Lecture 1
Introduction to Research

Undergraduate Course

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What is Research?

- Grinnell (1993) defined research as " a structured inquiry that utilises acceptable scientific methodology to solve problems and creates new knowledge that is generally applicable" (p.4).

- Burns (1997) viewed research as "a systematic investigation to find answers to a problem" (p.2).

- Creswell and Poth (2018) highlighted that research is "a rigorous, systematic, and objective process of inquiry designed to discover, interpret, or revise facts, events, behaviors, or theories, or to make practical applications with the help of such knowledge" (p. 7)

- Thus, it can be said that research is a voyage of discovery of new knowledge

Why do we do Research?

The aims of research, or the reasons why we conduct it, generally revolve around advancing knowledge, solving problems, and informing decision-making.

- **To Expand Knowledge and Understanding:** Research seeks to explore the unknown, uncover new facts, or deepen our comprehension of existing phenomena. As Bryman (2016) notes, "The primary aim of research is to contribute to the body of knowledge in a particular field by systematically investigating questions or hypotheses" (p.10).

- **To Solve Problems:** Research is often conducted to address practical or theoretical challenges. Leedy and Ormrod (2015, p.4) explain that "research is a process by which we attempt to find answers to questions or solutions to problems in a systematic way".

- **To Test or Develop Theories**: Research aims to validate, refine, or create theoretical frameworks that explain how or why things occur. Creswell (2014, p.8) highlights that "one purpose of research is to develop or test theory, providing a foundation for further inquiry"

- **To Inform Decision-Making and Practice:** Research provides evidence that can guide actions in fields like policy, education, medicine, or business. "The ultimate aim of research is to generate reliable and valid data that can be used to make informed decisions or improve practices" (Kumar, 2014, p.12).

- **To Explore and Innovate:** Research often drives innovation by exploring uncharted areas or questioning established norms. According to Punch (2014, p.3), "Research is about discovery and pushing boundaries, whether to invent new technologies or rethink old assumptions"

Characteristics of Research

Research is distinguished as a disciplined and purposeful activity. It is:

1. **Systematic:** Research follows a structured and logical process, with clear steps from planning to conclusion.
2. **Objective:** It strives to minimize bias and base findings on evidence rather than personal opinion.
3. **Empirical:** Research relies on observable and measurable evidence.
4. **Replicable:** Good research can be repeated by others to verify results.
5. **Logical:** It adheres to principles of reasoning, ensuring conclusions follow from evidence.
6. **Purposeful:** Research is driven by specific aims or questions.

Requirements of Research

To conduct research effectively, the following requirements are necessary:

1. **Clear Research Problem or Question:** Research begins with a well-defined issue or query.

2. **Appropriate Methodology:** A suitable design or approach (e.g., qualitative, quantitative, or mixed methods) must be selected.

3. **Access to Data or Resources:** Research requires relevant and reliable data, whether through observation, experiments, surveys, or existing records.

4. **Ethical Considerations:** Research must adhere to ethical standards, such as informed consent and confidentiality.

5. **Competence and Skills:** The researcher must possess the knowledge and ability to design, conduct, and analyse the study.

6. **Time and Funding:** Adequate resources, including time and financial support, are often necessary.

