

Practical Research 2

Quarter 1- Module 2

Importance of Quantitative Research Across Fields



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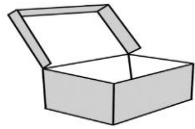
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What I Need to Know

Good day student- researchers! In this lesson, you are going to learn to:

Illustrate the importance of quantitative research across fields
(CS_RS12-Ia-c-2)

Moreover, in this lesson, you will learn concepts and do practice activities that will help you do the following:

1. illustrate the importance of quantitative research;
2. identify the steps to follow in conducting true experiments;
3. report on the different research findings on quantitative researches across fields; and
4. write a reflection essay on the importance of quantitative research.



What I Know

Before you proceed to the different activities inside the module, answer first the short **pre-assessment activity** below.

Answer the following questions. Select your answer from the options provided after each item. Choose and encircle the letter of the correct answer. If there are no options provided, do as directed.

1. Which of the following DOES NOT define why people conduct research?
 - A. People do research to find solutions in order to disprove or provide new hypothesis.
 - B. People do research to find solutions in order to find answers to questions or solutions to problems in daily life.
 - C. People do research to find solutions in order to fulfill one's duties and responsibilities particularly those of being a student.
 - D. People do research to find solutions in order to improve or enhance the manner of doing things.
2. Why is quantitative research widely used in most fields?
 - A It is easy to do.
 - B. The emphasis is on discovery.
 - C The emphasis is on proof.
 - D. Its process is complicated.
3. What is quantitative research in social sciences?
 - A. In social sciences, quantitative research is utilized just like other research methods.
 - B. It is the systematic, empirical investigation of observable phenomena using statistical, mathematical or computational techniques.



- C. It is the way of finding answers to questions in order to give solution to a problem.
 - D. Quantitative research in social sciences is the same as the other research methods in various fields.
4. What is the objective of quantitative research in various fields particularly in social sciences?
- A. It is mainly used to determine how certain phenomenon changes the perspective of people.
 - B. Quantitative research directs man how to live life.
 - C. The objective of quantitative research is mainly to evaluate social programs.
 - D. The objective of quantitative research is to develop and employ mathematical models, theories and/or hypotheses about a phenomena.
5. Measurement is a process that is very important to quantitative research. Why is this so?
- A. Measurement is important because without it nothing will come out of the study.
 - B. It provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships.
 - C. It makes the researcher compare and contrast data.
 - D. It gives a sense of pride and confidence that your findings are correct because data are measured.

Lesson 1	Importance of Quantitative Research Across Fields
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What's In

In the previous lessons, you learned about the characteristics of quantitative research, its strengths and weakness and the kinds of quantitative research designs.

Fill in the table below with at least three (3) strengths and three (3) weaknesses of quantitative research that you have learned.

Strengths	Weaknesses
1.	1.

2.	2.
3.	3.

Discuss in at least 5 sentences the different quantitative research designs. Write the salient or important points on the said topic.

What's New

Let us start our lesson by analyzing the sample research title below.

Title: *A Quantitative Study of Course Grades and Retention Comparing Online and Face-to-Face Classes* by Vickie A. Kelly

1. Based on the given title, what field or area is this research conducted for? Why do you say so?

2. What do you think is the purpose of the above-mentioned research?



What is It

The above given research title is an example of a quantitative research conducted in a particular field.

A lot of researches are conducted almost every day. Different fields are doing researches on different phenomena and these make impacts in our lives.

Say for example, the cellular phone that you are using is a product of research. This gadget has become a very important part in your day-to-day life. It has become an essential part of you that you feel you are incomplete without it.

The medicine you are taking when you are sick is a product of research. And those in the pharmaceutical and medical technology fields are the ones conducting these researches to keep us healthy. Without research in medical technology, discovery would be non-existent – no MRI, no anaesthetic, no birth control, no X-Ray machine, no insulin, no IVF, no penicillin, no germ theory, no DNA, and no smallpox vaccination, and the list is never ending.

Why do people conduct research on the different fields?

Research is an integral part of learning about life. Zarah (2020) said that the main purpose of research is to inform action, to prove a theory, and contribute to developing knowledge in a field of study.

You have to put in mind that research findings can affect people's lives, ways of doing things, laws, rules and regulations, as well as policies among others and that because of its emphasis on proof rather than discovery. Quantitative research has been widely used in most disciplines or fields.

