

BRANCH

The National Newsletter

of Project Learning Tree

English Language Development Theory and Practices: Background Information for EE Providers

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ED.S. BILINGUAL SPECIAL EDUCATION

Although English Language Learners (ELLs) are the fastest growing group of students in the United States, it is often difficult to immerse them in the variety of academically demanding tasks that are available to their English-monolingual peers. In order to help meet the challenges posed by ELLs nationwide, the U.S. Environmental Protection Agency's Environmental Education and Training Partnership (EETAP) funded a collaborative undertaking with Project Learning Tree (PLT), Project WILD (WILD), and Project WET (WET) in California. The venture, managed by Kay Antunez, California PLT coordinator, explores the links between environmental education (EE) objectives and current theories on second language acquisition. Results of the project are designed to help educators extend EE to ELLs by adapting the academic content and activities of the lessons. The project findings are summarized briefly below, but

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New Assessment Tools Will Benefit PLT Teachers

Do you want to be able to assess the effect of environment-based instruction on your students' learning? If so, you will want to follow the progress of the Environmental Education Assessment Project (EEAP).

EEAP is designing a series of student assessment instruments that will help teachers and other educators in Washington State measure the effects of environment-based education—including PLT—on student learning. The instruments will obtain evidence to measure how PLT and other comprehensive environmental education programs improve students' higher-order thinking skills and interdisciplinary understanding, in addition to their standards-based achievement. When the instruments are complete, EEAP will promote them as models that can be adapted nationally.

"Ultimately, this project will give PLT teachers and other educators access to a comprehensive package of student assessment

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1999 Outstanding Educators

They are as diverse as the trees of the forest, yet as common to one another as the nature that inspires them and the students they commit themselves to.

The five Outstanding Project Learning Tree Educators of 1999 are exceptional teachers in the field of environmental education. This year's "five" have what it takes: exceptional teaching skills, commitment to the PLT curriculum, exemplary use of PLT in classroom projects, and sustained use of PLT.

The skills they share, the influence they exert, and the commitment they give truly stand out from the rest. Read on!

CASEY HARRIS

BARRY CONSERVATION DISTRICT
BATTLE CREEK, MI

Casey Harris demonstrates her commitment to EE as a facilitator for both the PLT PreK-8 Guide and Secondary modules.

Not content to merely "practice" what she teaches, Casey sits on the advisory committee for Michigan PLT and is a board member for the Michigan Alliance for Environmental and Outdoor education.

Where did the seed of commitment begin to germinate? What is her advice to those who wish to grow an outdoor ethic in others?

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Share ideas and information with other PLT trained educators through PLT Talk. See article on page 5

1999 Outstanding Educators

"I would say to others, everything you do makes a difference," Casey testified. "When you share PLT and when a student begins to 'see' that's it, you are right there in raising awareness. You know you have helped to bring about the change!"

DR. EDWARD DONOVAN

BEECH SPRINGS INTERMEDIATE SCHOOL
DUNCAN, SC

Dr. Edward Donovan has taken his commitment to environmental education across the country, becoming trained in PLT when entering a Ph.D. program at Florida Institute of Technology.

Later, as Director of the Science Education Center at the University of South Carolina, Ed obtained permission to conduct PLT educator workshops in South Carolina.

Recently, Ed resigned his tenured full professorship at USCS to return to the K-12 classroom where he continues to serve on the PLT Steering Committee.

"My advice to PLT teachers?" says Ed. "Keep on learning from your PLT activity book. It will

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Outstanding Educators

never let you down if used in the manner it is supposed to be used."

DR. BONNIE GLEASON

UNIVERSITY OF ARKANSAS AT MONTICELLO
MONTICELLO, AR

Bonnie exemplifies the "awareness to action" philosophy of environmental education.

In preparing preservice educators, Bonnie asks them to integrate PLT activities into their lesson plans, thus having an impact on the curriculum those teachers will share with their own students throughout their careers.

