Republic of the Philippines
Department of Education
REGION III
SCHOOLS DIVISION OFFICE OF NUEVA ECIJA

LEARNING ACTIVITY SHEET
COMPUTER 6
IT& RESEARCH
2nd Quarter, Week 3

Name of Learner: _____ Date: _____

Section: _____

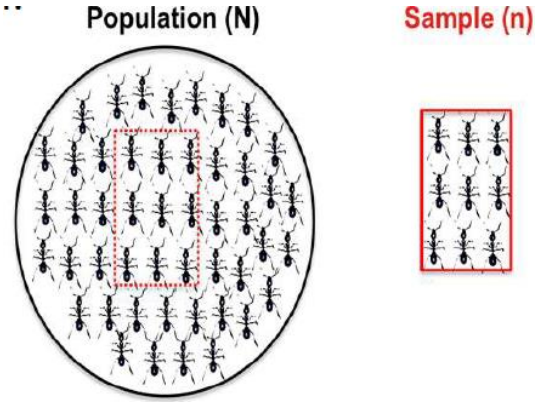
Sampling designs and procedure
Writing the Methodology
Key Areas of the Research Proposal

Background Information

SAMPLING DESIGN AND PROCEDURE

SAMPLING

- The process of obtaining information from a subset (sample) of a larger group (population)
- Selecting some of the units or elements in a population to draw conclusions about the entire population.



How do you do a survey/Test?

Study or observe the element of

Sample - contacting a portion/subgroup of the population (e.g., 10% or 25%) or just one or few segments

- best with a very large population (N)
- easiest with a homogeneous population

Census - the entire population

- feasible when population("n") is small
- or the cost of making an error is high
- when the elements are different from each other

Characteristics of Sampling Technique

Advantages	Disadvantages
1. Cheaper	1. Inadequacy of samples
2. Save Time	2. Chances for bias
3. Accurate and reliable result	3. Chances of committing the errors in sampling
4. Suitable for carrying out different surveys even in a very large universe	4. Difficulty of getting the representative sample
5. Economical in nature	5. Untrained manpower

When conducting research, it is almost always impossible to study the entire population that you are interested in. If you were to survey the entire population, it would be extremely timely and costly. As a result, researchers use samples as a way to gather data.

STEPS IN SAMPLING DESIGN/PROCESS

1. Define Target population
2. Identify the Sampling frame
3. Select a sampling design or procedure
4. Determine the Sample size
5. Draw the sample/ Execute Sampling Design

1. DEFINE TARGET POPULATION

- All the elements related to the research problem is the population
- Complete group of specific population elements relevant to the research.

Example

- All students is 'population'
- MBA Students is 'target population'

2. IDENTIFY SAMPLING FRAME

- Draw a list of units from the specific population
- The list excludes unqualified ineligible elements from the population

Example

Students who have not paid the fee or joined late are not considered.
Students who eat McDonalds.

3. SELECTING A SAMPLING PROCEDURE

- **Probability**- every unit has an equal nonzero chance of being selected

Types and Techniques

1. **Random Sampling**- selected by using chance or random numbers, or an equal chance of being selected to be included in the sample. Also known as lottery or raffle sampling
2.

Example:

You have a population of 1,000 people and you wish to choose a simple random sample of 50 people. First, each person is numbered 1 through 1,000. Then, you generate a list of 50 random numbers (typically with a computer program) and those individuals assigned those numbers are the ones you include in the sample.

Advantage	**Disadvantage**
Minimal knowledge of population needed	Low frequency of use
Easy to analyzed data	Does not use researchers' expertise
	Larger risk of random error

3. **Systematic Sampling**- select a random starting point and the select every k^{th} subject in the population. Also called as interval sampling, there is a gap or interval between each selected unit in the sample

Example:

if the population of study contained 2,000 students at a high school and the researcher wanted a sample of 100 students, the students would be put into list form and then every 20th student would be selected for inclusion in the sample. To ensure against any possible human bias in this method, the researcher should select the first individual at random. This is technically called a systematic sample with a random start.

