the significance

Hypotheses

- Deductive: from general to specific; general expectations about events are used to arrive at more specific expectations

- Inductive: starts with specific observations and combines them to produce a more general statement, namely a hypothesis.

Null and alternative hipotheses

- Null: stating that there is no relationship/no effect/no difference

- Alternative: vice versa.

Variables

- Independent
- Dependent
- Moderator
- Control
- Intervening

Controlling for selection (experimental and control groups)

- Randomization
- Matched pair technique
- Matched group technique
- Using subjects as their own control
- Limiting the population
- The moderator variable as selection device

Research designs

A. Pre-experimental design

1. One shot case study

2. One group pretest-posttest design

3. Intact group comparison

B. True experimental design

1. Posttes only control group design

2. Pretest posttest control group design

Research design (cont.)

- C. Factorial design
- D. Quasi experimental design
- 1. Time series
- 2. Equivalent time sampel design
- 3. Nonequivalent control group desgn
- 4. Systematically assigned control group design
- 5. separate sample pretest-posttest design
- 6. Patched-up desgn

Test reliability

- 1. Test-retest
- 2. Alternate-form
- 3. split-half
- 4. Kuder-Richardson

Test validity

- Concurrent validity
- Construct validity
- Content validity

Statistical Analyses

- Significance testing (hypothesis testing)
- Measures of central tendency and variability
- Mean, median, standard deviation

Statistical tests

A. parametric

- Assuming normal distribution
- Assuming homogeneity of variance
- Assuming continuous equal interval measures

B. Nonparametric

- Requires no assumption as above

The t-test

- Allows us to compare two means to determine the probability that the difference between the means is a real difference rather than a chance defference.

Parametric correlation

(Pearson product moment correlation)

Is used to deal with two interval variables, each of which is normally distributed.

The anova

- Analysis of variance
- To find out difference between means.
- Can be used with more than two variables at a time

Nonparametric techniques

- Mann-Whitney U test → "t-test" for nonparametric data (does not require normally distributed data and equal sample variances).

- The independent: nominal

- The dependent: ordinal

Spearman rank-order Correlation

- Comparing two sets of ranks to determine their degree of equivalence. ➜ ordinal data

- It is often chosen as an alternative, esp. when the product moment correlation analysis cannot be carried out (because the sets of data do not meet the parametric criteria)

Chi square test

- To compare the frequencies.

- Used for two or more nominal variables.

- The result will tell us whether the frequency in one cell is statistically different from the frequency in another cell.

References

- Johnson, B., and Christensen, L. 2008. *Educational research: Quantitative, qualitative, and mixed approaches. 3rd ed*. London: Sage Publications.

- Tuckman, B. W. 1988. *Conducting educational research. 3rd ed*. Orlando: Harcourt Brace Jovanovich Publishers.