SELF-LEARNING HOME TASK (SLHT)

Subject: **Practical Research 2** Grade Level: **12** Quarter: **2** Week: **1**

MELC: ***Chooses appropriate quantitative research design;* and *describes sampling procedure and sample.***

Competency Code: ***CS_RS12-IIa-c-1* and *CS_RS12-IIa-c-2***

Name _____ Section _____ Date _____

School _____ District _____

A. Readings/Discussions

Quantitative Research Designs

If you remember, in the first quarter, Practical Research 2 module 1 briefly discussed the kinds of quantitative research or what is technically called as "Quantitative Research Designs or Approaches."

It is easier to understand the different types of quantitative research designs if you consider how the researcher designs for control of the variables in the investigation.

1 **Causal- Comparative Research**

It is also known as ex post facto (after the fact) research. This kind of research derives conclusion from observations and manifestations that already occurred in the past and now compared to some dependent variables.

Example: *The effect of preschool attendance on social maturity at the end of the first grade.*
The effect of taking multivitamins on a students' school absenteeism.
The effect of magnet school participation on student attitude.

2 **Correlational Research**

It is the systematic investigation of the nature of relationships, or associations between and among variables without necessarily investigating into causal reasons underlying them.

Example*: The relationship between intelligence and self-esteem.*
The relationship between diet and anxiety.
The relationships between the types of activities used in math classrooms and student achievement.

3 Descriptive Research

This design is concerned with describing the nature, characteristics and components of the population or a phenomenon.

Example*: A description of how parents feel about their children's modular learning.*
A description of the kinds of physical activities that families do this pandemic.
A description of the extent to which senior high school teachers employ reading activities.

4 Evaluation Research

This kind of research aims to assess the effects, impacts or outcomes of practices, policies, or programs.

Example*: What is the cost-effectiveness of a project?*
What is the overall reach of this project?
How would you rate the market penetration of this project?

5 Experimental Research

This research utilizes scientific method to test cause-and-effect relationships under conditions controlled by the researcher. In this case an effort is made to determine and impose control over all other variables except one.

Example*: Testing the effects of a new drug to treat a certain medical condition like Covid-19.*
A testing of the stress levels of senior high school learners towards modular learning
A testing of the causes of the growth of hair under the armpit.

6 Survey Research

A survey research is used to gather information from groups of people by selecting and studying samples chosen from a population. It may be done in various ways like face-to-face, phone, email, and online.

Example*: A survey about the preferences of students in the canteen.*
A survey about the reactions and feelings of learners towards distance learning.
A survey about the need to follow rules and regulations in public during the pandemic.

Procedure:

1. Make your observations about something that is unknown, unexplained, or new, investigate current theory surrounding your problem or issue.
2. Hypothesize an explanation for those observations.
3. Make a prediction of outcomes based on your hypotheses. Formulate a plan to test your prediction.
4. Collect and process your data. If your prediction is correct, go to step 5. If not, the hypothesis will be proven false. Return to step 2 to form a new hypothesis based on your new knowledge.
5. Verify your findings. Make your final conclusions. Present your findings in an appropriate form for you audience.

Approaches in Identifying Sample Size

Heuristics. This approach refers to the rule of thumb for sample size. The early established approach by Gay (1976) stated by Cristobal and Dela Cruz-Cristobal (2017, p 172), sample sizes for different research designs are the following:

Research Design	Number of Subjects/Participants
Descriptive Research	10% to 20% maybe required
Comparative Research	15 subjects or groups

Lunenberg and Irby (2008), as cited by Barrot (2017, p 107), also suggested different sample sizes for each quantitative research design.

Research Design	Number of Subjects/Participants
Survey	800
Correlational	100 to 200
Ex post facto	30+
Experimental	30 or more

Literature Review. Another approach is by reading similar or related literature and studies of your current research study. Since you are done writing your review of related literature and studies, you might want to recall how these studies determine sample size. Using this approach increases the validity of your sampling procedure.

Formulas. Formulas are also established for the computation of an acceptable sample size. The common formula is Slovin's Formula.

Slovin's Formula:

$$n = \frac{N}{1 + Ne^2}$$

where: n is the sample size
N is the population size
e is the desired margin of error

Example: There are 600 Senior High School Students in AZ National High School. How many students are needed if we are only going to get the sample size and will consider 5% error?

$$n = \frac{600}{1 + 600\,(0.05)^2}$$

$$= \frac{600}{1 + 600\,(0.0025)}$$

$$= \frac{600}{1 + 1.5}$$

$$= 240$$

Findings: Based on the computation, 240 students are needed out from the 600 Senior High School Students in AZ National High School.

Stratified Random Sampling. The same with simple random sampling, stratified random sampling also gives an equal chance to all members of the population to be chosen.

However, the population is first divided into strata or groups before selecting the samples. The samples are chosen from these subgroups and not directly from the entire population. This procedure is best used when the variables of the study are also grouped into classes such as gender and grade level.

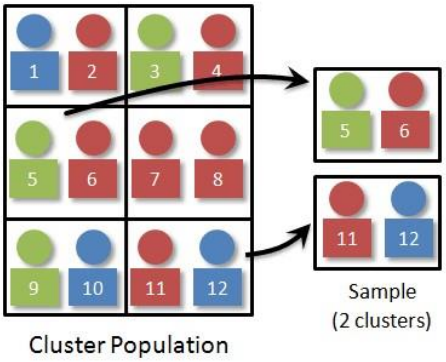
You can simply follow the steps from this given example:

A population of 600 Junior High School students includes 180 Grade 7, 160 Grade 8, 150 Grade 9, and 110 Grade 10. If the computed sample size is 240, the following proportionate sampling will be as follows.