Advantage	**Disadvantage**
Moderate cost; moderate usage	Periodic ordering required
Simple to draw sample	
Easy to verify	

4. **Stratified/Mixed Sampling**- divide the population into at least two different groups with common characteristic(s), then draw SOME subjects from each group (group is called strata or stratum)

Example:

To obtain a stratified sample of university students, the researcher would first organize the population by college class and then select appropriate numbers of freshmen, sophomores, juniors, and seniors. This ensures that the researcher has adequate amounts of subjects from each class in the final sample

Advantage	Disadvantage
Assures representation of all groups in sample population	Requires accurate information on proportions of each stratum
Characteristics of each stratum can be estimated and comparisons made	Stratified lists costly to prepare

5. **Cluster Sampling**- grouped into subpopulations and lists of those subpopulations already exist or can be created. May be used when it is either impossible or impractical to compile an exhaustive list of the elements that make up the target population.

   Example:

   Let's say the target population in a study was church members in Mandaluyong. There is no list of all church members in the city. The researcher could, however, create a list of churches in Mandaluyong, choose a sample of churches, and then obtain lists of members from those churches.

Advantage	Disadvantage
Can estimate characteristics of both cluster and population	The cost to reach an element to sample is very high
	Each stage in cluster sampling introduces sampling error- the more stages there are, the more error there tends to be

- **Non-Probability**– sampling does not involve random selection or does not give individuals on the population of equal chances of being selected.

Type and Techniques

1. **Accidental/Convenience Sampling**-Use subjects that are easily accessible, or those whom researcher or interviewer meet by chance are included in the sample and get the reactions.

   Examples:

   Let's say that a researcher and professor at a University is interested in studying drinking behaviors among college students. The professor teaches a sociology 101 class to mostly college freshmen and decides to use his or her class as the study sample. He or she passes out surveys during class for the students to complete and hand in.

Advantage	Disadvantage
Very low cost	Variability and bias cannot be measured or controlled
Extensively used/understood	Projecting data beyond sample not justified
	Restriction of Generalization

2. **Purposive or Judgmental Sampling**-selected based on the knowledge of a population and the purpose of the study.

   Example:

   You want to conduct a tracer study of the graduates of a certain course for specific time frame. So, you do not get all the graduates but only the graduates of the BSED course from 2009-2013.

Advantage	**Disadvantage**
There is a assurance of quality response	Bias selection of sample may occur
Meet the specific objective	Time consuming process

3. **Quota Sampling**- units are selected important characteristics and then select desired samples in a non-random way

   Example:

   You would like to know what percent of the student population use Colgate and Close-up as their toothpaste. You decide to study 20% of the 400 IBCS student population. So, you go from student and ask them the toothpaste that they use until you complete the 80 desired samples.

Advantage	**Disadvantage**
Used when research budget is limited	Variability and bias cannot be measured or controlled
Very extensively used/understood	Projecting data beyond sample not justified
No need for list of population elements	Time consuming

4. **Snowball Sampling**- appropriate to use in research when the members of a population are difficult to locate, such as homeless individuals, migrant workers, or undocumented immigrants.

   Example:

   if a researcher wishes to interview undocumented immigrants from Mexico, he or she might interview a few undocumented individuals that he or she knows or can locate and would then rely on those subjects to help locate more undocumented individuals. This process continues until the researcher has all the interviews he or she needs or until all contacts have been exhausted.

Advantage	**Disadvantage**
Low cost	Not independent
Useful in specific circumstances & for locating rare populations	Projecting data beyond sample not justified

DIFFERENCE OF PROBABILITY AND NON-PROBABILITY PROBABILITY

PROBABILITY	NON-PROPBABILITY
You have a complete sampling frame. You have contact information for the entire population.	Used when there isn't an exhaustive population list available. Some units are unable to be selected, therefore you have no way of knowing the size and effect of sampling error (missed persons, unequal representation, etc.).
You can select a random sample from your population. Since all persons (or "units") have an equal chance of being selected for your survey, you can randomly select participants without missing entire portions of your audience.	Not random
You can generalize your results from a random sample. With this data collection method and a decent response rate, you can extrapolate your results to the entire population.	Can be effective when trying to generate ideas and getting feedback, but you cannot generalize your results to an entire population with a high level of confidence. Quota samples (males and females, etc.) are an example.
Can be more expensive and time-consuming than convenience or purposive sampling.	More convenient and less costly, but doesn't hold up to expectations of probability theory.