7. **Documentation and Reporting:** Results must be recorded and communicated clearly.
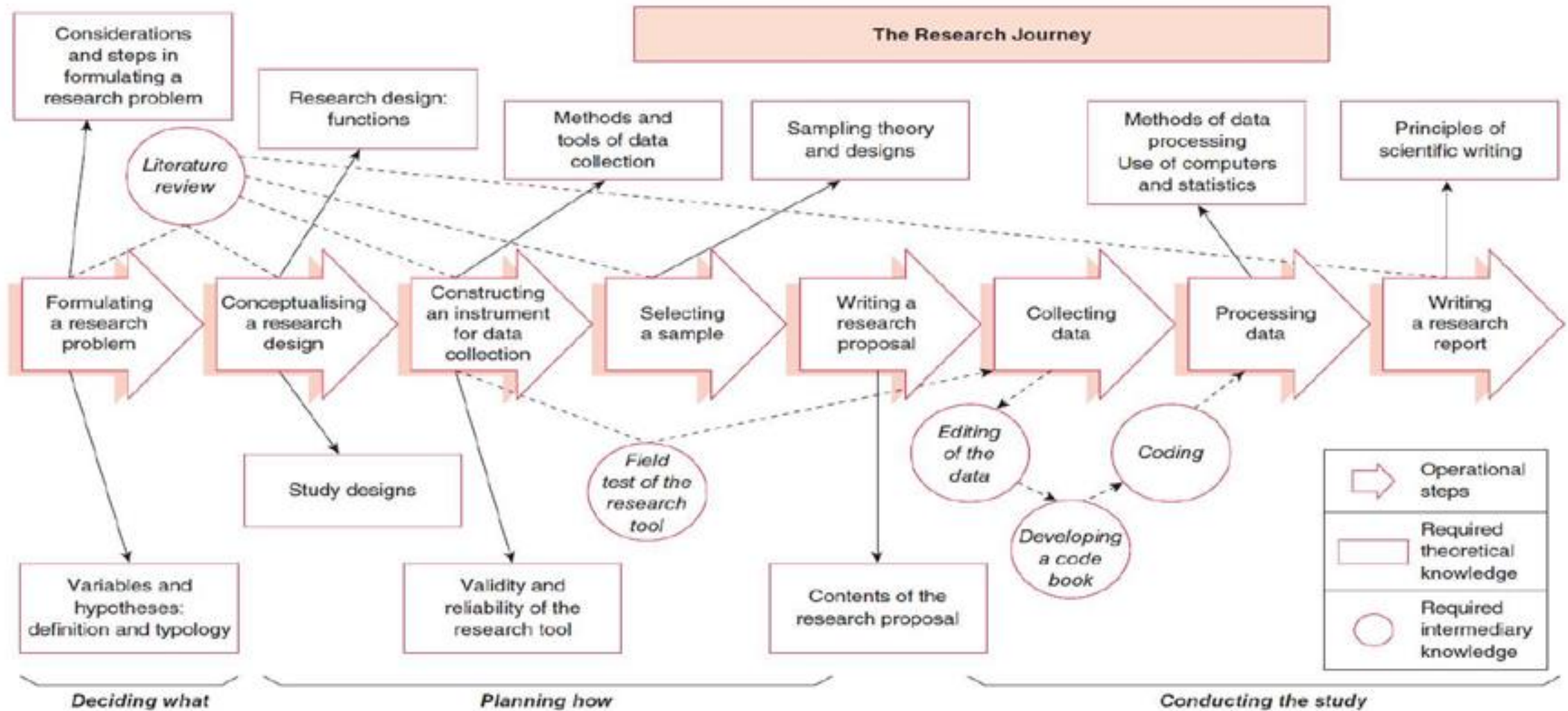
Stages of the Research Process

Figure 2.2 The research process

Kumar, R. (2011). Research methodology: A step-by-step guide for beginners, 3rd ed. Sage

Stages of the Research Process

The research process is a structured sequence of steps that researchers follow to systematically investigate a problem, answer a question, or achieve a specific aim. While the exact steps may vary depending on the discipline or methodology.

1. **Identifying the Research Problem or Question:** The process begins with recognizing a gap in knowledge, a practical issue, or a question that needs exploration. This step defines the focus and purpose of the research.

2. **Reviewing the Literature:** Researchers examine existing studies, theories, and data to understand the context, avoid duplication, and refine their problem or question.

3. **Formulating Objectives, Hypotheses, or Research Questions**: Specific goals or testable statements (hypotheses) are developed to guide the study. In qualitative research, broader questions may be posed instead.

4. **Designing the Research Methodology:** This involves selecting an appropriate approach (e.g., experimental, survey, case study) and determining methods for data collection and analysis.

5. Collecting Data: Data are gathered using the chosen methods, such as interviews, experiments, observations, or archival records, ensuring accuracy and relevance.

6. Analysing and Interpreting Data: Collected data are processed (e.g., statistically or thematically) and interpreted to draw meaningful conclusions or patterns.

7. Drawing Conclusions and Reporting Findings: Results are summarised, linked back to the objectives or hypotheses, and communicated through reports, articles, or presentations.

8. Evaluating and Disseminating Results: The research is assessed for its implications, limitations, and future directions, and shared with relevant audiences (e.g., academics and practitioners).

