WEEK 5

Outline

I. Classification & Types of Research
II. Research Design
III. Class Discussion

II. Classification & Types of Research
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<table>
<thead>
<tr>
<th>CLASSIFICATION</th>
<th>TYPES</th>
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<tr>
<td>I). Application</td>
<td>1. Pure/Basic Research</td>
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<td></td>
<td>2. Applied Research</td>
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<tr>
<td>II). Objectives</td>
<td>1. Descriptive research</td>
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<td></td>
<td>2. Exploratory</td>
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<td>3. Correlational</td>
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<tr>
<td></td>
<td>4. Explanatory</td>
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<td>III). Types of information sought</td>
<td>1. Quantitative research</td>
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<td>2. Qualitative research</td>
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<td></td>
<td>3. Mixed methods</td>
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CLASSIFICATION BY APPLICATION

<table>
<thead>
<tr>
<th>PURE/BASIC (Fundamental research)</th>
<th>APPLIED RESEARCH</th>
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<tbody>
<tr>
<td>• Address theoretical issues</td>
<td>• Produce solution to a specific issue/problem</td>
</tr>
<tr>
<td>• Expand existing knowledge</td>
<td>• Seek additional knowledge</td>
</tr>
<tr>
<td>• Explore the unknown</td>
<td>• Solve immediate, practical problem</td>
</tr>
<tr>
<td>• Emphasize explanation</td>
<td>• Emphasize application</td>
</tr>
<tr>
<td>• Complex methodology</td>
<td>• Simple methodology</td>
</tr>
<tr>
<td>• Seeks answers, solutions, developments, and/or uses related to topics/problems that are new &amp; different</td>
<td>• Uses known information, products, and/or services</td>
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<tr>
<td>• Long-term application</td>
<td>• Short-term application</td>
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e.g., of Pure Research

What is the strength of Malaysian families?
- Developing family strength inventory of Malaysian families.

Why don’t people help others?
- Stimulate new ways of thinking about apathy behaviour / helping behaviour.

What are the family dynamics in polygamous marriage?
e.g., of Applied Research

- Factors related to adolescents’ conduct problem.
  - Information relevant for parents, educators, police, policy makers, etc., who are trying to prevent delinquency.
- Action research, social impact assessment research are popular examples of applied research.
- Most social science research are applied in nature.

<table>
<thead>
<tr>
<th>CLASSIFICATION BY OBJECTIVES</th>
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<tbody>
<tr>
<td>Descriptive</td>
</tr>
<tr>
<td>Describe systematically a situation/topic of interest.</td>
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<tr>
<td>e.g., describe the attitude of UPM students toward smoking.</td>
</tr>
<tr>
<td>Also use to develop, refine, and/or test measurement tools and procedures</td>
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<tr>
<td>e.g., describe the prevalence of smoking amongst UPM students.</td>
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<tr>
<td>Correlational</td>
</tr>
<tr>
<td>Determine the extent of the existence of a relationship between 2 or &gt; aspect of a situation.</td>
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<tr>
<td>e.g., what is the relationship between smoking and the incidence of heart attack?</td>
</tr>
<tr>
<td>Explanatory</td>
</tr>
<tr>
<td>Clarify why and how there is a relationship between 2 aspects of a situation.</td>
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<tr>
<td>e.g., why cigarette smoking results in heart attack?</td>
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<table>
<thead>
<tr>
<th>CLASSIFICATION BY INFORMATION SOUGHT</th>
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<tbody>
<tr>
<td>ASPECTS</td>
</tr>
<tr>
<td>Views on the world</td>
</tr>
<tr>
<td>Research Purpose</td>
</tr>
<tr>
<td>Approach</td>
</tr>
<tr>
<td>Researcher’s role</td>
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</tbody>
</table>
### General Sequence for Qn & Ql. Method

<table>
<thead>
<tr>
<th>QN</th>
<th>QL</th>
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<tbody>
<tr>
<td>Observe using structure questionnaire</td>
<td>Observe/ask questions with open-ended answers</td>
</tr>
<tr>
<td>Data entry</td>
<td>Record what is said and/or done</td>
</tr>
<tr>
<td>Data analysis</td>
<td>Interpret</td>
</tr>
<tr>
<td>Data interpretations</td>
<td>Return to observe/ask more questions (recurring cycle 2-4)</td>
</tr>
<tr>
<td>Draw conclusions</td>
<td>Theorizing</td>
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### Mixed methods

- Collect both quantitative & qualitative data
- Develops rationale for mixing
- Integrates data at different stages of inquiry
- Employs both qualitative and quantitative data analysis
- Both statistical and narrative reports.
III. Research Design

What is Research Design?

