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Department of Education
National Capital Region
SCHOOLS DIVISION OFFICE
MARIKINA CITY

Practical Research 2

Quarter 1 - Module 12
Research Hypothesis

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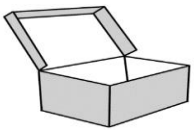


What I Need to Know

Good day Senior High School Students! In this lesson, you are going to learn how to:

List Research Hypothesis (if appropriate) (CS_RS12-lf-j-8)

Most of the time in making a decision it begins with the questions which is then explored through background but it does not have to be correct. The hypothesis is a prediction, but it involves more than a guess. Having tested the statement to be valid or invalid; true or false; one is able to give decision or his/her judgement. In the scientific method, whether it involves research in social sciences, biology, or some other area or businesses a prediction or a guess represents what the researchers think will happen in the investigations or experiment. Moreover, in this lesson, you will learn concepts, understand, and do practice activities that will help you to do the following which are linked to our main lesson:

1. Learn the concept of hypothesis.

2. Understand the types of hypothesis and how to formulate it.

3. To identify the different steps in conducting hypothesis.

What I Know

Before you proceed to the different activities inside the module, answer first this ***pre-assessment activity*** below to find out what you already know about the topic on the list research hypothesis.

Choose the best answers on the following questions. Write only the letter.

1. It is simply a statement that something is true.
   A. Alternative hypothesis
   B. Hypothesis
   C. Hypothesis testing
   D. Null hypothesis

2. A hypothesis to be considered as an alternate to the null hypothesis.
   A. Alternative hypothesis
   B. Hypothesis
   C. Hypothesis testing
   D. Null hypothesis

3. A procedure in making decision to which a claim is rejected or not.
   A. Alternative hypothesis
   B. Hypothesis
   C. Hypothesis testing
   D. Null hypothesis

4. A hypothesis test for which the rejection region lies at only one tail of the distribution.
    A. Hypothesis testing
    B. Null hypothesis
    C. One tailed test
    D. Two tailed tests

5. The rejection lies on both end tails of distribution one on left and one on the right.
    A. Hypothesis testing
    B. Null hypothesis
    C. One tailed test
    D. Two tailed tests

Lesson 1	List Research Hypothesis (if appropriate)

What's In

A research topic is an intellectual stimulus calling for an answer in the form of scientific investigation, that lead to the researcher to consider field of interest or their specialization or event from related fields. Hence, hypotheses are the expected answer to the problem or outcome of the research study.

A hypothesis is simply a statement that something is true. It is a tentative explanation, a claim, or assertion about people, objects, or events. It enables the researcher formulate initial explanation of study which is the basis or a guide throughout the experiments. A testable and specific claim about what you expect to be the outcome of the research. In hypothesis, the words used in the statement must be measurable and clear. In the previous discussion a hypothesis deals with the relationship between two or more variable, ***independent*** and ***dependent*** variables which is something that assumed and caused or a change and an effect or measure respectively. Its features are:

1. **Measurability** this measure expected relationships of the two variables (dependent and independent) as outcome to the problem.

2. **Reasonableness** It is based on the evidence, meaning or theory.

3. **Testability** clearly define hypothesis and has a connection relationship with the theory.

Nevertheless, Hypothesis can categorize in some point in order to easily identify the variables by phrasing the statement, you can write simple guess in *if… then… form which easily understood that the first part is independent and second part is dependent.* Example is: **if** a SHS student actively attending in a class, **then** their exam scores will improve.

other examples:

1. A study designed to look at the relationship between intelligence and academic success might have a hypothesis that states, "*This study is designed to assess the hypothesis that an intelligent student who performs well throughout their studies has an academic success than those who are not."* In this example, the independent variable is intelligent the assume cause and the dependent variable is the effect on how the students manage his/her study.

2. A SHS-STEM students of Marikina High School study that daily consumption of Vitamin C leads to fewer doctor's visits. *This study is designed to assess the hypothesis that having a daily consumption of vitamin C will lessen his /her medical check-up than those who are not regular taking the vitamin C.* In this example, the independent variable is vitamin C consumption – the assume cause. The dependent variable is the frequency of medical or doctor's check- up/visits – the assume effect.

Formulating a Hypothesis

Base on the given examples above you can conclude that researchers might draw hypothesis from specific theory or build on previous research. Hence, trying to come up and in order to formulate a hypothesis ask yourself or consider the following questions:

- Is your hypothesis based on your research study?
- Is your hypothesis testable?
- Does your hypothesis consider variables (dependent and independent)?

