

Unit 1: What Do We Know and How Do We Know It?

Reasoning Exercises in Islam and Science

Lesson 3 - Overlapping Naturalistic and Islamic Epistemologies

Time Length: 45-50 min.

INSTRUCTIONAL OUTCOMES

NGSS (Next Generation Science Standards)

Science and Engineering Practices:

- Engaging in Argument from Evidence: Students will engage in discussions about the validity of different types of judgments in naturalistic and Islamic epistemologies.
- Obtaining, Evaluating, and Communicating Information: The lesson includes evaluating different sources of knowledge and communicating the distinctions between naturalistic and Islamic perspectives.

Crosscutting Concepts:

- Cause and Effect: Understanding the influence of different epistemological beliefs on the interpretation of scientific and religious knowledge.
- Systems and System Models: Exploring how different systems of thought (naturalistic and Islamic) process and interpret information.

Common Core State Standards (CCSS)

English Language Arts Standards for Literacy:

CCSS.ELA-Literacy.RST.6-8.2 & 9-10.2: Determining the central ideas or conclusions of a text; providing an accurate summary of the text distinct from prior knowledge or opinions.

CCSS.ELA-Literacy.RST.6-8.8 & 9-10.8: Distinguishing among facts, reasoned judgment based on research findings, and speculation in a text.

English Language Arts Standards for Speaking and Listening:

CCSS.ELA-Literacy.SL.9-10.1 & 11-12.1: Initiating and participating effectively in a range of collaborative discussions on various topics and texts, integrating diverse perspectives.

History/Social Studies Standards:

CCSS.ELA-Literacy.RH.6-8.2 & 9-10.2: Provide a summary of a text distinct from personal opinions or judgments, especially relevant when discussing historical figures like Karl Popper and their philosophical contributions.

Content Learning Outcomes:

- Define, provide examples, and explain the relationship between the three types of propositions/judgments (rational, revelatory, empirical).
- Demonstrate the position of scientific propositions in the Islamic epistemological framework.
- Explain the difference between Islamic epistemology and Naturalistic epistemology and how each views the various judgments.

Materials:

- **Presentation Slides - Slides 31-42**
- **Triple-Entry Vocabulary Journal - Instructions** Teacher-led
- Youtube Video - **Chapter 1.4: Karl Popper and the logic of falsification**
- Unit 1: Lesson 3 Assessment Questions - **Instructor's Version** and **Student's Version**

Instruction/Teacher Facilitation:

- ❖ Begin by reminding students/asking students about the sources of knowledge, and the levels of truth from the previous lesson. **[Use one of the examples/scenarios students have come up with in Lesson 1 from the Sources of Knowledge Graphic Organizer Activity and have the Spectrum of Certainty posted in a visible place in the classroom.]**
 - Sources of knowledge -
 - The five senses
 - The intellect (al-'aql)
 - True reports
 - Inspiration (Ilhaam)
 - The Spectrum of Certainty
 - Certain it is true (yaqeen, qath'i) - 100% true (verified or guaranteed)
 - Probable (likely) to be true (zann rajah) - 51-99% true
 - Doubt (shakk) - 50% true i.e. 50/50 chance that it is true or it is false
 - Improbable (unlikely) to be true (zann marjuh) - 49-1% true
 - Certain it is false (baathil) - 0% true or 100% false
 - So we need to analyze the information or knowledge we are presented with and judge its level of truth. We also need to look at what type of judgment is being made.
- ❖ Review/orally quiz students on the 3 Judgment Types (from lesson 2)
 - Revelatory Judgment - these are statements that are only known from ALLAH swt and HIS Messenger (S).
 - Rational Judgment - these are statements we know that do *not* require our senses nor revelation.
 - Empirical Judgment - these are statements we know only from our five senses.

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- ❖ Introduce Naturalism: The principle ideologies of Naturalism are...
 - A philosophy/philosophical school that maintains the idea that only natural laws and forces operate in the universe and reality is *explainable* through nature and natural laws; it denies supernatural influence.
 - A belief that everything *arises* from natural properties or causes.
 - Science is the study of natural properties and causes.
 - Therefore, science can discover everything.

