

## Aiming For Range Management Literacy

**A proposed model for developing youth that have not only an awareness, but the ability to act, on range and wildlife management issues.**

**By Christine Moseley, Mark Moseley, and Seburn Pense**

Conservation of natural resources and the environment has always been a major focus of youth range camps. It's often assumed that the high school students involved in range camps were "literate" upon completion of the camp; in other words, they had learned and could read and write, and repeat, some information about range management.

However, how does one define literacy and what constitutes a "literate student?" Is being able to read and write about a subject enough to be competent in that subject?

The purpose of this article is to stimulate discussion on what constitutes literacy, or more specifically, environmental literacy and how its definition might apply to the field of range management. We propose a literacy continuum model based on an established environmental literacy model for those professionals in the fields of range and wildlife management who are involved in the development of range camp curricula.

This model will assist range professionals in creating educational teaching strategies so that "graduates" of youth range camps will be literate in range and wildlife management.

Environmental literacy might best be understood by reviewing other models and definitions of literacy in various discipline areas. More understanding may be achieved by specifically reviewing the historical definition of literacy and its impact on the development of reading and agricultural literacy.

### Literacy Defined Historically

Historically, the overall goal of education has been to create a society of literate citizens. The first law on public education (The Code of 1650) called for reading literacy so that an informed citizenry



*Students participating in plant identification with Ben Berlinger.*

could be able to read the Bible and learn morality. This would ultimately result in the electorate passing legislation that would preserve an upright society.

Dictionaries now generally define literacy as the ability to read and write; and, to be well educated, having or showing extensive knowledge, learning or culture. The challenge now for anyone involved in the education of a literate citizenry is to define and clarify what it means to be "well educated", that is, to have literacy and establish this as standards for the educational community.

From this premise several models for literacy have been developed, especially in the areas of reading, agriculture, and environmental education.

### Reading Literacy Model

It is generally agreed that in reading literacy a number of stages are involved

– from recognizing the alphabet to building the letters into words and phrases to decoding the written words for meaning.

It is commonly recognized that there are degrees of literacy ranging from those who can minimally decode such things as the words on signs to those who can read and understand newspaper accounts to those who easily read and comprehend great literature or complex scientific journals. The functionally literate reader is able to recognize the alphabet and can decode basic signs and key phrases or simple words, whereas an academically literate person shows extensive skill in reading, decoding, and comprehending a variety of complex writings.

Do other forms of literacy, such as environmental or agricultural literacy, encompass a similar developmental continuum? If so, are there reasonably rec-

ognizable degrees of literacy? If that is the case, when a program states that it develops literacy, can we ask: To what degree and at what level?

It would seem only fair that only when these questions can be answered is it possible to assess the potential of a proposal or the degree of success of a functioning educational program.

As adult sponsors and curriculum developers of traditional summer range camp programs for high school youth, we agree that the ultimate goal of the range camp curriculum, as with any educational program, is to produce a literate youth population. However, we are now beginning to ask the same questions as above: To what degree and at what level does the range camp program develop literacy? How can we recognize that the participants have acquired literacy? Most importantly, is there such a thing as "range management literacy" and if so, how should it be defined and recognized?

### Environmental Literacy Model

In 1990, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) defined environmental literacy "as a basic functional education for all people, which provides them with the elementary knowledge, skills, and motives to cope with environmental needs and contribute to sustainable development."

Since 1990 educators in the field of environmental education have attempted to clarify and refine this broad definition in order that it may be used in goal and objective planning and in assessment of programs developed to promote environmental literacy.

Environmental educators now generally recognize that there are stages of accomplishment in developing environmental literacy, best determined by observed behavior. Three major cluster areas of a proficiency continuum exists that individuals progress along in degrees towards acquisition of environmental literacy:

- *Nominal Environmental Literacy* is the ability to recognize many of the basic terms used in communicating about the environment, and to provide a rough working definition of their mean-

ings. Developmentally, the nominally environmentally literate person, although aware of the terms or vocabulary, has little or no depth of understanding of them, has only rudimentary process skills, and no more than casual commitment to environmental concern and action.

- *Functional Environmental Literacy* is the capacity to use fundamental environmental knowledge, concepts, and thinking skills to formulate action positions on particular environmental issues and in daily behavior. The functionally literate person can communicate the substance of an account to a third party, either orally or in writing.

