A Brief Introduction

RESEARCH

The Research Process

- The research process is systematic and has several stages

1. **Selection of topic**

The Research Process

2. **Narrowing of topic**

General topic: Global Warming

Specific: The Causes and Effects of Global Warming in NorthWest Trinidad.

The Research Process

3. **Thesis**

   Develop your main idea from your topic

The Research Process

4. Devise the research instrument

- Decide how the research will be performed (books, interviews etc.)

The Research Process

5. **Gathering data**
6. **Recording data**
7. **Analyzing and evaluation of the data**

The Research Process

- 8. **Presentation of results**
- 9. **Review of results**

Data Collection

- Quantitative Data

- Data which can be expressed in a numerical fashion. For example, the number of eyes you have (2), the temperature (32◦ C)

Data Collection

- Qualitative Data

- Data which can't be expressed by a number. For example, your hair colour eye and how much you like a video game.

Qualitative Data	Quantitative Data
Overview: • Deals with descriptions. • Data can be observed but not measured. • Colors, textures, smells, tastes, appearance, beauty, etc. • Qualitative → Quality	**Overview:** • Deals with numbers. • Data which can be measured. • Length, height, area, volume, weight, speed, time, temperature, humidity, sound levels, cost, members, ages, etc. • Quantitative → Quantity
Example 1: ***Oil Painting***  **Qualitative data:** • blue/green color, gold frame • smells old and musty • texture shows brush strokes of oil paint • peaceful scene of the country • masterful brush strokes	**Example 1:** ***Oil Painting***  **Quantitative data:** • picture is 10" by 14" • with frame 14" by 18" • weighs 8.5 pounds • surface area of painting is 140 sq. in. • cost $300

Example 2:

Latte

Qualitative data:

- robust aroma
- frothy appearance
- strong taste
- burgundy cup

Example 2:

Latte

Quantitative data:

- 12 ounces of latte
- serving temperature 150° F.
- serving cup 7 inches in height
- cost $4.95

Example 3:

Freshman Class

Qualitative data:

- friendly demeanors
- civic minded
- environmentalists
- positive school spirit

Example 3:

Freshman Class

Quantitative data:

- 672 students
- 394 girls, 278 boys
- 68% on honor roll
- 150 students accelerated in mathematics

Data Sources

- **Primary sources**
  Primary sources are original materials on which other research is based.

- **Secondary sources**
  Secondary sources interpret and analyse primary sources, like text books or journals which review others' work

Reliability and Validity

- Both elements judge the accuracy and credibility of a source.

Reliability

- **Reliability – The ability of the source to provide the data.**

- Aspects to examine to determine reliability:

Reliability

- **Author** - How qualified is the author to give information on the subject?
  - **Professional standards – How high are the author's standards?**

Publisher – The reputation of the publisher as far as you can determine it

Reliability

- **Organisation or Institution** – The reputation of the organisation that the data comes from (eg, data from the Central Statistical Office should be very reliable)

- **Research method – Is the data collection method chosen likely to generate relevant data?**

Validity

- Validity refers to the truth of the data.
- A source can have high levels of reliability, but have low levels of validity, eg, very old data
- In evaluating validity we need to look at **accuracy** and **bias.**

Validity - Accuracy

- Aspects of data to evaluate **accuracy**:
- **Currency** – The date the data was generated
- **Relevance**
- **Data collection** – Precision of recording

Validity - Accuracy

- **Sample size –** should be neither too large nor too small
- **Replicable** -other sources should have similar information

Validity - Bias

- Evaluation of **bias**:
- Adequate representation of the whole in a sample
- Cultural, political or social bias
- Faulty research methods
- Aim of the source in presenting the data (hidden agendas)

Methods

- Surveys
  - The collection of data from a given source for the purpose of analysis of a particular issue
  - Surveys can employ several tools of data collection, eg, interviews, questionnaires and obervation

Methods

- Case Studies
  - Collection and presentation of detailed information about a particular participant or group.
  - A form of qualitative research
  - Draws conclusions about that participant or group in that specific context.
  - Several data collection methods can be used

Methods – Data Collection

- Interviews
  - Formal or informal
  - Structured or unstructured
  - Small or large scale (focus groups)
- Produce more qualitative data (especially unstructured)

Methods – Data Collection

- Observation
  - Direct (subject knows it is being observed)
  - Unobtrusive (subject is ignorant of being observed)
  - Participant (researcher takes part in the activity) This can be direct or unobtrusive
  - Can be used to produce both quantitative and qualitative data

Methods – Data Collection

- Questionnaires
  - predominantly closed-ended, or forced-choice, questions for quantitative data (eg, yes/no or multiple choices)
  - Open-ended questions for more qualitative data

Methods – Data Collection

- Experimentation
  - Not usually used for social research
  - Used when high levels of variable control and specific results are required
  - Produces quantitative data

Methods – Data Collection

- Secondary sources
  - Eg, Reading other research
  - Type of data can be of either type

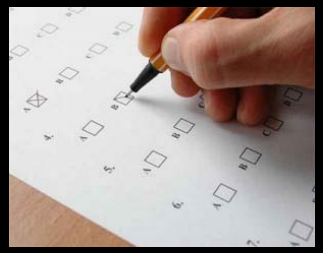
Methods

- Things to consider when choosing methods:
  - Cost
  - Expertise needed
  - Time frame
  - Reliability
  - Validity
  - Ethics & sensitivity of topic
  - Accessibility

Method Pros / Cons

Method	Advantages	Disadvantages
Observation 	•Complete •Creates detailed understanding •Avoids validity problems like: •Perception •Bias •Memory •Translation •Deliberate misguidance by subject	•Time consuming •Accessibility issues are frequent •Observer bias •Subject behaviour may change under observation (direct) • Unfavourable response if observer is discovered (unobtrusive) •Large amount of data gained •Ethical issues

Method Pros / Cons

Method	Advantages	Disadvantages
Questionnaires 	•Cheap •Easy •Quick to administer (email, mail, phone) •Large target audience •Trends can be identified •Statistical analysis possible	•Incomplete answers •Misinterpretation •Hard to verify answers

Method Pros / Cons

Method	Advantages	Disadvantages
Interviews 	•Can be fast (focus groups) • Provide subject point of view •Face to face contact •Misinterpretation is reduced •In depth responses	• Time consuming (individual) •Can be costly •Data is difficult to analyse •Training is usually required •All opinions may not be heard (focus group)

Method Pros / Cons

Method	Advantages	Disadvantages
Secondary Sources 	•Cheap access to large amount of data •Rapid compilation is possible •No special training required	•Data comparison between sources difficult •No control over method •Questionable validity and reliability •Data may be in a format other than what is required

Sample Selection

- Sample – A representative portion of a whole
- Random
  - Used to prevent bias
- Purposive
  - Usually picked by the researcher
  - Used to get specific data from specific groups (Eg, smokers)

A Brief Introduction

RESEARCH

END