**HANDOUT #2**

**RES421 Introduction to Research and FS W/F 11:30 -1:00 (CE)**

**Engr. Reynaldo P Ramos, PhD Monday 1:00-2:00 (EE)**

1. **Why Research?**

It is important to conduct or do research because:

* It is a major contributor towards attainment of national development goals
* It plays a major role in shaping the nature’s future development and modernization
* In particular, undergraduate or college thesis is not compilation of the ideas of the writers or researchers but an organization of their views in one’s own way to show the relation of the different ideas and if possible, to draw conclusions based on one’s readings.
* Its purpose to answer a specific question, to solve a particular controversy or issue
* Its primary objective is to (a) seek new knowledge and (2) provide useful information in the form of verification.

**Thus the value of Research to Man as follows:**

* Research improves quality of life
* Research improves instruction
* Research improves student’s achievement
* Research improves teacher’s competence
* Research satisfies man’s needs
* Research reduces the burden of work
* Research has deep-seated psychological aspects
* Research improves the exportation of food products
* Research responds to the economic recovery and austerity measure of the country
* Research trains graduates to become responsive to the economic development of the country and compete globally (ASEAN integration and entrepreneurship )

**THESIS:** A formal and lengthy research paper, especially one written in partial fulfillment of the requirements for a master’s degree.

**DISSERTATION**: It is more sophisticated research paper written in partial fulfillment of the requirements for a doctorate degree.

1. **Characteristics of Research**
2. Empirical – direct/practical experience or observation. The collection of data relies on practical experience without giving consideration to scientific knowledge or theory.
3. Logical – valid procedures and principles. Scientific study is done in an orderly manner. Systematic examination of the procedures used in the research enables investigator to draw valid conclusions.
4. Cyclical- it starts with a problem and ends with a problem; continuous endeavor. One research study draws conclusions and recommendations to further conduct several studies or potential researches will be conducted.
5. Analytical – utilize proven analytical procedures in gathering data, whether historical, descriptive, experimental and case study.

d.1 Historical – the data focused in the past

d.2 Descriptive – the study focuses on the present situation

d.3 Experimental – focuses on the future situation

d.4 Case Study – focused on the past, present and future data

1. Critical – exhibits careful and precise judgment.
2. Methodical – in methodical or orderly manner without bias using systematic/organised methods and procedures
3. Replicability – research design and procedures are replicated or repeated to enable the researchers to arrive at valid and conclusive results. It mean using the same instrument, method and procedure but to different venues and subjects.

1. **Qualities of a Good Researcher**

R = research-oriented, E=efficient, S= scientific, E= effective, A=active, R=resourceful, C=creative, H=honest, E= economical, and R=religious (*Calmorin & Calmorin, 2007*)

**R= responsibility, E=excellence, S=scholarly, E=enhancement, A=acceptability, R=re-invent, C=career, H=heart, E=extension, R=rewards/recognition**

1. **Characteristics of the Researcher**
2. Intellectual curiosity – deep thinking and inquiry
3. Prudence –careful to conduct research at the right time and place, wisely, efficiently and economically.
4. Healthy criticism – always doubtful as to the truthfulness and veracity/authenticity of the results
5. Intellectual Honesty – honest to collect or gather data or facts in order to arrive at honest results
6. Intellectual Creativity – creates new researches and innovative
7. **Types of Research**
8. Basic Research – called fundamental research or pure research which seeks to discover basic truths or principles. (Boyle’s Law, Charles Law, Archimedes Law, Newton’s Law, Hooke’s Law)
9. Applied Research – seeking new applications of scientific knowledge to the solution of a problem
10. Developmental Research – decision-oriented research involving the application of the steps of the scientific method in response to an immediate need to improve existing practices
11. **Classification of Research**
* Library Research – done in the library where answers to specific questions or problems. Field an laboratory researches also make use of the library researches
* Field Research – conducted in a natural setting and applicable to descriptive survey and experimental methods
* Laboratory Research – conducted in artificial or controlled conditions by isolating the study in a thoroughly specified and equipped area. It is applicable to experimental, descriptive and case study methods
1. **Variables -** It is defined as a quantity susceptible of fluctuation or change in value or magnitude under different conditions. Numerical values or categories represent these quantities.

