

V. Topics to Model and Discuss

In addition to introducing the PLT materials, your PLT workshop should be a vehicle for helping teachers learn new teaching strategies and techniques. If you like, or if you think your audience would be interested, you may decide to use one of the following topics as the focus of a particular workshop:

- Thinking Processes
- Cooperative Learning
- Learning Styles
- Multiple Intelligences
- Addressing Controversial Issues
- Leading Successful Outdoor Activities
- PLT and Education Reform

PLT and Thinking Processes*

PLT activities incorporate thinking processes in a variety of ways. Teachers participating in your workshop will appreciate your helping them to:

Be aware of thinking processes that are involved in PLT activities. Emphasis on thinking processes, as well as content, will help educators in PLT workshops to teach PLT concepts more effectively and provide the necessary rationale for using PLT in meeting district or school curriculum objectives.

Identify thinking processes specifically. Being specific about the processes involved in a particular activity will help teachers identify how it fits into their curriculum. For example, encourage teachers to recognize when students will *compare* renewable to nonrenewable resources, *relate* the presence of trees to local temperatures, or *predict* the effects of deforestation on soil erosion.

Recognize nonverbal evidence of thinking and problem solving. While evaluating or assessing learning is an important part of teaching, results of written products and tests dominate student records of achievement. Teachers need assistance in identifying ways to give credit for and to record nonverbal behaviors that indicate thinking and learning. When debriefing PLT activities during

the workshop, ask teachers to list nonverbal behaviors students might exhibit that would indicate their understanding and learning.

Recognize ways to adapt activities to various cognitive levels. Children progress through cognitive stages acquiring the specific thinking processes. They do not skip stages. An awareness of general age ranges and their corresponding expectations for thinking ability is useful in adapting activities to specific grades. Teachers appreciate help in analyzing parts of an activity for thinking process requirements as well as knowledge requirements. "What's going on in the students' head?" should be a frequent question for teachers to ask when familiarizing themselves with PLT activities.

Appreciate knowledge students bring with them to a learning situation and help construct or reconstruct knowledge through experiences. Teachers know that students do not come to an activity, lesson, or unit with a blank slate. Students have ideas, notions, and explanations for the world around them. These ideas work for them even though the interpretations may be alternative forms compared to those you accept as logical or true. Teachers appreciate your experiences and examples of typical "alternate understanding" that students may have about concepts or issues and will want to explore with you experiences that can be provided to students that allow them to construct or reconstruct their knowledge.

* Adapted from a handout prepared by Dr. Karen Reynolds, Department of Education, San Jose State University for the "Advanced Training for PLT Facilitators" workshop, January 1989.

For a list of thinking processes and skills, see the "Skills Index" in the back of PLT's PreK-8 Activity Guide.

Cooperative Learning

Cooperative learning is a model of instruction in which students work together in small groups to achieve a common learning goal. PLT activities can help a teacher implement cooperative learning because many of the lessons are designed to be conducted with cooperative groups. There are many different models of cooperative learning, and teachers should set up and use it in the way they feel most comfortable. However, teachers who use or are interested in using cooperative learning will appreciate your addressing the following in the workshop:

The cooperative learning potential of PLT activities. Whenever possible, model using cooperative learning in a particular lesson by setting it up for teachers to experience it that way during the workshop. After presenting each lesson (as cooperative learning or not), have teachers discuss how the lesson could be modified to better facilitate cooperative learning.

Grouping issues. In cooperative learning, the teacher must decide on how the groups will be formed, how large the groups should be and how long groups should stay together. For example, the groups may be randomly formed or assigned by the teacher, and groups may stay together for only one class period, or for six weeks. Model different ways of grouping in the workshop, then discuss the advantages and disadvantages of various ways of grouping, of group sizes, and of the group duration.

Structuring the learning task. For each PLT activity experienced in the workshop, help teachers identify how the learning task could be structured so that it is truly cooperative, with successful completion of the task requiring each group member's participation.

For more information on Cooperative Learning, see PLT's PreK-8 Activity Guide, Appendix 1.

Learning Styles*

Learning style indicates how a person learns and likes to learn. Style characteristics reflect genetic coding, personality development, motivation, and environmental adaptation. Style is relatively persistent in the behavior of individual learners. It can change, but does so gradually and developmentally. Learning style has cognitive, affective, and environmental elements. No learning style is better than another, each is simply different.

There are many different models of learning styles, but in general most models identify four different learning styles. Bernice McCarthy, in her 4MAT system, characterizes the four learning styles as shown on the "Teaching to Learning Styles" handout at the end of this section.

During your workshop, you can help educators use PLT and learning styles in the following ways:

Model using the four different learning styles in your presentation. To be sure that you include all four different styles, when planning your workshop, identify the learning style most prominent for each workshop element. While you need not represent each learning style equally, be sure that you exemplify each one.