According to Prieto, et al. quantitative research is the systematic, empirical investigation of observable phenomena using statistical, mathematical or computational techniques with the objective of developing and employing mathematical models, theories and/or hypotheses pertaining to phenomena. Very important to quantitative research is the process of measurement and you have to take note on this always. The process of measurement is very important to quantitative research because it provides the fundamental connection between empirical or scientific observation and mathematical expression of quantitative relationships.

Let us now review some of the fields conducting quantitative researches.

First is *quantitative research and anthropology*.

Anthropology is concerned with exploring connections simultaneously, amidst cultural differences, alternatives and identity. In the contemporary academic, socio-cultural and political climate these concepts have immense symbolic overtones. Therefore, anthropology is concerned about understanding various kinds of symbolic order in a given situation, society, community, group, organization etc. Anthropological studies reveal significant bonds amidst notions of class, status, power relations & vocation.

How is quantitative research related to anthropology?

There are five steps to follow true experiments on people according to Bernard (1994) as cited by Prieto, et al.



You need at least two groups, called the treatment group (or what we call as the intervention group or the stimulus group) and the control group. One group gets the intervention (a new drug, for example), and the other group (the control group) does not.

1. Step number 1 reminds you that in conducting a quantitative research involving people, you need to have two groups of respondents – one is the treatment group which gets the intervention and the other one is the control group which does not get an intervention.

2. *Individuals must be randomly assigned, either to the intervention group or to the control group to ensure that the groups are equivalent. Some individuals in a population may be more religious, or wealthier, or less sickly, or more prejudiced than others, but random assignment ensures that those traits are randomly distributed through the groups in an experiment. The degree to which randomization ensures equivalence. However, it depends on the size of the groups created. With random assignment, two groups of 50 are more equivalent than four groups of 25.*

In grouping your respondents, you have to always do it randomly. See to it that your treatment group and control group has equivalent number of respondents and traits of respondents are randomly divided between the groups in the experiment. This will ensure the validity of your findings later.

3. *The groups are measured on one or more dependent variables (income, infant mortality, knowledge of curing techniques, or other things you hope to change by intervention); this is called the pretest.*

You have to conduct an assessment on your groups of respondents. You need to measure your respondents with a variable or more variables. Usually, a pretest is conducted.

4. *The intervention (the independent variable) is introduced.*

An independent variable is something that causes, influences or affects outcomes. As mentioned earlier, this is the *intervention* given to the treatment group.

5. *The dependent variables are measured again. This is the posttest.*

Dependent variables are those that depend on the independent variables, meaning, they are the outcomes or results of the influence of the independent variable. Remember that in this lesson, you were told that the dependent variables are measured in a pretest. Because you have a pretest, you need to measure again the dependent variables which is now called the post test. As a senior high school student, you will probably conduct a research which will involve people as your respondents. It is therefore very important that you familiarize yourself with the steps on how to conduct true experiments with people so that when the time comes, you can apply these. Thus, you will be able to apply and follow them easily.

Let us talk about *quantitative research and communication*.



What do you think connects people? _____



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Communication is very important. We cannot function as a society without communication. We are all social beings and we cannot exist without interacting with other people.

There are a lot of researches on communication. Researchers are often interested in understanding how a particular communication phenomenon might be generalized to a larger population.

For example, researchers can ask questions like:

1. What effect do punitive control statements have on a classroom?
2. What communicative behaviors are associated with different stages in romantic relationships?

What can you say about the sample questions above? How are quantitative research and communication illustrated in the given sample questions? _____

You have to remember that as a researcher, you will be finding answers to a query or question. Let us suppose that you are the researcher asking the questions and trying to find out answers to these. Let us find out what possibly be your purpose for asking each question.

In questions number 1, you as a researcher would like to know the effect of punitive control statements on a classroom. What are punitive control statements? It is obvious that in a classroom, there are rules to follow. Can you identify some of these rules? Some of the rules in your classrooms are _____

Now these rules or statements will have an effect on you or other students. You want to find out here the effects of punishment if the rules are not followed. Remember that there are serious student transgressions and that some kind of punishment is an appropriate response. As a researcher, you want to find out whether these punitive control statements are advantageous or not.

What about question number 2? What purpose will you have on conducting a research on this? _____

Here, you probably are interested in finding out how the different stages of romantic relationships blossom through different communicative ways and means. You want to find out the different behaviors shown by lovers in a particular stage of romantic relationship. Say for example, in the getting-to-know stage, you want to know the behaviors shown on this particular stage which matter a lot in more serious relationships.