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- ❖ Naturalistic Epistemology - Out of the 3 different types of judgments, the naturalistic epistemology is based *solely* on empirical judgments as a source of knowledge.
 - The assumption for the naturalist is that this is reality. His empirical judgments are necessary because he has no other source of knowledge. As a result, he is limited in his sources, and therefore, limited in his knowledge.
 - In contrast, Islamic epistemology makes use of all three judgments, rational judgments, revelatory judgments, along with empirical judgments. We can also say that empirical judgments are not always necessary due to the fact that we have other sources of judgment.
 - Questions that arise are:
 - How do naturalists answer the question about God or God's existence?
 - For the naturalist, then, there is no supernatural God who made nature. Naturalism rejects God, the supernatural, and life after death because these beliefs cannot be proven by the scientific method. And science is all about empirical observations and associations. (ex: Pavlov's conditioning - the salivating dog)

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- How do naturalists view revelatory judgments?
 - Naturalists view revelatory judgments as superstitions.

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- How would a Muslim answer the question about God or God's existence?
 - As discussed earlier, the existence of God is a rational judgment.
 - Contingency Argument - need for a cause/beginning, "initial mover"
 - Ex: Line of leaning people - must have something at the beginning to hold them all up. That beginning must be unique compared to the rest of the line (composed of all leaning people, the beginning can't be leaning).
 - A -> B -> C -> D = B, C, and D are contingent (dependent)
 - Dependency can then only be fulfilled by an independent element at the beginning. i.e. the universe is dependent, and God is independent. (This is why God's existence is a rational judgment. There is this rational thought behind it.)

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- ❖ Islamic Epistemology - not as limiting as the Naturalistic view
 - Islam/Muslim scholars make use of all established sources of knowledge as evidence for a claim.
 - Justification for a claim can and usually goes beyond the empirical and, therefore has a more vast knowledge base.
- ❖ Comparing and Contrasting the two epistemologies:
(Present/View "Justified Beliefs"/ "Unjustified Beliefs" Slide)

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- ❖ Critical Thinking Questioning (Whole-group activity)

- What kinds of overlap are possible?
 - Overlap - empirical judgments, accepted truths

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- Where does the conflict arise between the two epistemologies?
 - Concepts of ghaib/the unseen; ex: miracles - definition of a miracle (from a religious perspective) is when the common association that God created does not happen, with or without an empirical cause. Muslims say yes, miracles are possible, Naturalist says no, miracles are not possible.
 - Conflict will arise whenever scientists use *their* naturalistic epistemology to state something as true or false, and Muslims use *their* Islamic epistemology to state something as true or false.

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Looking further into how the topic of ghaib/unseen, revelation, and God/religion are addressed by scientists, let's look at the views of Karl Popper - one of the 20th century's most influential philosophers of science.

❖ Karl Popper and the Unseen

- He started to delve into the nature of knowledge itself. [Teacher can question students as to what this would be called. Answer: Epistemology - the study of knowledge and how we know things.]
- He was critical of everything in science. He looked at ways we could test science, and challenge its claims as well.
- Well-known for his **Falsification Principle** - which states that a theory or idea should *not* be considered scientific unless it could, in principle, be proven false. "It is easy to obtain confirmations, or verifications, for nearly every theory- if we look for confirmations," Popper said. But if we want to be scientific, our mission would not be to look for the confirming evidence but to refute/falsify evidence instead. He said that real scientists should always be looking at what would make their claim false, because that's the actual job of a scientist, to be critical of any claim.
 - Ex: A scientist observes "I've always seen white swans, therefore, all swans must be white."
 - Hypothesis - All swans are white
 - Testing it out entails searching everywhere for a different colored swan.
 - BUT just because the scientist never finds a different colored swan doesn't mean the theory is true, it just means that *it is true right now*, until a better theory comes along and someone does find a different colored swan to then falsify the theory.
 - Popper believed that true scientists don't set out to prove a hypothesis, but should set out to disprove it. A true scientist is always aware that there is the possibility of a new observation that might come about that proves that their previous theory or claim is wrong/false. And that

scientists only should use deduction, and never use induction. (Can't use any previously claimed principles in their hypotheses because you can not know if it is actually true. Popper even said that scientists can not even say that a claim is "probable" or "likely to be true.")

