

# RESEARCH METHODOLOGY

## Introduction

## Introduction: Faculty

- **Sudarshan Raj Tiwari**
- **Sanjay Uprety**
- Nagendra Bahadur Amatya, as required/available
  - Data analysis and interpretations
    - Descriptive and inferential statistics
    - Statistical analysis, regression
    - Application of statistical analysis software such as SPSS and EXCEL

## Introduction: Students

- Name
- Academic background
- Social background
- Experience
- Specific area of Interest in E-S-SD
- Why do you think such an interest crystallized?
- Have you already gone some distance into the study?

## Introduction: Course Objectives

- **Research Design and Methodology**
  - Increasing awareness of Research, Role of RDM in an enquiry process, Philosophy, Processes and Ethics of Research
  - Introduce a Range of Research Methodologies, Methods, Techniques, Tools, weaknesses and strengths
  - Application of E/CS/S in field situation
  - writing research proposal and reports

## Introduction: Course Outline

- Nature and Types of Research, Language of Research - Terminologies, Structure and Processes of Research, Field Research
- Buildings blocks of research, Paradigms in social research
- Research and criticism, use of logic in research
- Literature survey, building theory, Referencing
- Methodology, strategies, methods
- Data analysis and interpretation, application of SPSS, EXCEL
- Writing research proposal, research report, thesis

## Introduction: Hours and Evaluation

- 4 credits 2 2 hr sessions a day for 20 days
- Basically lectures/discussions
- Assessment (40 marks) in three points
  - Cumulative assessment of interactions and outputs of tutorials
  - Written report and presentation
  - Written test
- Course Outputs
- Student Inputs 75% attendance
  - Interactions and inputs in Tutorial classes
  - Reports and Presentations on Assigned Topics
  - Participation through critiques/discussions

## Textbooks and References

- I shall be using some of these as references
  - Rossi, P.H., Wright, J.D. & Anderson, A.B. 1983, *Handbook of Survey Research*, Academic Press Inc., London.
  - McQueen, R. & Knussen, C. 2002, *Research Methods for Social Science*, Prentice Hall.
  - Jonker, J. & Pennik, B. 2002, *The Essence of Research Methodology*, Springer.
  - Polonsky, M.J. & Waller, D.S. 2005, *Designing and Managing a Research Project*, SAGE Publications, Thousand Oaks.
  - Hart, C. 2000, *Doing a Literature Search*, SAGE publications, London
  - Yin, R.K. 1994, *Case Study Research*, SAGE Publications, Thousand Oaks.
  - Groat, L. & Wang, D. 2002, *Architectural Research Methods*, John Wiley & Sons, Inc., New York.
  - Trochim, W.M.K. 2006, *Research Methods Knowledge Base*, [online]. Available: <http://www.socialresearchmethods.net/kb>, [2010, June 29]

## Language of Academic/Applied Research

Lecture  
ESSD RM L1

## Research is...

- “A studious inquiry or examination, especially a critical investigation or experimentation having for its aim the discovery of new facts and their correct interpretation, the revision of accepted conclusions, theories, or laws in the light of new discovered facts or the practical application of such conclusions, theories or laws.”
- “Diligent and systematic inquiry or investigation into a subject in order to discover facts or principles.”

## Definitions

- Research is a careful, systematic and patient study and investigation...undertaken to discover or establish facts or principles
- Knowing creates description, explanation and understanding
- New knowledge: not a perchance discovery!
  - Old Theory: New Observations
  - New Observations: New theory
  - New procedures of practice for old knowledge
- Purposefulness of research
- Changing Reality through New Knowledge

Research – what kind of search behavior is expected of the researcher?

Research = Re + Search  
Research is about searching again. It is an activity that looks back so as to move forward.  
Looking at the reality to change it/transform it?

If you want knowledge, you must take part in the practice of changing reality

- Mao-Tse Tung

## Research for ESSD

- Knowledge and Research as an aid to sustainable social development? Literature on theory, practice, instruction and on methods
- Society, Energy use, Globalization, Process, People, Market, Technology,...
- Adding to the base knowledge/increasing wisdom of your discipline?
  - Building primary knowledge
  - [Ontology, Epistemology]
  - Building applied knowledge
  - Building Didactic (process) knowledge

## Your Research may be done ...

- “in a complex environment of a society, organizations, People, processes, procedures, culture, attitudes, behavior, rules, politics; everything is going on and changes at the same times”.
- **May seek knowledge, insight, design, intervention, solution or any other means of making a ‘change’ in the problem scene.**

## Research Design, Methodology and Method

- Design is interfacing
  - Theory, methodology and context/question
- Methodology
  - Not just a route map, but a domain
  - A system of methods and principles for doing something
- Method
  - Specific steps to be taken in the research in an orderly fashion eg steps of data collection, classification, ordering, display, data analysis, interpretation etc.
  - Uses techniques (of action and thinking)

## Common Terms in Research

- THEORY\*\*
- PRACTICE\*
- HYPOTHESIS\*
- Theoretical and Empirical Research
  - Empiricism- primacy to evidence from experience or observation
- Basic and Applied Research\*
- Nomothetic and Idiographic rules
  - interested in establishing law-like statements, causes, consequences, etc
  - describes reality as it is
- Probability
  - The likelihood that an event will occur (randomly).
  - Reliability of predictions, predictive studies

Theory is “ a way of understanding the world, a framework to organize facts and experience and interpret them in a scientific way.”

-Alexander, E. R. 1986, *Approaches to Planning*, 1986, Gordon and Breach Science Publishers, Montreux

Theory is not to be taken as ‘Truth’, it may only be the latest description or explanation of reality.

Theory may have “definitional, substantive, procedural, normative” content

\*Nothing is as practical as theory – JR Oppenheimer

\*Ultimate test of worth of theory lies in its practical use/practicability

\*Didactic and Developmental relevance of research in technical disciplines

**A Good theory should have both explanatory value as well as predictive value –**

Kay, S

Towards a new theory of the firm: a critique of ‘stakeholder’ theory,  
*Management Decisions*, 37(4), 317-328

\*A hypothesis is a 'predictive' statement of a case specific nature that may be based on a pre-assumed theory and that is proposed for testing.

Alternate Hypothesis  $H_a$   
Null Hypothesis  $H_o$

## Positivism- Naturalism

- Verification (logical positivism-Vienna Circle) –Observational evidence, empiricism
- Falsification (Karl Popper) is a better epistemological basis than verification- particularly in social sciences – Null hypotheses,  $H_o$

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## Probability

- The likelihood that an event will occur. Within empirical analysis, it relates to the likelihood that an event occurred (or did not occur) randomly
- Theory of Probability offers an opportunity to statistically study a sample to estimate on parameters of the population itself

## More Common Terms in Research

- Causal relations
- Co-relations
- Temporal independence, Intertextuality
- POPULATION, SAMPLE,
- PARAMETER, VARIABLE
- Qualitative and Quantitative Data
- Independent and Dependent Variables
- Units of Analysis
- Constructs and Models
- Fact, Idea, Data