- *Operational Environmental Literacy* is the capacity to regularly perceive environmental issues, gather and evaluate pertinent information, examine and choose among alternatives, take actions that work to sustain, and develop the foundation of environmental knowledge along with the elements of questioning, analytical and deductive reasoning, logical thought process, and reliance upon objective analysis.

People tend to progress along the continuum of proficiency in environmental literacy in stages that include awareness and concern, knowledge and understanding, and behaviors and action. Capability at the nominal or functional developmental stage of literacy is not achievement of the ultimate operational literacy. A person who is environmentally aware is not yet environmentally literate; neither is a person who possesses broad environmental understanding or who demonstrates environmental concern.

Moreover, one who only takes action on an environmental issue is not considered literate. *One demonstrates operational environmental literacy only when all the components come together in the actions taken.*

Research into environmental behavior does not bear out the validity of a linear model for changing behavior. Knowledge and awareness of the environment and environmental problems are certainly prerequisites to appropriate action. However, some research reveals that knowledge and awareness of action skills are also prerequisites for taking



*Plant collecting.*

action. Furthermore, students need to be specifically trained in problem-solving skills, and this training needs to be incorporated into the instructional practice of environmental education.

Responsible environmental behavior is a learned response or action. As the ultimate goal of environmental education, it is synonymous with environmental literacy. Consequently, the ultimate goal of environmental literacy is acquiring life-sustaining, responsible, environmental action skills. It is recognized that knowledge and sensitivity to a problem is a prerequisite to appropriate action.

However, knowledge of the problem is only part of the catalyst required. A student must also know what he/she can do to help and how to take action. Teaching students only environmental awareness and knowledge are not enough. Instruction and modeling of action skills must be done in and out of the classroom.

### Agricultural Literacy Model

Agricultural literacy is no less important than reading literacy or environmental literacy to the well being of a nation. Indeed, Sir Horace Plunkett once said, "The well-being of a people is like a tree: agriculture is its root, manufactures and commerce are its branches and its life; if the root is injured, the leaves fall, the branches break away, and the tree dies." (Shepardson 1929, p. 3).

It is not difficult; then, to understand that agriculture must be protected if a nation is to thrive legally, politically, and culturally. To preserve and protect agriculture in the United States, citizens must be agriculturally literate if they are to enact laws that will not only protect but also promote this industry.



*The Challenge Course.*

In 1988, the National Research Council's Committee on Agricultural Education in Secondary Schools proposed that an agriculturally literate person would understand the Food and Fiber Systems in relation to its history, economic, social, and environmental significance. Traditionally, agriculture has been defined as the science, art and business of cultivating the soil, producing crops and raising livestock. A more comprehensive definition of Food and Fiber Systems also includes the management of wildlife, range lands, forests, rivers, oceans and natural resources.

Frick, in 1990, reported one of the first conclusive agricultural literacy definitions: "Agricultural literacy can be defined as possessing knowledge and understanding of our food and fiber system...An individual possessing such knowledge would be able to synthesize, analyze, and communicate basic information about agriculture" (p. 52).

## Does Range Management Literacy Exist?

As we searched the literature for comprehensive definitions of literacy, a pattern began to emerge, regardless if the definitions were for reading, environmental or agricultural literacy. Each of the definitions include the concept of learning proficiency and competency based upon a continuum, and that individuals progress along the continuum from **awareness**, to acquisition of **knowledge** and development of **skills**, and further application of those skills and content to undertake appropriate **action**.

To be truly literate in any discipline

requires competency in all aspects along the continuum. A study done by Gambro and Switzky (1996) of a national sample of American high school students confirms that assertion. A majority of the students in that survey were able to recognize basic facts concerning natural resources and environmental problems; however, most students could not apply their knowledge to comprehend the consequences or potential solutions related to the problems and issues. Thus, they would not be considered fully literate in the areas of natural resources and environmental education.

As educators involved in agriculture, we believe that the definition of agricultural literacy should be expanded beyond "knowledge and understanding" to include appropriate skills, actions and behaviors, as defined in environmental literacy. Students must not only be taught facts and information about their natural resources, but also be taught how to take appropriate action and responsible behavior for sustainability of those resources.

