Topic 7: Electronics (Optional)

Learning Objectives:

1. Understand the principles of semiconductors and their properties.
2. Master the operation and applications of diodes and transistors.
3. Analyze basic electronic circuits, including amplifiers and oscillators.
4. Understand the principles of digital electronics and logic gates.
5. Apply the concepts of electronics to real-world systems and devices.

Pedagogical Approaches:

* Constructivism: Relate electronics concepts to students' experiences with electronic devices and systems.
* Inquiry-Based Learning: Have students investigate the behavior of electronic components through experiments and simulations.
* Project-Based Learning: Assign projects related to the design or analysis of electronic circuits or devices.

Real-World Examples and Applications:

* Analyzing the functioning of smartphones, computers, and other electronic devices.
* Investigating the principles behind audio amplifiers and radio receivers.
* Understanding the role of electronics in control and automation systems.

Laboratory Activities:

* Investigate the behavior of diodes, transistors, and logic gates using breadboards and electronic components.
* Analyze the performance of simple amplifier and oscillator circuits.

Formative Assessments:

* In-class quizzes, group problem-solving sessions, and peer evaluations of project progress.