

Ecological Inquiry Investigation

College Biology—Mr. DePue

Objectives:

1. To identify the diversity of plant life in a particular habitat or life zone.
2. To compare the diversity of plant life between three different life zones (short grass prairie, wetlands, and riparian)
3. To observe the biotic and abiotic factors that influence particular habitats.

Engage Activity:

1. Working in your group, brainstorm types of plants in various areas of the Division of Wildlife Fish Hatchery (short grass prairie, wetlands, riparian)
2. Based on brainstorming, where would you find the areas with the greatest level of diversity?

Exploring Activity:

1. Each group will be assigned an area to collect data.
2. Each group is to place a flag in the ground next to each different plant that they find in their assigned area. They only need one flag for each type of plant.
3. Groups are to observe carefully because some plants may look somewhat similar, but are truly different.
4. Groups need to make sure they cover the entire assigned area. How you do this is up to you!
5. When groups finished flagging their plants. Record and identify each plant type flagged. If needed collect a sample of the plant to bring back to class for identification.

Explaining Activity:

1. Each group will explain the following for their assigned area:
 - a. Show the different species found
 - b. Identify each species found
 - c. Determine which plants are found in other quadrants
 - d. Count the total number of different species for the live zone.
2. Discuss the diversity and/or lack of diversity in the life zone.
3. Discuss how abiotic and biotic factors might impact the diversity seen.

Elaborating Activity:

1. Visit the “Wray Community Garden” at the shopping center.
2. Identify plants found in the field by each group and identify which of their plants they don’t see in the Community Garden.
3. Of the plants found in the field and not found in the Community Garden, hypothesize a connection.
4. Of the plants found in the Community Garden and not found in the field, hypothesize a connection.

Evaluate:

1. Groups must develop the following to include in a final written report:
 - a. Purpose/Objectives of investigation
 - b. Claim/Hypothesis for investigation
 - c. Methods/Procedures for investigation
 - d. Data/Evidence/Findings
 - e. Conclusion/Justification of findings

2. Ecology Investigation Portfolio—Each individual must complete a portfolio including the following:
 - a. Must include 3-5 photos of area
 - b. One photo/ page
 - c. Photos must include a descriptive caption
 - d. A detailed description of the area including the following
 - i. Soil make-up
 - ii. Weather conditions
 - iii. Rainfall
 - iv. Evidence of animal life and its impact
 - v. Plant species
 - vi. Plant adaptations for survival
 - vii. Evidence of human impact
 - e. One journal article from a peer reviewed source
 - f. One page typed reflection for the journal article
 - g. Identify one local resource/agency for more information and describe its purpose
 - h. References

Ecology Portfolio Evaluation Criteria—100pts total

1. Quality of descriptive captions (40)
2. Appropriateness of photos (20)
3. Professional Appearance and Organization (10)
4. References (5)
5. Style, Grammar, Scientific Names (5)
6. Quality of Article Summary Content (15)
7. Agency (5)