Thus, as educators involved in developing curriculum for a range camp, we are now challenged to go beyond the traditional emphasis of content. Content and knowledge alone are not enough, as research suggests. We must also teach the skills that these future students must have to become an operationally agricultural literate citizen.

How does this happen? What actions and responsible behavior do we want the youth of today and voting citizens of tomorrow to take? As range camp curriculum developers, we first must decide what are the overall goals and objectives of our program. Too often, educational programs are developed around a set of facts and content that must be taught, with little consideration given to the purpose of the program itself and what it ultimately wants to accomplish.

Second, those individuals involved in the development of the curriculum must become familiar with a literacy model, whether environmental or agricultural, and choose an appropriate one consistent with the program's goals and objectives.

Third, the range camp curriculum must be designed to achieve complete

literacy, with appropriate behavior skills identified, based on the "new" definition of literacy as interpreted by the curriculum developers. All too common in educational programs, appropriate and effective assessment is lacking.

Reflective follow-up assessment to measure success of the program regarding achievement of the goals and objectives must be done and this assessment then used to revise and improve the curriculum.

## Future Implications: Range Management Literacy Continuum Model

We have been involved in the development of youth range camp curricula for the past ten years. As our previous training in the field of range management directed, we initially emphasized facts and figures and demonstrated technical applications of that information. We assumed that was enough; that the students were "getting it." We never sought to define "it!"

With the current research in the area of environmental literacy as a curriculum outline, the fundamental techniques of curriculum development as a model, and the principles of range and wildlife management as a knowledge base, we are now revising our curricula and seeking to produce a competent, literate student in the field of range management.

We have had to ask ourselves the hard question, "Are graduates of our range camp literate in the field of range management?" Until we began to fully understand and implement the working definition of literacy...acquisition of knowledge and skills and application for appropriate behavior...we had to sadly admit that our graduates were not truly literate.

Our weeklong curriculum is now developed around activities and teaching strategies that give students opportunities to progress along the literacy continuum from awareness, to acquisition of knowledge and skills, and application of those skills and content for appropriate action. Each of the day's activities build upon this continuum with the ultimate objective of having students participate

**Table 1. Literacy Continuum Model for Youth Range Camp Curriculum**

Stages of Development	Activities
<b>Awareness</b>	Field trips to local ranches Simulations/Games (Project WILD, WET, and PLT activities)
<b>Knowledge</b> <i>Acquisition of Knowledge</i>	Guest speakers Field work
<i>Acquisition of Skills</i>	Plant collections Field journals Field exercises Ropes course (team building) GPS instruction Conflict resolution
<b>Action</b>	
<i>Application of Knowledge and Skills</i>	Development of range management plan Oral presentation of plan to peers and instructors SRM High School Youth Forum Presentations to local communities Junior counselors College major in related field

in a culminating problem solving project, where they are required to use the skills and knowledge that they have acquired throughout the week.

This final range management plan, done together in cooperative groups, requires the students to develop land management objectives, conduct a site inventory, prescribe practices that meet their objectives, and defend their plan orally to peers and instructors. Table 1 outlines activities that students are involved in throughout the week addressing the four stages of literacy development.

With this literacy continuum in mind, our major goal as range camp instructors are to "graduate" students who not only are aware of range management issues and have some knowledge and skills of range management principles, but who are able to apply that knowledge in problem solving situations.

The Cognition and Technology Group (1990) defines inert knowledge as "knowledge that can usually be recalled when people are explicitly asked to do so but is not used spontaneously in problem solving even though it is relevant" (p. 2). Teachers must make information meaningful to students and train students to use their knowledge as an instrument for problem solving. When students learn new information in meaning-

ful contexts (under problem-solving conditions), they begin to understand the various circumstances in which to apply concepts and facts.

Hopefully, the problem of inert knowledge can be at least partially avoided through the use of specific instructional techniques that provide a purposeful, problem-oriented context for learning rather than techniques that employ a fact-oriented approach. The interdisciplinary nature of range management issues provides an ideal opportunity for meaningful, integrated, and problem-oriented instruction. In addition, this proposed literacy model provides an outline for the development of effective curriculum and instructional strategies that take advantage of the integrated nature of range management.

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