Using the Teaching to Learning Styles handout at the end of this section, help each of the participants identify which learning style seems to best describe him or her. Keep in mind that most learners use a combination of styles.

Suggest that participants identify a particular student or other person they know that seems to fit each of the learning styles. Make sure that participants understand that the point of this exercise is to help them have a concrete picture of each of the styles, not to stereotype their students.

Encourage participants to identify which styles are prominent in each PLT activity presented at the workshop. Ask participants to suggest ways to extend each PLT activity presented to get at some of the other learning styles.

During the curriculum planning time, have participants identify a group of lessons that focus on different learning styles to teach together as part of a unit.

- * For more information on learning styles, see the following references:
Keefe, James W. (ed.). *Profiling and Utilizing Learning Style*. Reston, VA: National Association of Secondary School Principals, 1988.
McCarthy, Bernice. *The 4MAT System: Teaching to learning styles with right/left mode techniques*. 2nd ed. Oak Brook, Ill: EXCEL, 1981.

Teaching to Learning Styles

Learning Style 1: Imaginative Learner

I like to: learn through personal experience; have meaning in what I learn; learn about things I value and care about; express my beliefs, feelings and opinions; and understand how what I learn affects me. I function best when interacting with others. My goal is to make the world a better place. My favorite question is "Why?"

Teach by: Giving them a reason; having them create and analyze an experience.

Learning Style 2: Analytic Learner

I like to: get new and accurate information; deal in facts and right answers; know what the experts think; formulate theories and models; and have things exact and accurate. I function best when adapting to experts. My goal is to add to the world's knowledge. My favorite question is "What?"

Teach by: Teaching it to them; integrating the experience and the material; giving them the facts.

Learning Style 3: Common Sense Learner

I like to: do things; have ideas clear and understandable; find out how things work; test theories in the real world; and make things useful. I function best using kinesthetic awareness. My goal is to make things happen. My favorite question is: "How?"

Teach by: Letting them try it; giving them prepared materials and have them add "something of themselves" to it.

Learning Style 4: Dynamic Learner

I like to: connect things together; do things that matter in life; teach other people what I know; take some risks; and make what is already working, work better. I function best by acting and testing experience. My goal is to challenge complacency. My favorite question is: "So what?"

Teach by: Letting them teach it to themselves and someone else; having them analyze for relevance and originality, then share with each other.

REFERENCE

McCarthy, Bernice. *The 4MAT System: Teaching to learning styles with right/left mode techniques*. 2nd ed. Oak Brook, Ill: EXCEL, 1981.

Multiple Intelligences

"The Theory of Multiple Intelligences,"

by Cindy Ybos and Patty Watts, 1998.

A different kind of smart—that's the hottest topic of discussion in classrooms across the country today. With the currently accepted theory of multiple intelligences, educators no longer focus on "how smart students are" but on "how students are smart."

The theory of multiple intelligences, developed by Howard Gardner and his associates, holds that every individual possesses several different and independent capacities for solving problems and creating products. Gardner has named these capacities "intelligences" and has scientifically identified eight of them which are grouped into three categories.

The language-related intelligences, verbal/linguistic and musical/rhythmic, reflect the structures of individual languages. These two intelligences are "object free," meaning that thoughts are represented through sound-based communication and symbolic representations of those sounds.

The second category, personal relationships, consists of interpersonal and intrapersonal intelligences. These are the people-centered intelligences. They reflect the personal vision of self, expectations of others, accepted norms of thinking and acting, and the cultural pressures that shape behavior.

The third category is object-related intelligences. These include bodily/kinesthetic, visual/spatial, and logical/mathematical. The designation of object-related means that the basic concepts and procedures are rooted in physical manipulation of concrete objects that results in a defined product. These intelligences are subject to the "rules of the game" for using the objects to solve a problem or make a product.

The newest intelligence to be identified is naturalist intelligence. Gardner describes this as an ability to differentiate the patterns and characteristics among natural objects in the environment, recognize flora and fauna, make distinctions in the natural world, and observe and classify plants. Charles Darwin is often cited as an example of a person who possesses a naturalist intelligence.

As with other instructional strategies, Project Learning Tree has already incorporated many of the key aspects of multiple intelligences theory into its activities.

One of the simplest ways to include multiple intelligences with your students is to ask them to "represent" the data they have collected during a PLT activity, such as "Water Wonders," using one of the eight intelligences. Each group can be invited to use the intelligence with which they are most comfortable or you can assign an intelligence to each group. By doing this, you encourage them to really let their personalities shine! We have found that groups will dance, sing, draw pictures, make models, create graphs, or do calisthenics to report their findings from PLT activities.