Scientific approach in social sciences research

- According to Babbie (2021), the scientific approach in the social sciences is structured method of inquiry that relies on observation, hypothesis testing, and empirical evidence to analyze and interpret social phenomena.

- The scientific approach in the social sciences applies the principles of systematic inquiry, empirical evidence, and objectivity that were originally developed in the natural sciences, to study human behaviour, societies, and social phenomena. While it offers a structured and rigorous framework, its application in the social sciences faces unique challenges and limitations due to the complexity of human subjects.

Key principles of scientific approach adapted to social sciences research

- **Empiricism:** Relies on observable data (e.g., surveys, interviews, or statistical records).

- **Objectivity:** Aims to reduce researcher bias in studying subjective human experiences.

- **Systematic Process:** Follows structured steps (e.g., problem identification, data collection, analysis).

- **Replicability:** Seeks consistent results across studies, though often challenging.

- **Falsifiability:** Tests hypotheses that can be disproven (e.g., "Poverty causes crime").

- **Generalizability:** Aims for findings applicable to broader populations or contexts.

Limitations of the Scientific Approach in the Social Sciences

"The scientific approach in social sciences seeks to emulate the rigor of natural sciences while grappling with the messiness of human behavior" (Bryman, 2016, p.15)

While powerful, the scientific approach encounters significant limitations when applied to social phenomena due to their dynamic, subjective, and context-dependent nature.

1. **Complexity and Variability of Human Behaviour:** unlike physical phenomena (e.g., gravity), human actions are influenced by emotions, culture, history, and free will, making them unpredictable and hard to control.

2. **Subjectivity and Bias:** both researchers and participants bring subjective perspectives, which can influence data collection and interpretation despite efforts at objectivity.

3. **Ethical Constraints**: Ethical considerations, such as avoiding harm to participants, restrict experimental control and manipulation compared to natural sciences.

4. Lack of Replicability: social contexts change over time and place, making it difficult to repeat studies with identical conditions or results.

5. Measurement Challenges: abstract concepts like happiness, power, or identity are hard to quantify or measure precisely, unlike physical properties (e.g., mass).

6. Context Dependence: social phenomena are embedded in specific cultural, historical, or situational contexts, limiting universal conclusions.

7. Influence of the Observer (Reactivity): the presence or actions of researchers can alter participants' behaviour (e.g., the Hawthorne effect), skewing results.

8. Interpretive Nature of Data: social science data often requires interpretation (e.g., qualitative analysis), introducing ambiguity not typical in natural sciences.

Educational Research

- Educational research applies the scientific method to investigate issues in education, aiming to enhance teaching and learning practices (Creswell, 2018).

- Johnson and Christensen (2017) noted that Educational research is essential as it offers evidence and insights that help improve teaching and learning in a constantly changing world.

- Educational research is a systematic and disciplined inquiry aimed at investigating phenomena related to education, such as teaching, learning, curriculum, student behaviour, and educational policies. It applies scientific methods to generate knowledge that improves educational practices, informs policy, and enhances understanding of how individuals learn and develop within educational contexts.

Why do we do educational research?

The purposes or aims of educational research align with the broader goals of research but are tailored to the educational domain.

- **To Expand Knowledge and Understanding:** Educational research seeks to deepen our understanding of how learning occurs, what factors influence it, and how educational systems function.
  - Example: A study investigates how memory retention improves with spaced repetition versus massed practice, revealing cognitive principles that inform study habits.

- **To Solve Practical Problems:** It addresses real-world challenges in education, such as improving student outcomes or reducing dropout rates.
  - Example: Research on why students struggle with math identifies gaps in teacher training, leading to targeted professional development programmes.

- **To Test or Develop Theories:** It supports or refines theories about learning, motivation, or development to guide educational practice.
  - Example: A study tests Vygotsky's Zone of Proximal Development by examining how peer tutoring boosts reading skills, refining the theory's application.

- **To Inform Decision-Making and Practice:** Research provides evidence for educators, policymakers, and administrators to make informed choices about curriculum, teaching methods, or resource allocation.
  - Example: Research showing that smaller class sizes improve student engagement leads to policy changes reducing classroom overcrowding.

- **To Explore and Innovate:** It explores new approaches, technologies, or strategies to enhance education and drive innovation.
  - Example: A study evaluates the impact of gamified learning apps on student motivation, paving the way for new educational tools.

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