WEEK 6

# Medical Research

## RESEARCH PARADIGMS

MONEEB ALARABIAT & MAZEN ALNASHASH

# 1. Emic – Etic Distinction

• Terms addressing **rules of language**.

• **Emic** comes from **phonemic**.

• **Etic** comes from **phonetic**.

• **Emic** refers to constructs or behaviours that are **unique to an individual or sociocultural context** and are **not generalizable**.
Example: the **Jewish High Holy Days** or the **Christian Easter celebration** are religion-specific concepts and are not universally acknowledged.

• **Etic** refers to **universal laws and behaviours** that transcend cultures and apply to all humans.
Example: humans as biological organisms need to **eat, drink, and sleep** to survive.

---

# 2. The Research Wheel

• The **Research Wheel** shows that scientific research is a **continuous cycle** connecting **Theories** and **Data**.

### Deduction (Top-Down)

• Starts with a **theory**.
• Develops a **hypothesis**.
• Collects **data** to test the hypothesis.
• Used for **testing theories**.

### Induction (Bottom-Up)

• Starts with **data or observations**.
• Identifies **patterns**.
• Builds a **new theory**.
• Used for **creating theories**.

• **Deduction tests ideas with facts**, while **induction uses facts to build ideas**.

---

# 3. Research Paradigm

# 4. What is Meant by a Paradigm?

• Meaning of “paradigm” in the English Cambridge Dictionary:
“**Model of something, or a very clear and typical example of something**.”

• Origin: late 15th century, from Greek **paradeigma**, meaning “show side by side.”

• Paradigms are **general frameworks or viewpoints** that provide ways of looking at life and are based on assumptions about the **nature of reality** (**Babbie, 1998**).

---

## 5. Background About Research

• The word **paradigm** was first used by the American philosopher **Thomas Kuhn (1962)**.

• The word originates from Greek and means **pattern**.

• A research paradigm is “the set of common beliefs and agreements shared between scientists about how problems should be understood and addressed” (**Kuhn, 1962**).

• It includes the beliefs that shape how a researcher **views, interprets, and performs within the world** (**Kivunja & Kuyini, 2017**).

---

## 6. Background About Research Paradigm (Continued)

• A paradigm is **not a methodology**, but a **philosophy** that directs the research process.

• Paradigm is:

- The way of understanding and investigating reality (**Rehman & Alharthi, 2016**)
- The framework directing research and practice (**Willis, Jost, & Nilakanta, 2007**)
- The lens through which researchers understand reality (**Shek & Wu, 2018**)

• The **paradigm and research questions** determine the most suitable methods of **data collection and analysis** (**Mackenzie & Knipe, 2006**).

---

## 7. Background About Research Paradigm (Continued)

• The selected paradigm should guide the selection of the **research methodology**.

• There should be **coherence between the paradigm and the research method** to ensure research quality.

---

# 8. Components of Research Paradigm

Research paradigm consists of interconnected components that guide the research process from understanding reality to collecting data.

Ontology and epistemology are to research what 'footings' are to a house: they form the foundations of the whole edifice. (Grix, 2004, p. 59)

---

# 9. Ontology

• The term **Ontology** is from two Greek words (onto, which means 'being or existence' and logia, which means 'science, study or theory') (Antwi & Hamza, 2015).

• **Ontology** is a view of the nature of reality whether it is external or internal to the knower (Willis, Jost, & Nilakanta, 2007).

• Ontology identifies the nature and shape of **social reality** and what can be recognized about this reality (Antwi & Hamza, 2015).

• The **ontological questions** are:
❖ What is the form and nature of reality?
❖ Is this reality external to social actors? (Guba & Lincoln, 1994)

## Examples of ontological questions

• What is a thing?
• What are the fundamental parts of the world?
• How are they related to each other?

## Types of Ontology

1. **Objectivism**: holds that there is an independent reality – external reality
2. **Constructionism**: assumes that reality is the product of social processes – constructed reality (Neuman & Kreuger, 2003)

• The ontological question leads the investigator to ask what type of reality is existent: a single reality or socially constructed multiple realities (Patton, 2002).