"I can give no greater advice to educators than to say we must inform our young people of the importance of having an ethic for the land. It is a great gift to have PLT—a curriculum that not only 'touches' on this caretaking responsibility, but that is imbedded with that philosophy."

LAURENCE RAND

ELLENVILLE CENTRAL ELEMENTARY SCHOOL
ELLENVILLE, NY

Laurence is the elementary science coordinator of K-6 at New York's Ellenville Central Elementary School. He is not only a PLT facilitator, but serves as member of the New York PLT Steering Committee.

He has conducted over 35 educator workshops, was instrumental in getting PLT included as part of pre-service teacher programs at SUNY College at New Paltz and he promotes PLT at conferences throughout the state.

Laurence is the "Who's Who" of New York science teachers, having been on the board and president of the Science Teachers Association of New York State,

even serving as a consultant for publishers McGraw-Hill.

If one had a synonym for commitment to, and promotion of PLT and the education of youth, it would be Laurence Rand.

DENNIS MITCHELL

EVERGREEN MIDDLE SCHOOL
COTTONWOOD, CA

Dennis Mitchell is leader in the science reform movement! His devotion to environmental education has been described by his peers as "inspirational and relentless."

Dennis established the Evergreen Eighth Grade Environmental Teaching Academy in which students apply for positions and receive PLT training from him. Students receive certification and use the PLT curriculum in developing environmental lessons for grades K-6. Students are responsible for matching environmental lessons from PLT curriculum with the California State Science Standards as well as local county science standards for grades K-6.

"I would advise fellow PLT teachers to never tell an answer. Allow students to form their own ideas while you guide them along the way. PLT is a collection of wonderful stories that allow each individual to construct his or her own view of the natural world."

For pictures of these teachers in action, please visit the PLT Web site.

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New Assessment Tools

instruments to measure the impact of what they are doing with their students,” said Kathy McGlaulin, vice president and director of PLT. “EEAP is truly breaking new ground. Having this evidence will make it easier for school districts to see the educational value in infusing environmental education throughout the curriculum.”

EEAP grew out of research conducted by the State Education and Environment Roundtable (SEER) and funded by the Pew Charitable Trusts. That research documented the educational benefits for students who are taught using the environment as an integrating concept throughout the curriculum. (See the Spring 1999 *Branch* for more information or visit www.seer.org.)

EEAP takes SEER’s national findings down to the state level. The EEAP Consortium is using the SEER study as a basis for designing student assessment instruments that can be used to determine the effect of environment-based instruction on student achievement in Washington State. The project will also adapt these instruments to the specific standards in two other field-test states: Florida and Pennsylvania.

Moving beyond Anecdotes. “We know that EE plays an important role in helping students collaborate with one another, be enthusiastic about learning, and generally speaking improve in their mastery of the subject matter,” noted Tony Angell, supervisor of environmental education in Washington’s Office of the Superintendent of Public Instruction and a member of the EEAP consortium. “But

assessment and measurement keep coming up as a need. It’s all anecdotal unless you have measurement.”

“Washington has a new set of performance-based standards and tests [Washington Assessment of Student Learning] that seek to measure students’ abilities to think, problem solve, and show they have mastered other higher-order skills,” said Lynne Ferguson, Washington State PLT coordinator and another EEAP consortium member. “Teachers need to know in the interim if their students are meeting these standards. We [EEAP partners] decided this was a perfect opportunity to measure the effects of EE on student performance.”

About twenty different tools will be developed to deal with different topics (such as water, forests, and land use) and benchmarks (grades 4, 7, 10). Each tool will have an instructional component and will be correlated to PLT, WET, WILD, and other materials. For example, students may be assessed on their ability to conduct a wildlife inventory on the school grounds and then produce a children’s book about their findings, according to Ferguson.

Once the tools have been field-tested and refined, they will be available to teachers and program managers at day and residential programs that offer EE programs to students. Educators will receive training in how to use the tools. In addition, a central point (not yet developed) will be set up to collect and analyze the assessments.

“Eventually, we’ll get data from across the state,” said Ferguson. “This will give us a picture of how EE is addressing a particular issue

and will affirm that it’s working or show us what we need to change.”

