Research Methodology 1

1 An overview of research

- Methods of acquiring knowledge
  - Unreliable → ancient scholars, authorities, tradition, experts' opinion
  - Reliable → scientific methods → are purposeful and systematic, involve reflective thinking and discover new knowledge

- Definition of research
- Characteristics of research → predictive, replicable, generative, logical, generalizable
- Categories of research → original/secondary
- Types of research → pure or basic/applied
- Approaches to research → Quantitative, qualitative, mixed
- Goals of research → explain the reason for particular events/predict the generalizations/control events

2 Variables

- **Definition**
  - A variable is something that can change such as a characteristics or value.
  - Human characteristics or abilities that change over time are variables.
  - Ex. 1 a learner's vocabulary knowledge may change as he attends English classes.
  - Ex. 2 learning prefixes and suffixes to see their effects on learners' reading comprehension ability

- **Types of variables**
  - Dependent
  - Independent
  - Moderate
  - Extraneous(control)
  - Intervening

❑ Dependent and Independent variables

- The **independent variable** is selected and systematically manipulated by the researcher to determine its effects on the dependent variable.
- The **dependent variable** may change in case another variable has any impact on it.
- Ex. The impact of revision strategy on writing ability of English learners

❑ Moderator variable

- A **moderator variable** is a type of independent variable the may affect the relationship between the interdependent and dependent variables.
- It changes the effect of interdependent variables on dependent variables.
- If a variable is significant to the researcher, he highlights that variable by making a balance between two groups by establishing equal number of participants.
- Ex. If we want to consider the impact of revision strategy on writing ability of English learners and also we want to consider motivation of the learners as well, we divide the learners into two groups, one with high motivation and another with low motivation and then, revision strategies are taught to both and its effect will be tested on the learners' writing ability.

❑ **Extraneous(control) variables**

- When the effect one variable is kept constant, neutralize, or it is eliminated that variable is a **control one**.
- Ex. To have two groups of learners with the same language proficiency level. (same level of language proficiency)

❑ **Intervening variables**

- **Intervening variables** are difficult to identify since they are not directly observable but they affect the relationships between the interdependent and dependent variables.
- Ex. To have two groups of learners with the same language proficiency level. (motivation)

❑ Research validity

- Internal validity → the degree to which the results of a study is the function of the independent variable rather than factors that the researcher has not controlled.
- External validity → refers to the extent which the results of a study can be generalized to other populations, settings, and variables. (generalizability)

❑ Threats to internal validity

- **History** → an event outside the setting of the study
- **Maturation**→ the participants' biological and psychological changes
- **Pretesting procedures**→ the effect of pretest on posttest
- **Measuring instruments** → the effects of instruments
- **Statistical regression** → having groups with extreme scores
- **Selecting participants** → not having the possibility of random selection
- **Mortality** → not having all the participants up to the end of the study

CHAPTER 3

SOME SAMPLES

- Sample 1
- Among students with similar IQ, boys with instruction on vocabulary will perform better on speaking tasks than boys without this instruction while such a difference will not appear among girls.
- Sample 2
- A curriculum oriented toward problem solving will increase children's ability more than will a lecture-oriented curriculum.
- Sample 3
- There will be a positive relationship between an individual's attitude toward learning a foreign language and his language proficiency.

SAMPLING

- **Sampling from a population**
- Sampling refers to the process of selecting representative individuals based from a population of interest.
- It will be very time-consumi⊑g or costly to test, interview, or observe all members of populatio⊏; therefore, researchers use sampling to draw inferences about the target population.
- It requires system selectio⊏ of individuals ⊐nder controlled conditions.

STEPS FOR SAMPLE SELECTION

- **Defining the population**
- Population is a group of individuals who have one or more characteristics in common from which data can be gathered.
- **Identifying the sampling frame**
- A complete, accurate and recent list of all units (provinces, districts, communities, households, individuals, etc.). That is the actual population from which a random sample will be drawn.
- **Selecting a representative sample**
- All members of the population should have equal chance of being selected.
- **Sample size**
- The population size determines the sample size.
- If a sample is too small, it will fail to represent the characteristics of the population.
- In qualitative research, larger sample is required. In descriptive research, a sample of 10 to 20 percent of the population can be used.
- In experimental research, a sample of 30 participants is considered a large sample size.
- **The size of an adequate sample depend on three factors:** the nature of the population, the type of the study, the degree of precision.

TYPES OF SAMPLING

- **Random sampling**
- Simple random sampling
- Stratified sampling
- Cluster sampling
- **Non-random sampling**
- Convenience sampling
- Snowball sampling

RANDOM SAMPLI⊇G

- **Simple random sampling**
- Each member of the population has an equ⊲l ch«⊏ce of being selected for t⁻e sample.
- Sampling bias should be avoided.
- The more ⁻eterogeneous the participants of a study are, the smaller the sample is, the higher is t⁻e chance of drawing a poor s⊲mple.
- **Stra⁺ified sampling**
- Stratified random sampling divides the population into subgroups (or strata), and then r⊲ndom samples ⊲re selected from each subgroup (str⊲t⊒m) proportionally.
- **Cluster sampling**
- In this type of sampling, the pop⊐lation into a set of smaller groups or clusters and then, some clusters are randomly selected for inclusion in the sample.
- If obtaining a list of all members of the target population is difficult or impossible, an alternative approach known as cluster sampling can be ⊐sed.

NON-RAΣDOM SAMPLING

- **Convenieccce sampling**
- A sampling procedure through which a researcher selects individual or groups who are available.
- T∃ere is no attempt to ensure that the sample is represent⁴tive of the popul⁴tion.
- T∃is sampling is used frequently in the domain of applied linguistics.
- **Snowball sampling**
- When the members of the target population are a few, thec these members are asked to ic⁻troduce ot⁻er members that belong to the same population.