

STUDY PLAN

Ecology is personally and professionally one of the most relevant disciplines within the biological sciences. Ecology gets at the "environmental context of life" and can give a new appreciation for the anatomy and physiology of organisms. Indeed, we will see that structure and function of the creature is inseparable from its environment. On the other hand, ecology has much to say to economists and political leaders who face a soaring human population and dwindling resources. Thus, you will be challenged to integrate across disciplines, and across sub-disciplines within biology. As a result, your "biological literacy" as defined below, will be enhanced as you develop greater "ecological literacy".

BIOLOGICAL LITERACY: The quality of being able to understand biological concepts, make moral and ethical judgements about biological issues, and solve real-world problems that involve biological issues.

ECOLOGICAL LITERACY: A component of biological literacy related to *ecology*.

How does one develop greater "ecological literacy?" By analogy, think of your textbook, syllabus, this study guide, and other study materials as the BLUEPRINT. Like a blueprint, these materials can assist you in bringing about the reality of ecological literacy -- i.e., constructing the BUILDING representing the conceptual framework you will develop. The framework is composed of boards and nails, representing the vocabulary, facts, concepts, and data which you encounter. Just as a building is more than a collection of boards and nails, so ecological literacy represents more than facts and definitions, important as they are. Rather it is an orderly assembly of concepts into a framework and the quality of being able to continually modify, build onto, and apply this framework to address new topics/problems.

According to contemporary science education theory, each person who "builds" his/her ecological literacy is moving information through several "literacy levels" as illustrated below. Note the increasing richness of understanding of the concept of HABITAT one can attain by moving to *structural literacy* and *multidisciplinary literacy* levels.

Table 1. Ecological Literacy Begins with Nominal Literacy and Works 'Upward.'

| LITERACY LEVEL | DESCRIPTION | DEMONSTRATED BEHAVIOR |
|--|---|---|
| MULTIDIMENSIONAL LITERACY ↑ STRUCTURAL LITERACY ↑ FUNCTIONAL LITERACY ↑ NOMINAL LITERACY | Applies knowledge to solve real-world problems ↑ Constructs appropriate meaning of concept based upon his/he own understanding/experiences ↑ <i>Defines or describes</i> a term from memory ↑ <i>Recognizes</i> a term as "ecological" | In the face of a growing human population, how can HABITATS be protected to halt loss of species. ↑ The "HABITAT" of one species may be altered by changes in local climate caused by other resident species. ↑ "HABITAT" is the place where a plant, animal, or microbe lives. ↑ Associates "HABITAT" with ECOLOGY |

Your objective should be to recognize that, in instances where your literacy is at this *nominal literacy* level (simply recognizing a word as "ecological"), you must strive to move to higher levels. Do you want to excel in General Ecology by developing ecological literacy while using study time productively? This Guide will be useful **if** you use it to prepare for lecture-discussions and for post-lecture study and review. If you are at *nominal* or *functional literacy* levels, you must focus on moving from *recognition* and *definition* of terms to *construction* of "appropriate meaning" within your conceptual framework. To make it work, follow two suggestions:

ORGANIZE A LOOSELEAF NOTEBOOK as your *record* of notes, *repository* of handouts, and *review guide*. Sequence your class lecture notes and this Study Guide with your personal study notes according to their content for convenient review. Certain study assignments are available via CedarNet and you may wish to use word-processing to insert your answers to questions, etc.

APPROACH EACH ASSIGNMENT LOGICALLY as directed. Each study assignment is intended to help you establish your "jump-on point" from where you are familiar and help you "move yourself along" to higher literacy levels as illustrated with HABITAT. This is a sequence of SURVEY -> INQUIRY -> READING -> DEFINITION -> EXAMPLES -> CONCEPTUALIZE -> APPLY, and is modified from the SQ3R Method (Robinson, F.P. 1961. *Effective Study*, Harper). We call it the "S-I-R D-E-C-A Method". Each study assignment has roughly the following format, and "SIR DECA" is integrated with each part:

1. **Title:** Study Assignment Number (e.g. SA 1) and Title are referenced to the date in your syllabus when this topic is discussed. Prior study of this assignment will make the lecture more meaningful.
2. **Reading:** Assignment from the text or supplemental reading

SURVEY -- Find the assigned pages in your text and skim each page, while noting headings, pictures, and diagrams. Look for familiar terminology. Here, you should determine your general level of literacy.

3. **Principles:**

Your textbook author presents **Concepts** at the beginning of each chapter to *target specific learning tasks*. Here is how to use them:

INQUIRY -- Carefully read each **Concept** in the study assignment (SA). Also read any assigned **Study Questions**. What related questions come to mind? In this way you will create "mental magnets" in your mind that make you more receptive to the content of the assignment.

READING -- You are now ready to read with the purpose of answering the questions you formulated. Here active inquiry should replace passive plodding. Pray for an alert, "magnetic", inquiring mind.

DEFINITION -- Ecology has an extensive vocabulary which must be mastered. Having read the assignment, list key words and define them in meaningful terms, or reference each to a page in the text.

EXAMPLES -- From the context, list examples to assist in relating the concept to your personal experience.

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4. **Study Questions** are intended as a challenge to build a conceptual framework (*structural literacy*) and make practical application to the real world (*multidisciplinary literacy*).

CONCEPTUALIZE -- Having good definition and examples will assist you in associating a vocabulary word with some regular pattern of objects or events. Study Questions test your readiness to see relationships between or among concepts as they relate to a particular phenomenon, conceptual model, or theory.

APPLY your new understanding as you answer. Some of the study assignments are intended to stimulate you to apply the concepts in problem-solving situations. You may also wish to list one or more questions or observations that arise from your reading and study which reflect your own particular experience, interests, and insights into the topic. Find relationships to previous studies in this course or in other science courses.