Moreover, before you formulate a specific hypothesis, focus and spend time doing background, organize and check your literature and think about the questions you still have. The following are the steps in developing hypothesis:

- Look for theories and previous studies to help you form an assumption about what your research will find.
- Evaluate the theories and look for possible causes of the study.
- List a possible explanation that you might want to develop.
- After you have developed some possible hypothesis, think of ways that you could confirm or disprove each hypothesis through experimentation.

What's New

Activity – Checking your understanding

Given a research question of the study, state the possible hypothesis.

Research Question	Prediction
1. SHS Student social media and their attention span in class.	
2. Does a SHS student's academic performance in Math have any association with his/her stress tolerance?	
3. Is there a significant relationship between the Grade 11 student-respondents' availability of internet connection at home and their average sleeping time?	
4. Can flexible study time management improve class performance?	
5. Students who eat breakfast will perform better on a General Mathematics exam.	

What is It

Hypotheses are statements in quantitative research in which the investigator makes a prediction or a conjecture about the outcome of a relationship among attributes or characteristics (*Creswell, 2012).* However, hypothesis is a prediction of the possible outcomes of a study (*Fraenkel & knowledge Wallen, 2009).* Meaning hypothesis is not a guess it should be based on existing theories and knowledge that are testable and supported by scientific research methods. Examples are as follows:

1. There is no significant relationship between the Practical research and competency level of grade 12 Senior High Students of Marikina High School.
2. There is no relationship between sleep deprivation and test performance.
3. The mean monthly allowance of all senior high students of Marikina High School is at least P2000 per month.

Such statements are subjected to statistical testing in order to know whether it is true or false. It the statement is true based on statistical testing then it is accepted, else rejected. Hypothesis testing is a process in making decisions based on sample evidence used to determine whether the hypothesis is rejected or not.

In some cases, whenever the researcher talks about hypothesis it always involves the types of hypothesis simultaneously. Hypothesis is usually written in the **null form (Ho).** Null hypothesis expresses no relationship between the variables or an assertion that is to be rejected. On the other hand, the opposite of the null is **alternative hypothesis (Ha).** Being the opposite of the null, it expresses that there is a relationship. Let's say you want to predict that there will be a relationship between two indicators in your problem. The way you would formally set up hypothesis test is to formulate hypothesis that describe your prediction and the other that describe all other possible outcomes with respect to the hypothesized relationship. With this the null hypothesis is the default position and again, written as Ho. In previous example ***if*** *a SHS student actively attending in a class,* ***then*** *their exam scores will improve*. The null and alternative is written as:

Ho: The number of lectures attended by SHS students has no effect on their final scores.

Ha: The number of lectures attended by SHS students has a positive effect on their final exams scores.

Other examples are:

1. Ho -There is no significant relationship between the Practical research and competency level of grade 12 Senior High Students of Marikina High School.

   Ha - There is a significant relationship between the Practical Research and competency level of grade 12 Senior High Students of Marikina High School.

2. Ho - There is no relationship between sleep deprivation and test performance.

   Ha -There is a relationship between sleep deprivation and test performance

3. Ho - The mean monthly allowance of all Senior High Students of Marikina High School is at least P2000 per month.

   Ha - The mean monthly allowance of all Senior High Students of Marikina High School is not P2000 per month.

Activity: Identification

Identify the given hypothesis as to whether it is a null hypothesis or alternative hypothesis in the space provided below the statement.

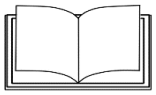
1. There is a difference between the set of observed frequencies and the expected frequencies.
   Answer: _____

2. There is a partial significant influence of quality toward customer buying behavior.
   Answer: _____

3. The mean monthly salary of the College lecturer in President University is not less than P35,000.
   Answer: _____

4. There is no simultaneous effect of the visual merchandising on the sales profitability of Starbucks coffee.
   Answer: _____

5. The percentage of shoppers in SM Department store who buy their favorite shampoo is 40% regardless of the price.
   Answer: _____



What's More

Answer the activities that will follow to practice your knowledge and skill about our lesson list research hypothesis.

Activity 1- Test your understanding

Write the null and alternative hypothesis of the following statement on the space provided.

