Student Guide to Research Paper Writing

# Types of Research

**🔹 Primary Research**

**Definition:**  
Primary research involves **collecting original data** directly from sources for a specific research goal.

**Methods Include:**

* Surveys and questionnaires
* Interviews and focus groups
* Experiments and observations
* Case studies

**Example:**  
A researcher conducts interviews with college students to study how social media affects their sleep patterns.

**🔹 Secondary Research**

**Definition:**  
Secondary research uses **existing data or information** that has been collected by others.

**Sources Include:**

* Books and journal articles
* Government reports and statistics
* Newspaper articles
* Online databases

**Example:**  
A student uses WHO reports and published journal articles to analyze global trends in mental health during the pandemic.

**Key Difference:**

* *Primary research* is **original and firsthand**, while *secondary research* is **interpreted or compiled** from existing sources.

# Types of Data

- Primary Data: Data you collect firsthand (e.g., survey responses, interview transcripts).

- Secondary Data: Pre-existing data (e.g., published studies, government records, reports from credible organizations).

# Secondary Data Sources

- Academic: Journal articles, books, conference papers (e.g., from JSTOR, Google Scholar)

- Government: Census data, public health records, education reports

- Institutional/NGO: UN, WHO, World Bank reports

- Media/Internet: Credible news outlets, statistics from reputable sites (e.g., Pew Research, Statista)

# Using Secondary Data in Primary Research

Secondary data can be used to:

- Compare it with your collected data

- Build a literature review

- Support your arguments with existing findings

- Provide a theoretical or statistical background

Example: You collect primary data on student stress and compare it with WHO data on youth mental health trends.

# Primary Data Collection Methods

- Surveys: Large groups, quantitative data.

Example: Google Forms survey on study habits across faculties.

- Interviews: Deep insights, qualitative data.

Example: One-on-one interviews with students about academic burnout.

- Focus Groups: Group dynamics and opinions.

Example: Group discussion on remote learning experiences.

- Observation: Real-time behavior tracking.

Example: Observing library usage patterns.

- Experiments: Controlled testing.

Example: Testing whether sleep quality affects memory recall.

# Primary Data Collection Platforms

- Google Forms / Microsoft Forms – Simple surveys

- Qualtrics / SurveyMonkey – Advanced survey features

- Zoom / MS Teams – Interviews & focus groups

- Wearable Devices / Apps – Health, fitness, and sleep data collection

# Research Questions vs. Survey Questionnaire

- Research Question: Broad question guiding your study.

Example: "How does sleep quality influence academic success?"

- Survey Questions: Specific items you ask participants to gather relevant data.

Example: "How many hours do you sleep on a school night?"

# Survey Question Types

- Closed-ended: "Do you consume caffeine daily?" (Yes/No)

- Likert scale: "Rate your stress level from 1 (low) to 5 (high)."

- Open-ended: "Describe any habits you think affect your sleep."

- Ranking: "Rank the following study techniques by usefulness."

- Demographic: "What is your age group?"

# In-text Citation

In-text citation gives credit to sources within the body of your writing.

APA Style:

- Format: (Author, Year)

Example: Students who sleep less than 6 hours tend to perform worse academically (Smith, 2022).

MLA Style:

- Format: (Author Page)

Example: The correlation between stress and GPA is well documented (Jones 45).

IEEE Style:

- Format: Uses numbers in brackets corresponding to the reference list.

Example: Sleep quality has been shown to significantly impact memory performance [1].

Note: In IEEE, number sources in the order they appear and reuse the same number for repeated citations.

# Referencing

Your reference list (or bibliography) appears at the end of your paper.

APA Example:

Smith, J. (2022). Student Sleep Habits and Academic Success. New York: Academic Press.

MLA Example:

Smith, John. Student Sleep Habits and Academic Success. Academic Press, 2022.

IEEE Example:

[1] J. Smith, Student Sleep Habits and Academic Success, New York: Academic Press, 2022.