Consortium Partners. The EEAP Consortium has a diverse group of partners including: Washington Forest Protection Association (sponsors of PLT); the Washington Department of Fish and Wildlife (sponsors of WILD); Department of Ecology (sponsors of WET); Office of the Superintendent of Public Instruction within the Department of Education; the Battle Ground, Issaquah, Kent, Olympia, Peninsula, Tahoma, and Tumwater school districts; the Washington State Educational Service Districts; Cispus Environmental Learning Center; North Cascades Institute; Olympic Park Institute; Weyerhaeuser Outdoor Classrooms; and SEER.

PLT and Assessments. PLT, of course, already provides assessment opportunities within each activity. In addition, activities have been correlated to national and many states’ standards. The EEAP instruments will allow teachers and administrators to take a broader view of what PLT is offering students.

“The work being done in Washington will extend the assessment opportunities that we provide in the PLT materials,” said McGlaulin. “It will result in a common way to collect information about student performance that says that PLT is making a difference in improving student learning and in meeting performance-based standards.”

Look for updates on EEAP in future issues of the *Branch*. Perhaps it will serve as a model for your state or school district in the future.

English Language Development

the entire manuscript can be viewed through the PLT Web site at <www.plt.org> providing extensive examples, suggestions, and strategies to help bring EE to second language learners.

Federal regulations require that ELLs receive instruction through some form of “specially designed” program. However, the range of linguistic needs and academic background present in the ELL population makes this a formidable mandate for educators who do not have training and experience in working with second language learners. Extensive research on acquiring English communicative and cognitive skills validate the positive effect of primary language development and maintenance on academic achievement, but most school systems neither have bilingual programs nor teachers fluent in the many languages spoken by their students. Thus, all educators who work with language minority students need to obtain at least a basic understanding of how language develops and learn to make adaptations in their lessons to reach those in the process of acquiring English. The EETAP project guides educators through this process and suggests ways to modify lessons developed for PLT, WILD, and WET so that they can become comprehensible to ELLs.

Researchers in the field of second language acquisition have found that learners undergo a series of stages which parallels first language development. Following a “silent period” in which learners are receiving information in the second language but not yet producing oral speech, students acquire basic interpersonal com-

Review

munication skills (BICS). The majority of learners require one to three years to be proficient in BICS which enables them to perform simple conversational tasks including playing games, watching television, expressing uncomplicated needs, etc. In five to seven years, learners develop cognitive academic language proficiency (CALP) which is necessary for success in school. CALP enables students to perform higher level thinking skills required in the classroom such as drawing conclusions, analyzing and synthesizing information, responding to abstract concepts, and performing academic tasks independently without contextual and situational support. Thus, much of the material accessible to English-speaking students can be beyond the “linguistic stretch” of many ELLs who need to learn the course content but may not yet be at the CALP level of the lessons at their grade levels. Frustration, failure, and alienation from the learning community are frequent byproducts of expecting students with BICS to perform tasks requiring CALP without appropriate accommodations.

In order to help ELLs understand and master EE lessons, educators must create learning conditions which match the linguistic level of the second language learners. Key elements necessary include providing “comprehensible input” by adapting vocabulary; paraphrasing and using gestures to facilitate meaning; modeling directions and assignments; and ensuring that each lesson is enriched through participatory activities and the use of realia. Research has also

shown that drawing on the students’ prior knowledge is critical to their understanding of new, cognitively demanding content. EE activities and topics are by design interactive and student-centered. Thus, they offer a ready foundation for adaptations, which will create optimum learning conditions for ELLs with at least an intermediate level of English proficiency.

A variety of strategies can be incorporated into each EE lesson to make content more comprehensible to ELLs. To do so, educators must first explore the type of academic language inherent in the lesson and check frequently and concretely for understanding. The use of contextual clues, graphic organizers, cognates, and visual as well as oral output will promote student comprehension. For example, in PLT’s activity “Every Tree for Itself” the teacher can first emphasize key words such as outside, inside, before, after, and between through hands-on and physical demonstrations. Likewise, rather than merely asking students to keep a written record of the results of the simulation, the teacher can provide a simple chart for students to complete during the game.