---

# 10. Epistemology

• **Epistemology**: The study of knowledge
➢ Its nature
➢ Its possible scope
➢ Its necessary limits

• The term epistemology comes from the Greek word **epistêmê**, which means knowledge or understanding (Trochim & Donnelly, 2001).

• Epistemology is the **philosophy of knowledge** or how we come to know (Trochim & Donnelly, 2001).

• Epistemology is closely linked to **ontology and methodology** (Krauss, 2005).

• Ontology involves the philosophy of reality, epistemology addresses how we come to know that reality while methodology identifies the practices used to attain knowledge of it (Krauss, 2005).

Put simply, epistemology describes how we come to know something; how we know the truth or reality.

---

## Types of Knowledge

1. **Practical knowledge**: skills-based knowledge (e.g., driving, computer use)
2. **Knowledge by acquaintance**: familiarity with people or objects
3. **Factual knowledge**: knowledge based on facts

• Epistemologists are concerned with **propositional knowledge** (knowing-that some proposition is true).

• A proposition is a statement such as:

- "Dogs are mammals"
- "2+2=7"

• A proposition may be true or false.

• Propositional knowledge is expressed using **"that"-clauses**, e.g., "He knows that Houston is in Texas."

---

## Tripartite Analysis of Knowledge

**Knowledge = Justified True Belief (JTB), Three Conditions of Knowledge:**

1. **Truth condition**
2. **Belief condition**
3. **Justification condition**

## The Truth Condition

- What is false cannot be known.
- Only **true statements** can be known.
- Example: If something did not happen, nobody can know that it happened.

## The Belief Condition

- Knowledge requires **belief**.
- If you do not believe something, you cannot know it.
- Belief can include strong confidence in truth.

## The Justification Condition

- Knowledge must be a **justified true belief**.
- Justification means having **evidence or adequate reasons**.
- This prevents **lucky guesses** from being considered knowledge.

## Epistemology (Continued)

- Epistemology concerns the type of knowledge generated and standards for justifying it (Willis, Jost, & Nilakanta, 2007).

- Epistemic understanding determines the type of knowledge available or required by the researcher (Rapport et al., 2018).

## Epistemological Questions

❖ What does knowledge mean?
❖ How is knowledge acquired?
❖ How do we know what we know?
❖ What is the basis for true knowledge?
❖ Are there limitations to what we know?

### Reality Assumptions

• If a **single reality** is assumed, the researcher adopts **objective detachment** to reveal how things really are.

• If **multiple realities** are assumed, the researcher rejects studying people as objects and instead seeks **subjective understanding within context** (Patton, 2002).

---

## 11. Methodology

• It guides the researcher in deciding what type of **data is required** for a study and which **data collection tools** will be most appropriate for the purpose of the study.

• The methodological question leads the researcher to inquire **how the world should be studied** (Rehman & Alharthi, 2016).

---

## 12. Methods

• The **means of collecting and analysing data**.

• Selection of methods depends on the **design of the study** and the **research questions** (Rehman & Alharthi, 2016).

---

## 13. Methodology vs Methods

• Methodology can be viewed as a **map**, and methods as a **sequence of steps** to move between two points on this map (Jonker & Pennink, 2010).

---

## 14. Key Research Paradigms

1. **Positivism**
2. **Post positivism**
3. **Constructivism (Interpretivism)**
4. **Pragmatism** (Hallebone & Priest, 2008)

---

## 15. Positivism

• Positivism sees social science as an **organized method combining deductive logic with empirical observations** to discover causal laws that predict human behaviour (Neuman & Kreuger, 2003).

• Reality exists **independently of humans** and is governed by **unchangeable laws** (Rehman & Alharthi, 2016).

• Positivism is used to **test theories and hypotheses** (Taylor & Medina, 2011).

• The social world is treated like the **natural world (cause–effect relationships)**.

• The reality is **context-free**, allowing generalization across time and place.

• The epistemological position is **objectivism** (researcher is independent and neutral).

• Knowledge is **objective and quantifiable**.

• Positivism is the basis of **quantitative research** (Rehman & Alharthi, 2016).

• Synonymous with **scientific method, empiricism, objectivism** (Mack, 2010).

---

## 16. Characteristics of Positivism

• Focus on **prediction and hypothesis testing**.
• Uses **hypothetico-deductive model** (theory → test → verification).
• Researcher is **detached and objective**.
• Uses **large samples** for generalization.
• Based on **empirical data only**.