Let us look into *quantitative research and medical education*.

As mentioned earlier, medicines are part of research. Everything that we take for cure of illnesses are outcomes of researches.



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Quantitative research in medical education tends to be predominantly observational research according to Prieto, et al. and this is based on surveys or correlation studies.

You have to know that in medical education, experimental research designs are used. These types of research design may enhance the quality of medical education. They test interventions like curriculum, teaching learning process, or assessment using an experimental group. What about validity concerns? Either a comparison or controlled group of learners may allow

researchers to overcome validity concerns and infer potential cause-effect generalizations.

Furthermore, when designing their own or evaluating other researchers' studies, researchers must always keep in mind internal and external validity concerns.

Now if you are a medical studies' researcher, you have to put in mind that the selection of research design for any study should be within the parameters of the research questions as stated in the problem statement or hypothesis. This is always like this. You have to see to it that your research design is within the bounds or areas of your research problems. You have to always remember that in quantitative research, the findings will reflect the reliability and validity.

Let us talk about *quantitative research and the behavioral sciences*.

What do you understand about behavioral science?

According to britannica.com, *behavioral science is any of various disciplines dealing with the subject of human actions*, usually including the fields of sociology, social and cultural anthropology, psychology, and behavioral aspects of biology, economics, geography, law, psychiatry, and political science. The term behavioral sciences suggest an approach that is more experimental than the older term, social sciences.



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In this field, modern quantitative researchers like you are interested in two types of questions. These are:

1. Questions of relationships and
2. Questions of differences

Relationship questions tend to explore how one behavior exhibited by people is related to other types of behaviors. Examples are verbally aggressive behaviors related to physical aggression – meaning, when a person has high level of verbally aggressive behavior, does he or she tend to be physically aggressive? Another example: Are certain supervisors' communication skills related to the emotional experiences of employees?

What are relationship questions then? _____

Questions of difference explore how patterns of behavior or perceptions might differ from one group or type of person to another. You may ask questions like these: Do people with disabilities experience emotional labor differently from those without disabilities? Do women perceive talkativeness (or lack of it) differently from men? Do communication styles differ from one culture to the next?

For easy understanding of this type of question, you just have to always remember the word “difference.” Put in mind that this question is about the different patterns of behavior and its difference with a group or a person.

As a quantitative researcher, you explore questions of difference or questions of relationships to uncover certain patterns of behavior. If you discover that a certain relationship exists in a sample that you have drawn from the population, you are then in a position to draw generalizations about patterns expected of human behavior.

Quantitative researches are also being conducted in the fields of education and psychology.



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Mertens (2005) as cited by Prieto, et al. says that the dominant paradigms that guided early educational and psychological research were *positivism* and its successor, *post positivism*.

Accordingly, positivism is based on the rationalistic, empiricist philosophy that originated with Aristotle, Francis Bacon, John Locke, August Comte, and Immanuel Kant. The underlying assumptions of positivism include the belief that the social world can be studied in the same way as the natural world, that there is a method for studying the social world that is value-free, and that explanations of a causal nature can be provided.

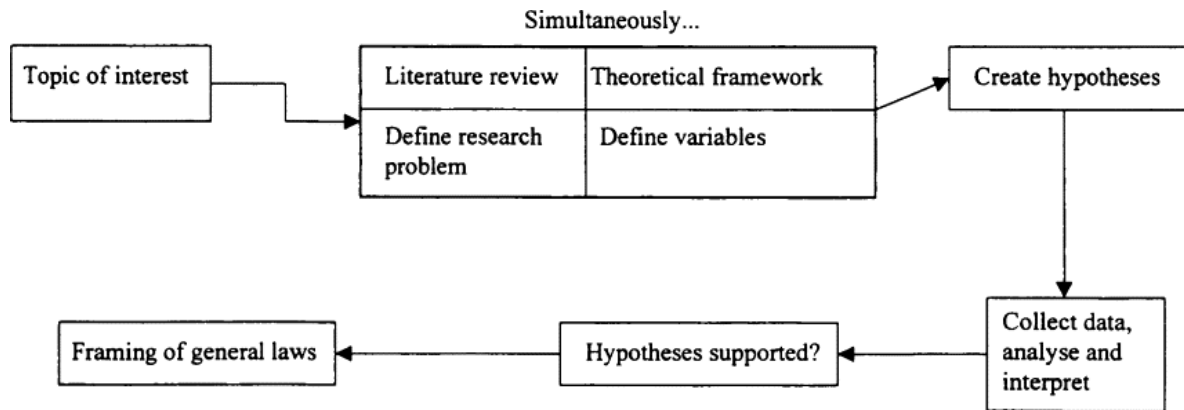
In positivism studies, your role as a researcher is limited to data collection and interpretation in an objective way. In these types of studies, research findings are usually observable and quantifiable.