A plan, structure and strategy of investigation to obtain answers to research questions or problems

It includes an outline of what the investigator will do from writing the hypotheses and their operational implications to the final analysis of data

(Kerlinger, 1986:279).

Purpose of Research Design

- Identify the most appropriate method in conducting research
- Identify research variable & how to operationalize it
- Identify the most economical method in conducting the research

Identify robust and objective research
TYPES OF RESEARCH DESIGN

<table>
<thead>
<tr>
<th>Experimental Research</th>
<th>Non-Experimental Research</th>
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<tbody>
<tr>
<td>• True Experimental Designs</td>
<td>1. Historical Research</td>
</tr>
<tr>
<td>• Quasi-Experimental Designs</td>
<td>2. Descriptive Research</td>
</tr>
<tr>
<td></td>
<td>a) Case Studies</td>
</tr>
<tr>
<td></td>
<td>b) Survey Research</td>
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<td>3. Developmental Research</td>
<td></td>
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<tr>
<td></td>
<td>a) Longitudinal Research</td>
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<tr>
<td></td>
<td>b) Cross-Sectional Research</td>
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<tr>
<td>4. Correlational Research</td>
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HISTORICAL RESEARCH/HISTORGRAPHY

What? Attempt to identify: Source of Data Limitations

| Study past events | i) Factors from the past that have impact on the present of the future. | Documents, Oral histories, remains, remnant, and relics | Generalizability |
| Study events | ii) Factors from two or more periods in the past that may be compared and may or may not be related to the present or the future. |
| Study events | iii) Factors from one or more periods in the past that are compared with or related to the future. |

DESCRIPTIVE RESEARCH

What? Case Study Survey

| Describe the current state of affairs of a phenomenon at the time of the study. | Study an individual or an institution as detailed as possible. |
| Basic tools: Indepth interview Qualitative observation | Study directly the characteristics of population thro’ surveys. |
| Examines the frequency & relationships between psychological and sociological variables - attitudes, beliefs, prejudice, opinion. |
| Basic tools: Questionnaire Interviews | |
### CASE STUDY

1. Focus on one individual or one thing, allows close examination
2. Encourage use of several techniques.
3. Richer data.
4. Suggestions directions for further study.

### SURVEY RESEARCH

1. Give broad picture of phenomenon studied.
2. Survey research is efficient.
3. Can yield remarkably accurate results

### ADVANTAGES

#### Descriptive Research

- Focus on one individual or one thing, allows close examination
- Encourage use of several techniques.
- Richer data.
- Suggestions directions for further study.

- Time consuming
- Biased view of one person
- Provide depth, not breadth
- Not for establishing any cause-and-effect links
- Generalizability is limited

#### Developmental Research

Study patterns and sequences of growth and/or change as part or function of time.

**Longitudinal Research**

- Examines one group of people repeatedly over time.
- Examines change over an extended period of time.
- Study same respondents studied according to age increment

**Cross-Sectional Research**

- Examines several groups of people at one point in time.
- Examine age differences rather than age changes.
- Study different respondents with different age categories.

### DISADVANTAGES

#### Bias

- Interviewer bias
- Questionnaire bias

- Uncooperative respondents
  - Refused to answer as in mail surveys

- Time consuming
- Biased view of one person
- Provide depth, not breadth
- Not for establishing any cause-and-effect links
- Generalizability is limited

### DISADVANTAGES

#### Developmental Research

- Time consuming
- Biased view of one person
- Provide depth, not breadth
- Not for establishing any cause-and-effect links
- Generalizability is limited

#### Longitudinal Research

- Requires no long-term administration or cooperation between staff and participants

### ADVANTAGES

#### Longitudinal Research

- Reveals extensive detail on the process of development
- High comparability of (the same) groups
- Allows for the study of continuity between widely differing groups
- Allows modified cause and effect speculation about the relationship between variables

- Inexpensive
- Short time span
- Low dropout rate

- Requires no long-term administration or cooperation between staff and participants
### DISADVANTAGES

<table>
<thead>
<tr>
<th>Longitudinal Research</th>
<th>Cross-Sectional Research</th>
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<tbody>
<tr>
<td>Expensive to conduct</td>
<td>Limits comparability of groups</td>
</tr>
<tr>
<td>Potential for high dropout rate (mortality/attrition)</td>
<td>Gives no idea as to the direction of change that a group might take.</td>
</tr>
<tr>
<td>Examines people of the different chronological age</td>
<td>Examines people of the same chronological age who may be of different maturational ages.</td>
</tr>
<tr>
<td>Reveals continuity of development on a person-by-person case.</td>
<td>Reveals nothing about the continuity of development on a person-by-person case.</td>
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### Correlational Research