Secondly, educators must analyze the instructional practices recommended in the lesson and make necessary adjustments to ensure the content is more accessible to ELLs. Among other best practices, teachers are encouraged to first introduce key concepts in a concrete and experiential manner before moving to conditions which are more abstract and inactive; to repeat some lessons

several times to ensure students are comfortable with the activity and free to focus on the language and content of the lessons; to use student-centered and cooperative grouping extensively; and to encourage opportunities to integrate reading, writing, listening, and speaking. For example, in PLT's activity "Every Tree for Itself" the teacher gives 'tree cookies' (cross sections of a tree) to same-language cooperative groups so that students can determine the age of their tree cookie. By allowing students to quietly analyze and discuss their cross sections in their primary language, the teacher is ensuring that a critical concept of the lesson is understood.

Finally, educators must assess and adjust the way EE lessons are structured by making connections with student's prior knowledge; by assessing and accommodating each student's level of second language development (whether BICS or CALP); and by incorporating techniques already found to be effective in second language acquisition theory and practice. Some of these include extensive use of visual aids and manipulatives; reference to the diverse cultural background of the students to elicit different cultural knowledge of the content to be studied; and customizing instructional strategies for the linguistic characteristics exhibited by participating ELLs. Again, using PLT as an example, in "Every Tree for Itself" the teacher uses props in the front of the room and asks students what plants need to live. Student teams sketch a tree on large chart paper and list the tree's needs (sun, food,

water, space, etc.). The students will be drawing from their prior knowledge about trees in their own countries to brainstorm together and begin formulating the basic requirements for a healthy tree.

By considering the linguistic, cultural, and educational background of the students and applying strategies which bridge the gap between conversational and academic language, EE can become

accessible to second language learners. After assessing the level of support needed by their students, EE educators can provide effective instruction that will offer appropriate language development opportunities as well as cognitive challenge to all. As a result, the EE classroom will flourish with increased student participation within an inclusive and accepting environment.

Introducing PLT Talk

One of the aspects of the PLT program that we value most is you—our extensive network of PLT trained educators. Since 1973, PLT has trained over 500,000 educators! And our current Branch newsletter is sent to 200,000 educators.

You all have something in common, a commitment to PLT. From seasoned PLT veterans to newly trained educators, you have valuable experiences and ideas about PLT and the implementation of PLT activities in a variety of settings. Imagine being able to tap into this resource and communicate with such an amazing group of educators. Now you can!

Introducing our newest addition to the PLT family—PLT TALK! PLT TALK is a communication tool that we have set up on the PLT Web site for you to share ideas, resources, information, and solutions with other PLT educators, from Alaska to Chile.

The communication tool we have established for PLT TALK is a Threaded Message Forum. This type of discussion forum links messages by subject. Thus, all messages on one topic are grouped together, and the responses will be listed below your original response in a "threaded" format, which makes it easy to track the progress of a discussion.

To start the dialogue, we have set up a few subject areas within PLT TALK. They are: PreK-8 Implementation, 9-12 and Preservice Implementation, Education Reform, Urban and Multicultural EE and PLT, PLT and Technology, and PLT in Action: GreenWorks! and Service Learning.

You may access PLT TALK through the new "Educator Exchange" button on the PLT Homepage <www.plt.org>. Look for additional information and exchange opportunities in the year 2000 in the "Educator Exchange" section of the PLT Web site.

We hope PLT TALK provides meaningful discussion and exchange opportunities that will assist you and your PLT efforts in or out of the classroom!

Internet Resources

Finding Resources on the Internet

BY: JOE E. HEIMLICH, PH.D.,
ASSOCIATE PROFESSOR, ENVIRONMENTAL
SCIENCES, OHIO STATE UNIVERSITY,
COORDINATOR EETAP RESOURCE LIBRARY

When searching the Internet for information and resources for your classrooms and educational programs, how often do you really end up finding what you were looking for? I imagine, like a lot of us, that you spend hours on the Web without ever finding the exact resources or information you were anticipating.