According to *researchmethodology.net*, positivism depends on quantifiable observations that lead to statistical analyses. The same site gives the five principles of positivism research. These are:

1. There are no differences in the logic of inquiry across sciences.
2. The research should aim to explain and predict.
3. Research should be empirically observable via human senses. Inductive reasoning should be used to develop statements (hypotheses) to be tested during the research process.
4. Science is not the same as the common sense. The common sense should not be allowed to bias the research findings.
5. Science must be value-free and it should be judged only by logic.

Positivist research is based mainly on deductive styles of reasoning, as used in the natural sciences. Firstly, the deductive or hypothesis testing style begins with theories and models. It defines variables for study (for example, age of library users and their frequency of library use), predicts their relationships through the framing of hypotheses and tests those hypotheses. The sample is randomly selected and mostly quantitative data are collected, although qualitative data may also be included. Generalizations are eventually made. This search for general laws, central to the positivist approach is termed *nomothetic* which means, literally, ‘pertaining to the search for general laws’.

The deductive process is seen as clear-cut and linear, as illustrated in the figure below.

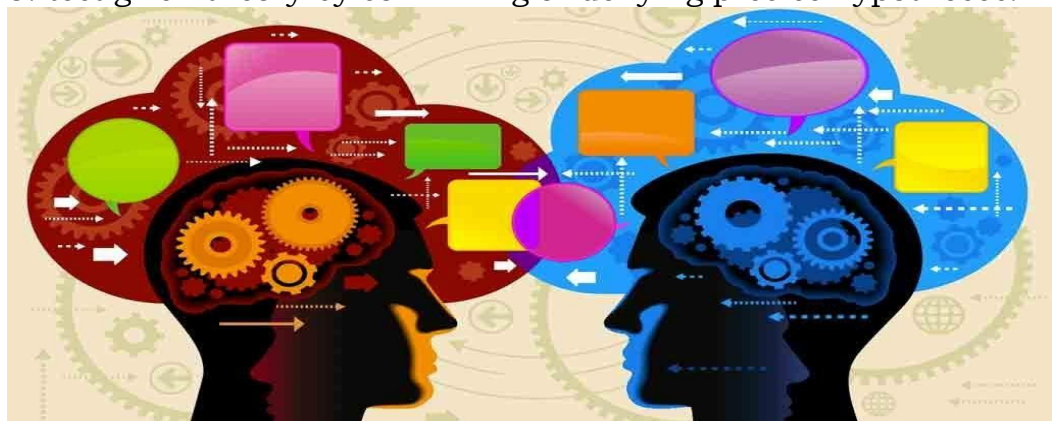


<https://www.sciencedirect.com/topics/socialsciences/positivism#:~:text=Positivism%20is%20the%20name%20for,tested%20against%20collected%20data%20systematically.>

Accordingly, quantitative approaches are typically associated with positivist perspectives in social research. Quantitative method is used. The term “*quantitative method*” refers to the adoption of the natural science experiments as the model for scientific research, its key features being quantitative measurement of the phenomena studied and systematic control of the theoretical variables influencing those problems.

You have to bear in mind that the logic of such research is to:

1. collect data using standardized approaches on a range of variables;
2. search for patterns of causal relationships between these variables; and
3. test given theory by confirming or denying precise hypotheses.



<https://www.iff-international.com/2017/11/quantitative-research-social-science/>

The methods employed in this type of quantitative social research are most typically the same survey and the experiment, a method that is particularly popular in psychological research.

You have to put in mind that the sample survey is the most commonly used technique for gathering information. Surveys are based on using statistical sampling methods. By taking a representative sample from a given population and applying a standardized research instrument in the form of a structured questionnaire, survey enable descriptive and explanatory generalizations to be made about the population in question.