Tip: Use a citation manager like Zotero, Mendeley, or built-in tools in Google Docs and Microsoft Word to format citations correctly.

**IEEE Citation Style**

The **IEEE citation style** is a widely used referencing format developed by the **Institute of Electrical and Electronics Engineers**. It is commonly used in engineering, computer science, and technology fields.

* **In-text citations** are numbered in square brackets (e.g., [1]) and correspond to the full citation in the reference list.
* The **reference list** is ordered **numerically** (not alphabetically) based on the order of appearance in the text.
* It includes standard formats for **books**, **journal articles**, **conference papers**, **websites**, and **online sources with DOIs**.
* IEEE style emphasizes **clarity and consistency**, making it easy to trace and verify sources.

# Types of Likert Scale Questions

Likert scale questions are commonly used in surveys to measure attitudes, opinions, or behaviors. They provide a range of options that reflect varying degrees of agreement, frequency, satisfaction, or importance.

1. Agreement Scale

Example: "I feel confident in my academic abilities."

- Strongly Disagree

- Disagree

- Neutral

- Agree

- Strongly Agree

2. Frequency Scale

Example: "How often do you revise before an exam?"

- Never

- Rarely

- Sometimes

- Often

- Always

3. Satisfaction Scale

Example: "How satisfied are you with your current sleep quality?"

- Very Dissatisfied

- Dissatisfied

- Neutral

- Satisfied

- Very Satisfied

4. Importance Scale

Example: "How important is exercise to your daily routine?"

- Not at all Important

- Slightly Important

- Moderately Important

- Very Important

- Extremely Important

5. Likelihood Scale

Example: "How likely are you to use library resources for studying?"

- Very Unlikely

- Unlikely

- Neutral

- Likely

- Very Likely

**Sampling methods** are strategies used to select a subset of individuals (a sample) from a larger population for research. These methods fall into two broad categories: **probability sampling** and **non-probability sampling**. Here's an overview of the main types and their differences:

**1. Probability Sampling Methods**

These involve random selection, giving each member of the population a known, non-zero chance of being chosen. They aim to minimize bias and are ideal for generalizing findings to a larger population.

* **Simple Random Sampling**  
  Every individual has an equal chance of being selected.  
  *Example:* Drawing names from a hat or using a random number generator.
* **Systematic Sampling**  
  Every *k*th individual is selected from a list after a random starting point.  
  *Example:* Selecting every 10th student from an enrollment list.
* **Stratified Sampling**  
  The population is divided into subgroups (strata) based on a shared characteristic, and random samples are taken from each stratum.  
  *Example:* Sampling 20 students from each faculty.
* **Cluster Sampling**  
  The population is divided into clusters (often geographically), and entire clusters are randomly selected.  
  *Example:* Randomly selecting 3 dormitories and surveying all students in them.

**2. Non-Probability Sampling Methods**

These do not involve random selection. They are often quicker and easier but may introduce sampling bias, limiting generalizability.

* **Convenience Sampling**  
  Selecting individuals who are easiest to reach.  
  *Example:* Surveying students in the library at the time of data collection.
* **Voluntary Sampling**  
  Participants opt in, usually by responding to a public invitation.  
  *Example:* A survey link emailed to all students who choose to respond.
* **Purposive (Judgmental) Sampling**  
  Selecting individuals based on specific characteristics or qualities.  
  *Example:* Only surveying students who report high academic stress.
* **Snowball Sampling**  
  Existing participants recruit future participants from their network.  
  *Example:* Asking students to refer peers for a mental health study.

**Key Differences**

| **Aspect** | **Probability Sampling** | **Non-Probability Sampling** |
| --- | --- | --- |
| Selection | Random | Non-random |
| Bias Risk | Low | High |
| Generalizability | Strong | Limited |
| Time & Cost | Higher | Lower |
| Common Use | Quantitative, large-scale studies | Exploratory, qualitative, or hard-to-reach populations |