Seeing the need for educators to be able to readily access specific information and materials on the Internet, the Environmental Education and Training Partnership developed a guide on "Finding Resources on the Internet." The following information is adapted from the guide and will help you implement successful Internet search strategies.

There are two types of broad search strategies for Web-based searching: a "creative" search and a "Boolean" search.

The Creative Search. The purpose of a creative search is to find out what's "out there" in the vast area of cyberspace. This type of searching is what many call

"surfing the net." A creative search starts by typing in a key word or phrase into a search engine. The result displays links to multiple Web sites that are similar to your key words. By clicking on the link that appears to be most like what you are looking for, you begin to travel through the "links" from site to site. The biggest downside to this strategy is that it can take literally hours of searching to find what you're after.

There are times when this strategy is extremely useful: 1) when you know the formal name of the organization, site, or report; 2) when you're trying to find a broad range of sites that all address a certain topic.

The Boolean Search. A Boolean search takes multiple words and finds the "overlap" of the terms. Most Web searches use a basic structure of a Boolean search.

The key to conducting a Boolean search is to carefully select the words you use in the search by using conjunctives (see the box for a listing.) Using conjunctives, you can narrow the results of a search. For example, by using the key words "forest products" (surrounded by quotations to indicate that we want the words side by side) you can end up with over 3 million hits. In order to refine your search, type in "forest products" and "economics,"

this results in just over 1 million hits. This is still too many hits, but within the top ten hits, there are three sites that are research centers for forest economics and three personal Web pages of forest economists. At this point, you have narrowed the search considerably and

Boolean Conjunctives

To get more detailed search results, try using some of the following conjunctives with your key word search:

"and" to combine two terms

"or" seeks both terms but not necessarily in the same document

"with" to get two words side by side

"not" eliminates duplicates in the search results

have accessed results that are close to what you were searching for.

Some Basic Hints. One of the most valuable strategies is the "multiple hit" approach. Use different key words, phrases, or conjunctives and then scan the top twenty or thirty hits from each search. Look for sites that appear on several of the searches. These are often sites that may have the information that you need or could lead you more directly to the information you're seeking.

Finally, try to use a search engine that will best suit your purpose. The Nueva School has developed a guide that will help you determine the best search strategy and search engine to use based on the type of information you need. Visit their web site at <www.nueva.pvt.k12.ca.us/~debbie/library/research/adviceengine.html>.

We wish you successful searching!

Internet Terminology

Internet—the vast collection of interconnected networks.

Meta Tags—embedded codes on individual Web pages that help Web searchers "read" what is on the page.

Network—2 or more computers connected together so that they can share resources.

Search Engines—an index of Web resources that can be queried for keywords or concepts entered by the user.

World Wide Web—an electronic web or network of Web pages that are connected to all others through computer servers.

CONNECTING PLT ACTIVITIES TO THE INTERNET

Where can you find information that relates to the activity "Saga of the Gypsy Moth" from the secondary module *EXPLORING ENVIRONMENTAL ISSUES: FOCUS ON FORESTS?* Try the Wisconsin Department of Natural Resources Web site <www.dnr.state.wi.us/eek/>. This Web site has an exciting series of pages that focus on the issue of the Gypsy Moth, including its lifecycle, favorite foods, history of the introduction and spread across the U.S., and much more!

The Web site, called EEK!, Environmental Education for Kids, addresses local and global issues. The Gypsy Moth information is located in the "Our Earth" section of the site under "Alien Invaders." Additionally, students can learn about other invasive species specific to the Great Lakes region such as sea lamprey, loosestrife, and the zebra mussel.

Please Note: When having your students do a search on the Internet for invasive or exotic species, it is advisable to have them use the key words, "invasive species" or "alien species" as opposed to "exotic species." Implementing a search using the key words "exotic species" may result in the display of Web sites that are inappropriate for student use.