**Types of Variables:**

1. Independent variable – the stimulus variable which is chosen by the researcher to determine its relationship to an observed phenomenon. This is the one being manipulated.
2. Dependent variable – this is the response variable which is observed and measured to determine the effect of the independent variable – it changes when the independent variable varies.
3. Moderate variable - this is a secondary or special type of independent variable to determine if it changes or modifies the relationship between the independent and dependent variables.
4. Control variable - this is a variable that is controlled in which the effects can be neutralized by eliminating or removing the variable.
5. Intervening variable – this is a variable which interferes with the independent and dependent variables, either its strengthen or weaken these variables.
6. **Components of the Research Process**
7. Selecting a research topic and research proposal writing, (b) Reviewing of literature, (c) Deciding on the research approach and technique to data collection, (d) Designing formal for primary and secondary data collection, (e) Data measurement and coding, (f) Analysis of the results, (g) Structuring and writing the research.
8. According to Calmorin & Calmorin (2007), the research process consists of the ff: (1) problem/objectives, (2) hypotheses, (3) theoretical/conceptual framework, (4) assumptions, (5) review of related literature, (6) research design, (7) data collection, (8) data processing and statistical treatment, (9) analysis and interpretation, (10) summary, conclusions and recommendations
9. **What is Abstract?** It is a brief and concise descriptive summary of statement of the problem, hypotheses, significance of the study, research design, determination of sample size, sampling design and technique, the research instrument and validation, data processing and method, statistical analysis, findings, conclusions and recommendations.

**Forms of Abstract:**

1. Short Form – it consists of 100-250 words and normally used for publication of research paper in a journal.
2. Extended Form – it consists of 500 – 900 and being used in research paper contest; and presentation of scientific papers during symposium, seminars and conference.
3. Long Form – it consists of 900-1000 words and being used in master’s thesis and PhD dissertation
4. **Literature Review**

A literature is an independent works or brief introduction to the reports of new primary data with different focuses, goals, perspectives, strategies, organization and audiences. It can also focus on research outcomes, research methods, theories and applications. It provides background to and context for the research and to establish a bridge between the research study and the existing body of knowledge on the research topic. It is a process in which the researcher “critically” reviews available literature directly or indirectly related to the conduct of the research.

There are three main reasons why a literature is necessary: (a) determining what research has been done on the research topic, (b) determining what level of theory and knowledge development relevant to the research topic, (c) determining relevance of the current/existing knowledge in relation to research problem.

**Major Steps to Literature Review**

1. Determine when to conduct a search, (b) Delimit what is searched, (c) Access database for books, journals, and documents, (d) Organize the information gathered, (e) Critically evaluate the literature, (f) Write the literature review

**Designing a Research Strategy**

1. What type of research topic/study are you working? (b) How much time do you have? (c) What type of information do you need?

**SUGGESTED READING MATERIALS**

1. Paler-Calmorin & L, Calmorin, M A (2007). *Research Methods and Thesis Writing, 2nd edition*, Rex Book Store, Manila, Philippines
2. Albert, J R (2008). *Basic Statistics for the Tertiary Level,* Padua, Patungan & Marquez (eds), Rex Book Store, Manila, Philippines
3. Asaad, A S (2008). *Statistics Made Simple for Researchers*, Rex Book Store, Manila, Philippines
4. Sanchez, C A (1998). *Methods Techniques of Research, 3rd Edition*, Rex Book Store, Manila, Philippines
5. Jha, A S (2011). *Research Methodology*, APH Publishing Corporation, Delhi, India
6. Mustafa, A (2010). *Research Methodology*, AITBS Publishers, India