---

## 17. Criticism of Positivism

• Separation between researcher and phenomenon is **problematic**.
• Researcher's **values and interests can influence findings**.
• Impossible to fully remove **subjectivity and interpretation** from research.

---

## 18. Post Positivism (Critical Realism)

• Developed as a **response to criticisms of positivism**.

• Assumptions:
o Reality exists **independently of the observer**.
o Researcher's **beliefs and values may influence findings** (Rehman & Alharthi, 2016).

• Rejects strict **neutrality and detachment** of positivism.

• Accepts that **complete objectivity is not possible**.

---

## 19. Post Positivism (Continued)

• Critiques positivism's strict reliance on empiricism.

• Promotes **triangulation of qualitative and quantitative methods**.

• Uses **mixed methods** to explore multiple perspectives (Bisman, 2010).

• Focuses on **deeper understanding of research problems** (McEvoy & Richards, 2006).

• Knowledge is **always tentative and open to revision**

---

## 20. Constructivism (Interpretivism)

• Aims to:
o Understand social phenomena in **context**.
o Understand how people **construct meaning** of their world.

• Uses **qualitative methods** (ethnography, case studies).

• Researcher **interacts with participants**.

• Uses **inductive analysis** (patterns → themes → theory). (Krauss, 2005)

• Knowledge is **constructed, not discovered**.

---

## 21. Constructivism (Continued)

• Rejects fixed **dependent and independent variables**.

• Focuses on **human sense-making and experience** (Antwi & Hamza, 2015).

• Reality is **subjective and multiple**.

---

## 22. Constructivism and Qualitative Research

• No **objective single reality**.
• Multiple realities exist based on **human experience**. (Krauss, 2005)

• Research requires **long engagement in natural settings**.

• Good constructivist research requires adequate time in the field.

---

## 23. Quality in Constructivist Research

• **Credibility** (internal validity)
• **Transferability** (external validity)
• **Dependability** (reliability)
• **Confirmability** (objectivity)

---

## 24. Pragmatism

**• Pragmatism is not always referred to as a paradigm or philosophy of science since it is not committed to a single philosophy.**

• Pragmatism originates from the Greek word **pragma**, which means **action, activity or the work done**.

• It is a philosophy that encourages people to find **processes that work in order to achieve desired ends**.

• It is concerned with the **best practical way to answer a research question**, and the research question becomes the **pivotal point for selecting methods**.

• Pragmatism is mostly associated with **mixed methods research** (O'Neil & Koekemoer, 2016).

---

# 25. Pragmatism (Approach)

• The pragmatic approach relies on a version of **abductive reasoning** that moves back and forth between **induction and deduction** to connect theory and data.

• It converts **observations into theories** and then assesses those theories through action.

• This abductive process is often used in **mixed methods research**, where:

- qualitative (inductive) findings inform quantitative (deductive) results
- and quantitative results can also guide qualitative inquiry

---

# 26. Pragmatism – Advantages

1. Provides a **more complete and complex understanding** of the research problem than using a single method alone (qualitative or quantitative).
2. Brings **quantitative and qualitative approaches together**, using the strengths of each to compensate for the weaknesses of the other.

• Qualitative research provides **depth and contextual understanding**, but may lack breadth due to small samples.

• Quantitative research provides **breadth and generalization**, but often lacks depth and contextual

| Philosophy | Constructivism | Positivism |
|---|---|---|
| *Type of research* | Qualitative | Quantitative |
| *Methods* | Open-ended questions, emerging approaches, text and/or image data | Closed-ended questions, pre-determined approaches, numeric data |
| *Research practices* | Positions researcher within the context<br>Collects participant-generate meanings<br>Focuses on a single concept or phenomenon<br>Brings personal values into the study<br>Studies the context or setting of participants<br>Validates the accuracy of findings<br>Interprets the data<br>Creates an agenda for change or reform<br>Involves researcher in collaborating with participants | Tests or verifies theories or explanations<br>Identifies variables of interest<br>Relates variables in questions or hypotheses<br>Uses standards of reliability and validity<br>Observes and then measures information numerically<br>Uses unbiased approaches<br>Employs statistical procedures |