CLASSROOM FEEDERWATCH

This exciting research and interdisciplinary curriculum, designed by the Cornell Laboratory of Ornithology, is geared for students in grades 5–8. With Classroom FeederWatch students learn how science and scientists work, and in

the process become scientists themselves. Students who participate in Classroom FeederWatch identify and count birds that visit their feeders; use the Internet to share data with scientists; analyze data to answer their own questions; use their findings to describe how the natural world works; and publish results in Classroom Birdscope, a newsletter written and designed by students. *For more information visit Cornell Laboratory of Ornithology's Web site at <www.ornith.cornell.edu/>.*

EEDUCATOR

This new magazine-style publication developed by the North American Association for Environmental Education (NAAEE) explores environmental education from new and stimulating perspectives. EEDUCATOR is geared towards educators, in both formal and nonformal settings, who care about helping students do better in school, and enjoy learning.

The first issue addresses the theme of "Environmental Education & Education Reform." It includes articles by some of the top thinkers in this arena and profiles those who are successfully making it happen! EEDUCATOR may be the first in a series of occasional publications on various themes related to the field of EE. *For ordering information, contact NAAEE at 706-764-2926 or visit their Web site at <www.naaee.org/>.*

TARGET ALL-AROUND SCHOLARSHIPS

Target Stores award scholarships each year to well-rounded high school seniors and college students

(under age 24) who are committed to community service, education, and family involvement. Because learning is a lifelong process, Target also awards a total of \$1 million each year to teachers and administrators for continuing education and staff development. *Printable applications for both student and teacher scholarships are available on the Target Web site at <<http://target.com/schools/scholarships.html>>.*

EARTH DAY 2000 POSTER CONTEST

In recognition of Earth Day 2000, EPA's Office of Solid Waste (OSW) is conducting an art contest for children in grades K-12 to increase students' awareness about reducing, reusing, and recycling waste. The theme of the contest is "Making a Difference in the New Millennium." The winners' work from the K-6 grade level will be published on a poster that will be distributed nationwide as part of OSW's educational materials. The winner of the 7-12 grade level will have their artwork published as the design on a new education CD-Rom that will be distributed nationally by OSW. *For more information you may contact EPA at 1-800-424-9346 or visit their Web site at <www.epa.gov/epaoswer/osw/students.htm>.*

For a complete list of PLT curricula, supplementary materials, and additional resources visit the PLT Web site at <www.plt.org/>.

PLT HAS DONE IT AGAIN!

The American Forest Foundation, the sponsor of PLT, has been selected to receive the 1999 School Curricula Gold Award from the Solid Waste Association of North America (SWANA) for the EXPLORING ENVIRONMENTAL ISSUES: MUNICIPAL SOLID WASTE module. This award is presented annually to recognize outstanding educational programs. SWANA is a professional membership organization with 6,500 members representing both the public and private sectors of solid waste management. The award will be presented at SAWANA's WASTECON 1999 Annual International Solid Waste Exposition in Reno, NV.

CURRICULUM UPDATE

We are pleased to announce five new curriculum projects underway at PLT. The first is a series of new supplemental curriculum modules for the secondary level focusing on communities and environmental issues; biodiversity, a joint project with World Wildlife Fund; and world forests, a joint project with the World Forestry Center. Secondly, we are developing new supplementary materials for the elementary and middle school levels focusing on energy and society. And lastly, a tenth-anniversary overhaul of the "new" PLT PREK-8 ACTIVITY GUIDE is in progress.


As we develop these new materials we would like input from you. We need educators and

content experts to assist in reviewing, pilot-testing, field-testing, providing input, or participating in a writing workshop/focus group for all of these curriculum initiatives. If you are interested in assisting us with these projects or would just like more information, please visit the PLT Web site <www.plt.org/html/curriculum/reviewer.htm> for descriptions of the initiatives or to submit a volunteer form.

Coming soon: Correlation of PLT's PreK-12 materials to the National Curriculum Standards for Social Studies and the Excellence in EE—Guidelines for Learning.

Both documents will be available on the PLT Web site or from your state coordinator.

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