- **Describes the linear relationship between 2 or more variables**
  - no hinting on the effect of one variable to another

- **Determine the extent to which variations/change in one factor/variable, corresponds/relates to variations in one or > other factors/variables.**

### Focus on the amount of variance shared between 2 variables.

1. **That is the more 2 things have in common, the more strongly related they will be to each other**
   - e.g., relationship between reading & mathematics vs. reading & physical strength.
Frequent measure used to assess degree of relatedness is the correlation coefficient:
- a numerical index reflecting the relationship between 2 variables.
- expressed as a number between -1.00 and +1.00
- Strength increases as amount of variance one variable shares with another increases.

The important quality of a correlation coefficient is not its sign, but its absolute value.
- A correlation of -.75 is stronger than a correlation of +.65, just as a correlation of +.58 is weaker than a correlation of -.70.
- Pearson product moment correlation – search detail.

Correlations can be direct/positive:
- as one variable changes in value, the other changes in the same direction.

Correlations can also be indirect/negative:
- as one variable changes in value in one direction, the other changes in the opposite direction.
Experimental Research Design

- Focuses on analyzing the **cause and effects** of a phenomenon.
- To test the presence of a distinct cause and effect:
  - A does cause B to happen?
  - A does not cause B to happen?

  (change in one factor are causally related to changes in the other – there are not just related, i.e., they share something, but one directly affects the other)

Expt. design delineates several procedures that must be followed by researchers, as follows:

1. **Determinates control group randomly** which, based on statistical characteristics is similar to the experimental or treatment group
   (similar in statistic – characteristics of the population used so that the subjects of the study are comparable and not extreme, for example, heights not exceeding 7 feet, between the two groups).

2. Control and experimental groups originate from the same population (this will help to determine similarities in terms of statistics)

3. Subjects in the control group are not exposed to the treatment, intervention or changes or variable(s) that will be manipulated.

4. Both groups must comprise **equal numbers of subjects**.

5. **Conduct pre-test** for the dependent variable for both control and experimental groups.
6. **Conduct post-test** for the dependent variable for both control and experimental groups.

7. Your study is complete after the post-test. You can conduct the post-test as many times as needed even when the experiment is taking place. Your research results are interpreted based on the differences in the post-tests between the experimental and control groups.

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**Hawthorne and Placebo effects**

- are two important issues that need to be given attention in experimental research.

- *Hawthorne effect* refers to the inclination of the research subjects to behave differently when they realized that they are being studied.

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- *Placebo effect* refers to the tendency of the subjects to feel themselves to be ‘better-off’ when they know that they are being treated.

- To ensure that the effects of both *Hawthorne* and *Placebo* can be controlled, you need to make certain that the subjects have no knowledge of their positions in the experiment (i.e., whether in the control or experimental group).
**Quasi Experiment**

- is designed to **parallel** true experiment.
- not lower in value than true experiment.
- sometimes better and more realistic than the true experiment.

- sometimes known as expo-facto research since, done after phenomena took place.
- IV is difficult to manipulate as in the true experiment.
- does not emphasize the element of randomness as in the true experiment.

- subject is not randomly selected to be in any kind of situation.
- subjects are chosen based on the IV (e.g., age & sex).
- the validity for the quasi experimental research is lower than the true experimental research.
Quasi experimental research can be classified according to three categories:

1) Quasi experiment using 'subject variables'
   - Comparison between different subjects
   - Pre-test and post-test measurements of the dependent variables

2) Quasi experiment using 'environmental variable' (time series design)
   - Comparison among the same subjects
   - Several observations made on the same subject for a period of time

3) Quasi experiment involving time panel/cohort:
   - Testing for developmental change. For example, comparing the academic achievement of PJJ students cohort of May 2003/04 with those of May 2005/6

Example of Quasi-experimental Research

1) The Effects of Taking Breakfast
   Experimental Group?
   Control Group?

2) The Effects of Cigarette Smoking on Unborn Child
   Experimental Group?
   Control Group?

Class Discussions

Write the objectives for the research entitled “Factors related to academic achievement amongst FEM 3002 students of UPM.”

1). Decide what approach & research design you would use to conduct the research.
2). Draw your model (conceptual framework or conceptual model).
3). Write the relevant objectives & hypothesis for the research.