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

LEARNING ACTIVITY SHEET
INFORMATION SYSTEM AND RESEARCH SP-ICT 10

Second Quarter, Week 2

Name of Learner: _____ Date: _____

Section: _____Grade Level_____

Quantitative Design

I Background Information

Quantitative research is influenced by the empiricist paradigm, which means that it is concerned with cause and effect of social phenomena and uses the data - which is based on empirical observation and their critical interpretation

Qualities of quantitative research

1. Deductive
2. Begins from theory - i.e. it is established to test theory
3. Can be used to make generalizations and / or to test hypotheses

Popper and Falsification '...*theories cannot be verified absolutely and forever; however, they can be falsified - i.e. they can be proven to be wrong - given a certain degree of certainty (or probability)*' (*The Logic of Scientific Discovery*, 1959)

1. Testing theories can 'improve ' them, but it cannot 'prove' them
2. Quantitative research needs to be open and open to criticism - which should be at the heart of quantitative research
3. Theories that cannot be tested, re-tested and (based on their falsification) be changed should be dismissed
4. Theory - concept - indicator

Importance of Quantitative Research

1. More reliable and objective
2. Can use statistics to generalize a finding
3. Often reduces and restructures a complex problem to a limited number of variables
4. Looks at relationships between variables and can establish cause and effect in highly controlled circumstances
5. Tests theories or hypothesis

6. Assumes sample is representative of the population
7. Subjectivity of researcher in methodology is recognized less
8. Less detailed than qualitative data and may miss a desired response from the participant

Quantitative Analysis

- **Laboratory experiments**
- deliberate manipulation of independent variable, strict control of other variables
- test cause and effect relationship
- **Field experiments**
- natural environment but independent variable still manipulated
- difficulty in controlling the situation so more likelihood of extraneous variables
- ethical problems of consent, deception, invasion of privacy
- **Quasi-or natural experiments**
- examine effects of independent variable without control over independent variable itself which often occurs naturally
- unable to manipulate independent variable because of ethics or because it is impossible

Quantitative Observation

Observation can also be carried out in a quantitative context and may involve:

1. Counting the use of services
2. Number of people accessing services
3. Ascertain busy/quiet times

Questionnaires

Questionnaires or social surveys are a method used to collect standardized data from large numbers of people -i.e. the same information is collected in the same way. They are used to collect data in a statistical form.

In *Data Collection in Context* (1981), Ackroyd and Hughes identify three types of survey:

1. Factual surveys: used to collect descriptive information, i.e. the government census
2. Attitude surveys - i.e. an opinion poll - rather than attempting to gather descriptive information, an attitude survey will attempt to collect and measure people's attitudes and opinions, i.e. 4 out of 5 people believe...
3. Explanatory survey - goes beyond the collection of data and aims to test theories and hypotheses and / or to produce new theory.

Researchers usually use questionnaires or surveys in order that they can make generalizations, therefore, the surveys are usually based on carefully selected samples.

Questionnaires consist of the same set of questions that are asked in the same order and in the same way in order that the same information can be gathered.

Questionnaires can be:

1. Filled in by the participant
2. Asked in a structured and formal way by an interviewer
    a. Interviewer bias must be considered when done in this way, however, an advantage of this method over a participant filling in a questionnaire is that the interviewer may assist if there are any ambiguous questions or if the participant is confused in any way
3. Postal questionnaire can be used, whereby a questionnaire is posted to the sample group and returned to the researcher by a specified time and date
4. Administration of a questionnaire to a group is an option - i.e. at centre, school or group. The researcher needs to consider if the group will affect each other's responses and the concentration levels etc when undertaking this approach
5. Telephone questionnaire
6. Email questionnaire

Developing a Questionnaire

Developing a Questionnaire
The process of developing a questionnaire involves the following four steps:

1. Choosing the questions by operationalizing concepts, which involves translating abstract ideas into concrete questions that will be measureable (i.e.....class, power, family, religion....add some sort of example)
2. Operationalizing concepts involves a set of choices regarding the following:
    a. units of analysis
        i. units that can be analyzed:
            i. individuals (i.e. students, voters, workers)
            ii. groups (families, gangs)
            iii. organizations (churches, army, corporations)
            iv. social artefacts (buildings, cars, pottery, etc)
        ii. points of focus
        iii. treatment of the dimension of time
        iv. nature of measurement
3. Establish an operational definition which involves breaking the concept down into various components or dimensions in order to specify what is to be measured
4. Once the concept has been operationally defined in terms of a number of components, the second step involves the selection of indicators for each component.'
5. '...indicators of each dimension are put into the form of a series of questions that will provide quantifiable data for measuring each dimension.'