Previously, we discussed on experimental research when we tackled on the kinds of quantitative research. Experiments are most commonly used in psychological research and in the broad field of business studies in the form of *action research*. Do not forget that experimental research is based on the researcher manipulating certain conditions in order to identify the relationship between particular variables, in the hope that it will explain cause and effect relationships. In seeking to measure the impact that one factor has on another by controlling all other factors that might have an effect, experimental research builds on the principles of a positivist approach to science, more than any other research technique. Remember that the legal definition of positivism is that it is *the view that true knowledge comes from studying observable traits and actions rather than through reasoning or speculating*.

As a scientific researcher, you conduct experiments. Experiments can be carried out in a laboratory or a field setting. Laboratory experimentation is the most closely regulated method of experiment. This includes the introduction of certain conditions into a controlled environment that stimulates key characteristics of a natural environment. To illustrate, Prieto et al. say that one example might be examining the extent to which the responses of a group of voters to questions about political attitudes after exposures to a series of party election broadcast might be different to another (yet identical) group's responses who are not confronted with such images. Such experiments allow for very considerable time on behalf of the researcher who is able to effect change and observe the research participants' subsequent behavior.

You know that social research is all around us. Bhat (2020) says that *social research is a method used by social scientists and researchers to learn about people and societies so that they can design products/services that cater to various needs of the people*. Different socio-economic groups belonging to different parts of a county think differently. Various aspects of human behavior need to be addressed to understand their thoughts and feedback about the social world, which can be done using social research. Any topic can trigger social research – new feature, new market trend or an upgrade in old technology.

Questionpro.com gives this example of a quantitative social research: A survey can be conducted to understand climate change awareness among the general population. Such a survey will give in-depth information about people's perception about climate change and also the behaviors that impact positive behavior. Such a questionnaire will enable the researcher to understand what needs to be done to create more awareness among the public.



Social research employs the following methods:

Surveys: A survey is conducted by sending a set of pre-decided questions to a sample of individuals from a target market. This will lead to a collection of information and feedback from individuals that belong to various backgrounds, ethnicities, age-groups etc. Surveys can be conducted via online and offline mediums. Due to the improvement in technological mediums and their reach, online mediums have flourished and there is an increase in the number of people depending on online survey software to conduct regular surveys and polls.



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There are various types of social research surveys: Longitudinal, Cross-sectional, Correlational Research. Longitudinal and Cross-sectional social research surveys are observational methods while Correlational is a non-experimental research method. Longitudinal social research surveys are conducted with the same sample over a course of time while Cross-sectional surveys are conducted with different samples.

For example: It has been observed in recent times, that there is an increase in the number of divorces, or failed relationships. The number of couples visiting marriage counselors or psychiatrists is increasing. Sometimes it gets tricky to understand the cause for a relationship falling apart. A screening process to understand an overview of the relationship can be an easy method. A marriage counselor can use a relationship survey to understand the chemistry in a relationship, the factors that influence the health of a relationship, the challenges faced in a relationship and expectations in a relationship. Such a survey can be very useful to deduce various findings in a patient and treatment can be done accordingly.

Another example for the use of surveys can be to gather information on the awareness of disasters and disaster management programs. A lot of institutions like the UN or the local disaster management team try to keep their communities prepared for disasters. Possessing knowledge about this is crucial in disaster prone areas and is a good type of knowledge that can help

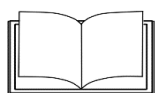
everyone. In such a case, a survey can enable these institutions to understand the areas that can be promoted more and what regions need what kind of training. Hence a disaster management survey can be conducted to understand public's knowledge about the impact of disasters on communities, and the measures they undertake to respond to disasters and how can the risk be reduced.

Experiments: An experimental research is conducted by researchers to observe the change in one variable on another, i.e. to establish the cause and effects of a variable. In experiments, there is a theory which needs to be proved or disproved by careful observation and analysis. An efficient experiment will be successful in building a cause-effect relationship while proving, rejecting or disproving a theory. Laboratory and field experiments are preferred by researchers.

Interviews: The technique of garnering opinions and feedback by asking selected questions face-to-face, via telephone or online mediums is called interview research. There are formal and informal interviews – formal interviews are the ones which are organized by the researcher with structured open-ended and closed-ended questions and format while informal interviews are the ones which are more of conversations with the participants and are extremely flexible to collect as much information as possible.

Examples of interviews in social research are sociological studies that are conducted to understand how religious people are. To this effect, a Church survey can be used by a pastor or priest to understand from the laity the reasons they attend Church and if it meets their spiritual needs.