SAMPLING ERRORS

The errors which rise due to the use of sampling surveys are known as the sampling errors.

Two types of sampling errors:

1. Biased Errors- due to selection of sampling techniques; size of the sample
2. Unbiased Errors/Random sampling errors
    - Differences between the members of the population included or not included

Methods in reducing Sampling Errors

- specific problem selection.
- Systematic documentation of related research.
- Effective enumeration.
- Effective pre testing.
- Controlling methodological bias.
- Selection of appropriate sampling techniques.

NON- SAMPLING ERRORS

Refers to biases and mistakes in selectin of sample

Causes for Non-Sampling Errors

- sampling operations
- Inadequate of response
- Misunderstanding the concept
- Lack of knowledge
- Concealment of the truth
- Loaded questions
- Processing errors
- Sample size

WRITING METHODOLOGY

How to write a research methodology? Methodology section should generally be written in the past tense.

Here's the steps that will guide you writing your methodology.

Step1. Explain your methodological approach

Begin by introducing your overall approach to the research.

What research problem or question did you investigate? For example, did you aim to systematically describe the characteristics of something, to explore an under-researched topic, or to establish a cause-and-effect relationship? And what type of data did you need to achieve this aim?

- Did you need quantitative data (expressed in numbers) or qualitative data (expressed in words)?
- Did you need to collect primary data yourself, or did you use secondary data that was collected by someone else?
- Did you gather experimental data by controlling and manipulating variables, or descriptive data by gathering observations without intervening?

Depending on your discipline and approach, you might also begin with a discussion of the rationale and assumptions underpinning your methodology.

- Why is this the most suitable approach to answering your research questions?
- Is this a standard methodology in your field or does it require justification?
- Were there any ethical or philosophical considerations?
- What are the criteria for validity and reliability in this type of research?

Step 2: Describe your methods of data collection

Once you have introduced your overall methodological approach, you should give full details of your data collection methods.

1. **Quantitative Methods**- valid generalizable results, describing method in detailed for another researcher that might improve your study in the future.
    - You can explain the operational concept, measured variables, sampling method or criteria, tools, procedure and materials you used to gather data.

- Surveys- describe where, when and how the survey was conducted
    - How did you design the questions and what form did they take (e.g. multiple choice, Likert scale)?
    - What sampling method did you use to select participants?
    - Did you conduct surveys by phone, mail, online or in person, and how long did participants have to respond?
    - What was the sample size and response rate?

  You might want to include the full questionnaire as an appendix so that your reader can see exactly what data was collected

- Experiments- give full details of the tools, techniques and procedures you used to conduct the experiment.
    - How did you design the experiment?
    - How did you recruit participants?
    - How did you manipulate and measure the variables?
    - What tools or technologies did you use in the experiment?

  In experimental research, it is especially important to give enough detail for another researcher to reproduce your results.

- Existing Data- Explain how you gathered and selected material (such as publications or archival data) for inclusion in your analysis.
    - Where did you source the material?
    - How was the data originally produced?
    - What criteria did you use to select material (e.g. date range)?

2. **Qualitative methods**- since methods are often more flexible and subjective, it's important to reflect on the approach you took and explain the choices you made.

   Discuss the criteria you used to select participants or sources, the context in which the research was conducted, and the role you played in collecting the data (e.g. were you an active participant or a passive observer?)

   - Interviews or focus groups- describe where, when and how the interviews were conducted.
       - How did you find and select participants?
       - How many people took part?
       - What form did the interviews take (structured, semi-structured, unstructured)?
       - How long were the interviews and how were they recorded?

   - Participant observation- Describe where, when and how you conducted the observation or ethnography.
       - What group or community did you observe and how did you gain access to them?
       - How long did you spend conducting the research and where was it located?
       - What role did you play in the community?
       - How did you record your data (e.g. audiovisual recordings, note-taking)?

- Existing Data- Explain how you selected case study materials (such as texts or images) for the focus of your analysis.
    - How did you collect and select them?

