

Science Lab: Comparative Embryology

Grade Level: 8th Grade

Topic: Comparative Embryology

Objective: Students will compare and contrast different species of animal embryos to understand evolutionary relationships.

Standards Addressed: MS-LS4-3

Materials Needed

- Images of animal embryos (chicken, fish, human, and frog)
- Worksheet for comparison
- Pencils
- Magnifying glasses (optional)

Safety Precautions

- Ensure students handle all materials with care.
- Follow school policies for lab activities.
- Maintain a clean workspace.

Lab Procedure

Introduction (10 minutes)

1. Discuss the Concept:

- Begin with a brief discussion on embryology and its significance in understanding evolution.
- Explain that students will compare embryos to see how different species are related.

Activity (30 minutes)

1. Group Formation:

- Divide students into groups of 4.

2. **Distribute Materials:**

- Provide each group with images of the embryos and a worksheet.

3. **Observation and Comparison:**

- Instruct students to observe the images closely.
- Have them use the worksheet to note similarities and differences in the embryos at various stages.

4. **Guiding Questions:**

- What similarities do you notice among the embryos?
- How do the embryos change as they develop?

Worksheet Components

- **Similarities:** Note common features among the embryos.
- **Differences:** Highlight unique characteristics.
- **Development Stages:** List changes observed in each embryo over time.

Reflection and Discussion (15 minutes)

1. **Group Reflection:**

- Allow groups to discuss their findings and complete the reflection questions on the worksheet.

2. **Class Discussion:**

- Facilitate a class discussion to share insights and conclusions.

Reflection Questions

- What do the similarities in embryos suggest about the relationship between species?
- How do the differences in embryos help us understand evolutionary changes?

Assessment

- **Worksheet Completion:** Ensure all students have filled out their worksheets with detailed observations.
- **Group Discussion Feedback:** Evaluate student participation and understanding through their contributions to group and class discussions.

Learning Outcomes

- Students will understand the concept of embryology and its role in evolutionary biology.
- Students will identify similarities and differences in different species' embryos.
- Students will infer evolutionary relationships based on embryonic development.

Standards Addressed

- **MS-LS4-3:** Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.

Teacher Note: Review all safety procedures and ensure students comply with them. Modify the lab setup based on available resources and school guidelines.