Questionnaire Questions

Questions in the questionnaire can then be:

1. Open ended (more difficult to extract quantifiable data)
    a. This form of question requires the researcher to code the answers. Coding identifies a number of categories in which people have responded, more detail of this process is covered in the qualitative research unit
2. Closed
3. Fixed-choice
4. Likert scale - where participants are given a range of options, i.e. agree, strongly agree.
5. The difficulty or negative of all of the close and fixed are that participants may be forced into an answer or may not be able to qualify or explain what they mean by what they have answered

The advantages and disadvantages of questionnaires

The advantages of questionnaires

1. Practical
2. Large amounts of information can be collected from a large number of people in a short period of time and in a relatively cost effective way
3. Can be carried out by the researcher or by any number of people with limited affect to its validity and reliability
4. The results of the questionnaires can usually be quickly and easily quantified by either a researcher or through the use of a software package
5. Can be analyzed more 'scientifically' and objectively than other forms of research
6. When data has been quantified, it can be used to compare and contrast other research and may be used to measure change
7. Positivists believe that quantitative data can be used to create new theories and / or test existing hypotheses

The disadvantages of questionnaires

1. Is argued to be inadequate to understand some forms of information - i.e. changes of emotions, behavior, feelings etc.
2. Phenomenologists state that quantitative research is simply an artificial creation by the researcher, as it is asking only a limited amount of information without explanation
3. Lacks validity
4. There is no way to tell how truthful a respondent is being
5. There is no way of telling how much thought a respondent has put in
6. The respondent may be forgetful or not thinking within the full context of the situation
7. People may read differently into each question and therefore reply based on their own interpretation of the question - i.e. what is 'good' to someone may be 'poor' to someone else, therefore there is a level of subjectivity that is not acknowledged
8. There is a level of researcher imposition, meaning that when developing the questionnaire, the researcher is making their own decisions and assumptions as

to what is and is not important...therefore they may be missing something that is of importance

The process of coding in the case of open ended questions opens a great possibility of subjectivity by the researcher

II Learning Competency

Describes qualitative and quantitative designs and apply design principles and theories to create project study.

III Activities

Directions: Search the following words in the puzzle:

Questionnaire	**Hypothesis**	**Deductive**
Survey	**Observation**	**Theories**
Statistics	**Experiments**	**Interpretation**
	Quantitative	

V	Q	O	B	E	X	P	E	R	I	M	E	N	T	S
N	A	U	Q	U	A	N	T	I	T	A	T	I	V	E
O	Q	G	E	R	X	L	W	R	U	B	U	L	K	X
I	K	I	A	S	W	I	X	G	Q	G	I	Y	Z	T
T	S	N	O	I	T	A	V	R	E	S	B	O	G	H
A	W	T	X	E	H	I	Z	B	S	D	U	C	Q	E
T	P	O	A	L	V	S	O	U	I	M	E	G	U	O
E	B	E	V	T	M	I	R	N	T	C	S	J	N	R
R	H	I	W	Y	I	V	T	Y	N	P	H	V	K	I
P	B	S	R	V	E	S	N	C	B	A	G	U	M	E
R	C	H	C	Y	F	O	T	D	U	N	I	L	K	S
E	O	V	P	V	R	N	V	I	B	D	F	R	N	J
T	L	G	Q	Y	O	W	Z	U	C	P	E	I	E	G
N	V	M	H	T	V	N	H	E	V	S	Y	D	V	H
I	E	U	Y	J	H	Y	P	O	T	H	E	S	I	S

Activity 1.2: Using your Self Learning Modules, review triangulation and write your reflection on Qualitative Research Design. The following guide question will help you write your reflection.

Guide Questions

1. What is Quantitative Design?
2. What makes Quantitative Design different from Qualitative Research Design?
3. How does Quantitative Design help you in solve a question in research?

IV Reflection

_____
_____
_____
_____
_____

Rubric for Activity 1.2 (Reflection)

Features	1	3	5
Organization	Information is not only organized but innacurate	Information is appears to be organized and factual	Information is very organized and factual
Content	Lacks development and self-reflection	Demonstrate a reflective analysis	Demonstrate a thorough self-reflective analysis
Sources	Sources are not documented	some sources are not accurately documented	Sources are documented

References:

https://www.le.ac.uk/oerresources/lill/fdmvco/module9/page_44.htm

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