Observation: In observational research, a researcher is expected to be involved in the daily life of all the participants to understand their routine, their decision-making skills, their capability to handle pressure and their overall likes and dislikes. These factors are recorded and careful observations are made to decide factors such as whether a change in law will impact their lifestyle or whether a new feature will be accepted by individuals.



What's More

Answer the activities that will follow to practice your knowledge and skill about the topic of characteristics of quantitative research.

Activity 1

Answer the questions below about the importance of quantitative research across fields/disciplines.

1. In 5 to 10 sentences, illustrate or show the importance of quantitative research in life. Include examples to make your points clear.



2. What are the steps in conducting true experiments?

Activity 2

Review the quantitative research in various disciplines, then fill the table below with the needed information.

Quantitative Research Across Disciplines	
Fields/Disciplines	Characteristics
Anthropology	
Communication	
Medical Education	
Behavioral Science	
Education and Psychology	
Social Sciences	

Activity 3

Write a short paragraph consisting of at least 100 words comparing/contrasting questions of relationship and questions of difference. Include examples for each.





In this lesson, we focused on the importance of quantitative research across disciplines.

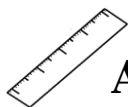
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Research on the different findings of quantitative research across different fields. Identify the field, the product or finding of the research and its uses. Report on these by completing the table below.

Field/Discipline	Product	Uses
Example: Communication	Mobile phone	Used in communication, studies, leisure



1.		
2.		
3.		
4.		
5.		



Assessment

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

A. Fill in the blank with the correct answer.

- Research is an _____ part of learning about life.
 - integral
 - required
 - tedious
 - useless
- Very important to quantitative research is the process of _____.
 - getting data
 - identifying problem
 - measurement
 - understanding
- Quantitative researches in _____ is concerned with exploring connections simultaneously, amidst cultural differences, alternatives and identity.
 - Anthropology
 - Education
 - Psychology
 - Social Sciences
- Quantitative research in medical education tends to be predominantly _____ research.
 - experimental
 - instrumental
 - informational
 - observational
- _____ research is based mainly on deductive styles of reasoning.
 - Educational
 - Medical
 - Positivist
 - Psychological

6. Social research is a method used by social scientists and researchers to learn about people and societies so that they can design products/services that cater to various _____ of the people.
- A. attitudes
B. kinds
C. needs
D. perceptions
7. A/An _____ is conducted by sending a set of pre-decided questions to a sample of individuals from a target market.
- A. experiment
B. interview
C. observation
D. survey
8. In observational research, a researcher is expected to be involved in the _____ of all the participants to understand their routine, their decision-making skills, their capability to handle pressure and their overall likes and dislikes.
- A. daily exercise
B. daily life
C. daily problems
D. daily schedule
9. In experiments, there is a _____ which needs to be proved or disproved by careful observation and analysis.
- A. phenomenon
B. problem
C. situation
D. theory
10. The technique of garnering opinions and feedback by asking selected questions face-to-face, via telephone or online mediums is called _____ research.
- A. interview
B. online
C. questionnaire-based
D. survey
- B. Choose one (1) among the six (6) fields discussed in this module. Then, explain the importance of quantitative research through an example. (5 pts.). Use a separate paper for this activity.



Additional Activities

Research additional information on the importance of quantitative research using books or internet sources. You can also watch YouTube videos regarding the topic. Take note on how the findings or outcomes of these researches change the lives of people.

Write a reflection paper on the importance of research in various disciplines. Come up with at least three (3) paragraphs containing at least 150-200 words for your report. Do not forget to cite your sources.

Be guided with the rubric below when you write your reflection paper.

Rubric for Grading Reflection Paper

Criteria	Needs Improvement 2 points	Meets Expectations 6 points	Exceeds Expectations 10 points	Your Score
Clearly organized introduction, body, conclusion	Disorganized, leaves reader wondering what is being said; abrupt ending	Paper has intro, body, and conclusion but may take a re-reading to understand	Easy to read, topic introduced, organization clearly evident with proper introduction, body, conclusion	
Clearly addressed the prompt or the topic.	Student does not clearly identify his/her reflections about the topic; may veer from topic.	The entire paper's content relates to the prompt or topic; the student explains his/her reflections about the topic but may take a re-reading to understand.	The student's reflection about the topic is explained in clear language; immediately interesting and supported with detail.	
Showed evidence of deep thought about the topic.	Paper is shallow and does not present detailed evaluation	The paper shows that the student has thought about the topic although the	Paper provides evidence that the student has examined his /her own belief systems and related	





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