<u>Step 3</u>: Describe your methods of analysis

Next, you should indicate how you processed and analyzed the data. Avoid going into too much detail—you should not start presenting or discussing any of your results at this stage.

- Quantitative methods- your analysis will be based on numbers. In the methods section you might include:
    - How you prepared the data before analyzing it (e.g. checking for missing data, removing outliers, transforming variables)
    - Which software you used to analyze the data (e.g. SPSS, Stata or R)
    - Which statistical tests you used (e.g. two-tailed t-test, simple linear regression)

- Qualitative methods- In qualitative research, your analysis will be based on language, images and observations (often involving some form of textual analysis). Specific methods might include:
    - Content analysis: categorizing and discussing the meaning of words, phrases and sentences
    - Thematic analysis: coding and closely examining the data to identify broad themes and patterns
    - Discourse analysis: studying communication and meaning in relation to their social context

<u>Step 4:</u> Evaluate and justify your methodological choices

Your methodology should make the case for why you chose these particular methods, especially if you did not take the most standard approach to your topic. Discuss why other methods were not suitable for your objectives, and show how this approach contributes new knowledge or understanding.

You can acknowledge limitations or weaknesses in the approach you chose, but justify why these were outweighed by the strengths.

KEY AREAS OF THE RESEARCH PROPOSAL

When writing a research design or research proposal, ensure you consider and cover the following areas:

1. **A working title or topic area**
    - ensure that you convey the key points of the research

2. **General overview of the research area**
    - provide a brief synopsis/background and issues of the research

3. **Identification of the relevant literature**
    - reference any key literature that may support your proposal and use the literature to demonstrate how/where it fits within the context of the subject area

4. **Key research questions**
    - in order to demonstrate that your research is viable and do-able it is essential to identify some of the key questions it aims to answer
    - You should formulate these clearly, giving an explanation as to what problems and issues are to be explored and why they are worth exploring

5. **Methodology**
    - outline the methodologies you aim to use

6. **Timescale / research planning**
    - identify the timescale and acknowledge the planning done, required and/or involved

7. **Bibliography**
    - ensure to include a Bibliography for any references to literature within your research proposal

Learning Competency

Describes sampling designs
Explain how to write a complete research methodology
Presents written research methodology

ACTIVITIES

Activity 1.

Directions: Identify the correct letter inside the box that corresponds on the definition below.

A. Stratified Sampling	I. Census
B. Sampling	J. Systematic Sampling
C. Quota Sampling	K. Snowball Sampling
D. Step 1	L. Step 2
E. Non-Probability Sampling	M. Sample
F. Element	N. Non sampling error
G. Step 3	O. Probability
H. Judgmental Sampling	P. Sampling Error

_____1. Study and observe the element of the entire population

_____2. Subgroup of population

_____3. Selecting a small group of population(representative)

_____4. Select some starting point and select every k^{th} subject in the population, also called as interval sampling

_____5. Nonprobability sampling technique where participants are asked to recommend a few acquaintances for the study

_____6. Population elements selected based on the researcher's judgement

_____7. Refers to biases and mistakes in selectin of sample

_____8 Sampling procedure that every unit has an equal nonzero chance of being selected

_____9. Errors resulting from the particular sample selected being imperfect representation of the population (biased and Unbiased errors)

_____10. Researcher divides the entire population into different subgroups or strata, then randomly selects the final subjects proportionally from the different strata.

Activity2.

Hi! I'm Lisa, I would like to write the steps in writing methodology, can you help me to enumerate them:

Step 1: _____

Step 2: _____

Step 3: _____

Step 4: _____

Reflection:

In your own words, what do you think are the thing/s that needs to be considered the most in writing research design or research proposal and why?

_____

_____

_____

_____

References:

https://www.slideshare.net/rajuindukoori/sampling-design-and-procedure?qid=4ae5cd70-2a99-4e7f-8dba-909fde991a46&v=&b=&from_search=1
https://www.slideshare.net/ceszamaldita/sampling-designs-by-ms-princess-jean-ronquillo
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Prepared by: Ednalyn F. Orola

Teacher 1 – BSNHS