1. Internet availability at home and student's average sleeping time at night.
   Ho:
   _____
   _____

Ha:

_____

_____

2. Social media involvement and practices of Grade 12 HUMSS students
   Ho:

   _____

   _____

   Ha:

   _____

   _____

3. The effect of the use of a local packaging material on the shelf life of a product.
   Ho:

   _____

   _____

   Ha:

   _____

   _____

4. The marketability of innovative iphone product to the learning activity of SHS students.
   Ho:

   _____

   _____

   Ha:

   _____

   _____

5. Children of single parents and their level of Math anxiety.
   Ho:

   _____

   _____

   Ha:

   _____

   _____

Activity 2. Analysis

Answer the following research question on the space provided as to what is being ask on the blank for prediction or null hypothesis.

Research Question	Prediction/Hypothesis	Null Hypothesis
1. What are the health benefits of eating fruits (apple, banana, avocado) a day	Increasing a fruit consumption in over-60s will lessen a frequency of health check up	

2. What effect does daily use of social media have on learning outcomes of under 16 years old.		There is no relationship between social media use and learning outcomes of under 16 years old
3. How effective is Senior High School sex education at reducing teen pregnancies?	Teenagers who received sex education lessons throughout Senior High School will have lower rates of unplanned pregnancy than teenagers who did not receive any sex education.	
4. Can flexible time management improve job satisfactions	Employees who have flexible working hours will report greater job satisfaction than employees who work fixed hours.	
5. Which airlines have the most delays?		Low-cost and premium airlines are equally likely to have delays.

Activity 3. Test your ability

In your own idea construct at least three simple research questions and state the prediction base on the formulated hypothesis.

1. Research question

   _____
   _____
   _____

   Prediction

   _____
   _____
   _____

2. Research question

   _____
   _____
   _____

   Prediction

   _____
   _____
   _____

3. Research question

_____
_____
_____

Prediction

_____
_____
_____

What I Have Learned

In this lesson, we focused on research hypothesis and now that you have finished the lesson, you may have learned that specifically:

- It is important to consider the variables or indicator since the researcher focus on that and reflected it on the topic.
- In hypothesis it is imperative that a statement must be tested significantly in order to ascertain its truth and validity.
- It is very important to consider the results of previous study or investigation of the topic for a good result.
- In writing the hypothesis it is needed to make sure that it is specific, testable and measurable.
- In order to write and understand simply the variable and to be able to formulate a prediction on the statement it is important to use the *if* and t*hen* form.

What I Can Do

Apply what you have learned about the topic research hypothesis by doing the activity below.

Explain the following base on what you have learned in this module.

1. Hypothesis Testing

_____
_____
_____
_____

2. Null Hypothesis

_____
_____
_____
_____

3. Alternative hypothesis

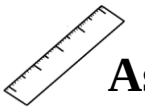
_____
_____
_____
_____

4. Research question

_____
_____
_____
_____

5. Problem statement

_____
_____
_____
_____



Assessment

Showcase the knowledge and skills you have learned in this lesson by answering the assessment activity.

Activity: Let your imagination do it

What immediately comes to your mind the moment you hear the following: *Hypothesis and Prediction, Problem and Question and how do you contrast problem to question*. Make an appropriate diagram to show their similarities and differences.

Hypothesis	Prediction
Problem	Question

Additional Activities

Activity: Checking your analysis

Read the following hypothesis and identify whether they are good or bad hypothesis**.**

1. Plants will grow taller with Miracle Grow.
   Plants will grow better when given Miracle grow.

2. Girls will score higher on Math test than boys.
   Girls are smarter than boys.

3. Hermit crabs will choose colorful shells over plain shells.
   Hermit crabs like colorful shells

Answers:

Good	Bad

References

1. Priscilla S. Altares, et al. Elementary Statistics with Computer Applications, 238-263
2. Ruben E. Faltado 111, et al., Practical Research 2: Quantitative Research for SHS, 60-92
3. Nerza A. Rebustes, Methods of Research: Fundamental Concepts, Theory and Application, 2002, 22-26
4. Jose Eos Trinidad, Researching Philippine Realities: A Guide to Qualitative, Quantitative, and Humanities Research, 2018, 115-123
5. Kendra Cherry (Jan. 02,2020), Forming Good Hypothesis for Scientific Research: https://www.verywellmind.com/what-is-a-hypothesis-2795239
6. Shona McCombes (April 23, 2019), How to write a hypothesis: https://www.scribbr.com/research-process/hypotheses/
7. https://www.slideshare.net/SICRN/practical-research-2-modular-approach

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