- This obviously comes with many issues: The major disadvantage of falsifiability is that it does not take into account the contributions of sciences that are observational and descriptive.
 - We already have a limited amount of observations, so we/scientists must draw conclusions based on these limited observations. This means we must use induction.
 - Most philosophers of science unanimously agree that Popper was wrong, we must agree on some basic accepted principles and can not base everything on deduction alone.
 - In order to falsify a theory, you also will need to make a lot of assumptions.
 - The reason Popper is wrong is that there *must* be a theoretical perspective that guides your thinking. (otherwise, you can not do induction, nor can you do falsification either!) We can not work within a scientific realm without induction.
 - And Popper's falsification principle's big issue is that it is limiting science to only observational and empirical data as a way of seeking truth. (Denying other avenues of finding truth, ignoring rational and revelatory judgments.) He also mentioned real scientific theories must be testable. IF it can not be tested, it is not scientific.
 - Modern scientific thinking says: Testable, refutable/falsifiable. For Popper, knowledge was about probability and contingency. I.e. we are justified in believing what seems most probable given our current data, and we should be willing to revise beliefs in the light of new evidence (empirical evidence). In other words, our belief should be contingent/dependent on the data themselves. (Popper never believed in certainty, so then even science is not a way to certainty.)
 - This is a problem, because then there is nothing certain, especially in the realm of empiricism (which makes sense because empiricism is limited to begin with and can never attain truth/certainty on its own). Therefore, you NEED other sources of knowledge.
 - Anthony Flew (philosopher and evidentialist) stated that "All statements are meaningful only if they can be empirically verified." - Q: Can this statement itself be empirically verified? A: NO, therefore, this statement itself is a self-refuting claim. (His own words can be used to refute his argument.)

[Teacher Resource: Video on understanding Popper's Understanding and why it is not accepted: Chapter 1.4: Karl Popper and the logic of falsification]

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- Vs. **Verification Principle** - all statements must be empirically proven to be considered scientific.

- Verifying it implies a scientist has found evidence to corroborate the theory's truthfulness.
- This principle asserts that a proposition is meaningful *only* if it can be empirically verified or is analytically true (true by definition). In other words, for a statement to be considered meaningful, there must be some possible observation or set of observations that can confirm its truth. This principle aimed to eliminate metaphysical and speculative assertions that could not be tested through empirical observation or logical analysis.
- This principle faced criticism for being too strict and excluding many statements that are considered scientifically meaningful but are not directly verifiable (e.g., universal statements and theoretical entities in physics).
- The verification principle is the opposite of the falsification principle. Both represent two different approaches in the philosophy of science and epistemology regarding how to demarcate meaningful or scientific statements from non-scientific ones.
 - Verification Principle - focuses on the positive *confirmation* of theories. It suggests that a statement is meaningful if it can be *empirically verified* or is true by definition.
 - The Falsification Principle emphasizes the ability to *disprove* theories. It suggests that a statement is scientific if it can be potentially *falsified through empirical observation*.

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- ❖ Culminating Discussion: [Discuss the following questions with the class]
 - How would Karl Popper analyze these propositions?
 - Water boils at 100°C - can not be known with certainty. This is probable for now; what if a condition comes, or we develop a tool that allows water to boil at 110 instead? Therefore, subject to the falsification principle, we still need to be critical in accepting this as truth.
 - An unseen realm of angels exists - can not be proven or analyzed empirically.
 - God exists - can not be proven or analyzed empirically.
 - What do we do with ethical statements? - Popper would say they are meaningless statements because can not be empirically proven, or more specifically, they can not be proven false.
 - NOTE: The level of certainty, Qat'i does not exist for Popper/Falsification principle. No way of attaining actual truth, only contingent truth or probability (i.e. everything is zanni.)
 - How would a Muslim analyze these propositions?
 - The basic understanding is that we have other ways of verifying knowledge, not only empirical verification. Empirical can be used, along with rational/intellectual verifications, true reports, etc.
 - We aren't limited by just the empirical.
 - Water boils at 100°C - can use empirical data
 - An unseen realm of angels exists - revelatory evidence

- God exists - rational judgment and revelatory evidence
- Keep in mind: As Muslims or Muslim scientists...
 - As long as you bring evidence, we will look at it.
 - We recognize there could be more than just the evidence that is brought. (More to it than meets the eye.)
 - Our thought, as Muslims, is not purely faith-based, we do ask for evidence as well. AND we take/accept all 3 sources of knowledge as evidence, which makes our paradigm more vast and comprehensive (not as limited as other thoughts/philosophies).

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- ❖ Connecting back to Lesson 1:
 - How would have Muslim scholars responded to Galileo? (contrasting to how the church actually reacted to Galileo, as presented in the video clip, and the clash of the church with science and new scientific thoughts.)
 - Muslim scientists would have looked at his claims and examined the evidence for his claims; looking at the source of that evidence and then categorizing it based on its level of truth (qat'i or zanni etc).