The number of members per subgroup is divided by the total accessible sample size. The percentage result of members per subgroup will be multiplied from the computed total sample size. After obtaining the sample size per strata, simple random sampling will be applied for the selection of samples from each group.

				Sample Size per Subgroups
180/600	=	.30x 240	=	72 Grade 7 students
160/600	=	.27x 240	=	65 Grade 8 students
150/600	=	.25x 240	=	60 Grade 9 students
110/600	=	.18x 240	=	43 Grade 10 students
		100%		240 respondents

Cluster Sampling. This procedure is usually applied in large-scale studies, with geographical spread out of the population as a challenge, and gathering information becomes very time-consuming. Like stratified random sampling, cluster sampling also involves grouping of the population according to subgroups or clusters. It is a method where multiple clusters of people from the chosen population will be created by the researcher to have homogenous characteristics.



For example, a researcher would like to interview all public senior high school students across Mindanao. The researcher selects cluster to satisfy the plan size. In the given example, the first cluster can be by region, the second cluster can be by division, and the third cluster can be by district. Another way of doing cluster sampling is illustrated on the figure on the right side.

Systematic Sampling. This procedure is as simple as selecting samples every *n*th (example every 2nd, 5th) of the chosen population until arriving at a desired total number of sample size. Thus, the selection is based on a predetermined interval. Dividing the population size by the sample size will help obtain the interval. For example, from a total population of 75, you have 25 samples. Using systematic sampling, you will decide to select every 3rd person on the list of individuals.

B. Exercises

Exercise 1

Directions: **Situation Analysis.** Read the situation in the scroll. From the choices below the scroll, identify what is the best research design to use. Explain why it is the best research design and how you would go about doing the study in a separate sheet of paper.

As a student so involved in social media, you are curious what other young people like you think of it. Specifically, you want to know how many hours senior high school students spend in social media.

Research Design: _____

Explanation: _____

_____

_____

Exercise 2

Test I. Directions: Copy the table below on a separate sheet of paper. Complete it by showing how the variables of the different types of quantitative research are being handled or manipulated given the goal for each design.

Quantitative Research	**Goal**	**How the variables are handled or manipulated**
Casual-Comparative		
Correlational		
Descriptive		
Evaluation		
Experimental		
Survey		

Test II. Direction: Review your research study in grade 11 or search samples on the internet. Identify the research design used and its sampling procedure. Complete the table below on a separate sheet of paper.

	Example 1	Example 2	Example 3
Title of the Research Study			
Research Design			
Characteristics of Population			

Sampling Procedure			
Sample Size			
Source			

C. Assessment/Application/Outputs (Please refer to DepEd Order No. 31, s. 2020)

Test I. Directions: Determine the research design appropriate for the given research titles below then explain it briefly in three to five sentences. Write on a separate sheet of paper.

1. Relationship between Technology Literacy and Learning Preferences of Senior High School Students
   Quantitative Design: _____
   Explanation: _____
   _____
   _____

2. Effects of Story Telling on the Reading Performance of the Grade 1 Pupils

   Quantitative Design: _____

   Explanation: _____
   _____
   _____

3. Measuring the Gadget Usage of Students at Home during the COVID-19 Community Quarantine
   Quantitative Design: _____
   Explanation: _____
   _____
   _____

Test II. Directions: Identify the sampling procedure used in each given situation. Write your answer on a separate sheet of paper and then explain your choice.

Sample Situation	Sampling Procedure	Justification
1. Alex's target population for his study are the employees of hotels in Cebu. Since there are too many employees in these establishments, he randomly selected ten hotels. And then he considered all employees as participants in his study.		
2. Dianne wants to know if the new learning modalities in the first semester affects the academic performance of senior high students. He took all the lists of all students in her school and selected every 10^{th} name to be part of her study.		
3. Faye wants to survey all the parents in Cebu Province who opt to enroll their high school children to an online class. All in all, there 26,000 parents. Faye decided to have 450 from the target population.		

D. Suggested Enrichment/Reinforcement Activity/ies

Test I. Direction: From what you have learned in this lesson, what is the appropriate research design for your current research problem? Justify your choice. Write on a separate sheet of paper.

Research Title: _____
Quantitative Design: _____
Justification: _____
_____
_____
_____

Test II. Directions: Perform the following task. Identify the size of the population and sample for your study and explain the sampling method that you will use. Write your answer on a separate sheet of paper.

1. Size of Population	
2. The method used to determine sample size (include computation if applicable)	
3. Sample Size for the Study	
4. Sampling Procedure to be employed (explain the steps)	
5. Who will be your respondents?	

References:

Books

Calmorin, Laurentina Paler and Melchor A. Calmorin. *Research Methods and Thesis Writing, 2nd Edition.* Manila, Philippines: Rex Book Store, Inc, 2007.

Faltado, Ruben E. III, Medardo B. Bombita, Helen B. Boholano, and Angeline M. Pogoy. *Practical Research 2: Quantitative Research*. Quezon City: Lorimar Publishing, 2016.

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Esther, Baraceros. *Practical Research 2 e-Book*. Quezon City: Rex Bookstore, Inc, 2016.

Prepared by:

Mrs. Florie Ann F. Sabio
Ms. Keisha Marie P. Roldan

Edited by:

Reviewed by:

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