While all of this information about Multiple Intelligence Theory may seem overwhelming, the main idea we would like for you to get from this article is that PLT activities already incorporate a great deal of this theory. Just by doing the activities, you are modeling some aspects of Multiple Intelligence Theory in your classrooms and with some small modifications, you can model all aspects of it. And, if you are a PLT workshop facilitator, it also is important that you think about how combinations of activities will address all of the intelligences when planning your workshops.

Addressing Controversial Issues

When teaching about the environment, many educators avoid certain topics and issues because they are reluctant to deal with controversy in the classroom. If you wish, your PLT workshop can provide ways for educators to examine ways to teach and cope with controversial topics. For information on teaching controversial issues, see PLT's PreK-8 Activity Guide, Appendix 3. In your workshops, you can help educators examine dealing with controversial issues. You might, for example:

Help participants identify potential controversial issues imbedded in the PLT activities you present.

Lead a discussion about the benefits and pitfalls of teaching about controversial issues. Help participants identify ways for handling each of the pitfalls.

Invite resource specialists to the workshop to help explain their perspectives on the topic. Help participants discuss arguments for and against each perspective. See page II-**x** for information on inviting a resource specialist.

Encourage participants to brainstorm a list of possible concerns that parents, administrators, the community, or the participants themselves would have about teaching a particular controversial issue. Then help them brainstorm ways to address each of the concerns.

Leading Successful Outdoor Activities

Taking students outdoors allows them to personally examine and experience the natural world. These experiences are critical for helping students understand the world around them. However, many educators shy away from outdoor activities because these activities present management problems. For example, when students leave their familiar classroom for an outdoor activity, they often assume that the classroom rules no longer apply.

To help educators become more comfortable with leading successful outdoor activities, you can provide ways of addressing this issue in your workshop. Following are some suggestions:

At the workshop introduce participants to the outdoors, and help them see the importance and advantages of working outside. After each outdoor activity, discuss how the activity and the learning would have been different if it had been conducted indoors.

Have participants brainstorm a list of the pluses and minuses of leading outdoor activities. Divide participants into small groups and have them think of ways to turn the minuses into pluses.

For more information, see the section on "Teaching Out-of-Doors" in Appendix 6 of PLT's PreK-8 Activity Guide.

PLT and Education Reform

Educators need to know how PLT fits in with education reform. Discuss hands-on learning, constructivist teaching, using story lines, and so forth.

You might want to ask them to contribute examples or comments. You can also hand out copies of the PLT correlations to national education standards, as well as any state standards to illustrate the connection.

“How Does Project Learning Tree Support Systemic Reform?”

By: Bill Andrews, Education Programs Consultant, Office of Environmental Education, California Department of Education

Throughout the 1990's, environmental educators have been challenged to meet the needs of systemic reform. To meet this challenge and continue to provide a world-class environmental education curriculum for its nation-wide network of educators, the Project Learning Tree (PLT) staff conducted four writing workshops in different regions of the United States. These multi-day workshops were instrumental in capturing each region's interpretation of systemic reform in the context of environmental education. Over the last decade, proponents of systemic education reform have focused their efforts on the following basic elements: (1) **new approaches to teaching and learning**; (2) **site-based governance**; (3) **shifting roles of teachers and administrators**; and (4) **accountability**. Environmental educators in each of the regions helped weave these basic elements into both the Project Learning Tree Environmental Education Activity Guide (Pre K - 8) and the Project Learning Tree topic specific modules for secondary students, thereby ensuring the activities met their pedagogical and programmatic needs. Regardless of whether you are a curriculum writer or director, classroom or outdoor educator, elementary or secondary student, everyone benefits from the outstanding quality of the PLT activities that reflect all of the common components of systemic reform listed above.

PLT Activities Reflect All the Basic Elements of Systemic Reform

The pedagogical approach of PLT activities is largely constructivist. This approach supports educators in their systemic reform efforts to embrace **new methods of teaching and learning**. Each activity is designed to engage students in active learning and to promote conceptual understanding. PLT lessons challenge students to apply critical thinking skills as they share their preconceptions, investigate environmental concepts, explore viewpoints, and attempt personal or group action projects based on knowledge they have gained. This constructivist learning approach improves the students' abilities to synthesize, infer, problem-solve, and analyze. Thus, the pedagogy used in many PLT activities reflects the new approaches to teaching and learning championed in systemic reform.

The PLT Activity Guide is ideal for teachers whose school or district embraces **site-based governance**. Teachers who are granted adequate flexibility in their instructional program to meet the content and performance standards of their district or state find the thematic storylines within the Activity Guide to provide valuable connectedness and continuity between various content areas. Every storyline is supported by four to six activities, and each activity provides a short

overview, lesson plan, background information, and helpful enrichment and assessment opportunities. Through training workshops, teachers learn how easy it is to incorporate PLT activities into their existing curriculum and are encouraged to adapt the activities to their local environment. Because the Activity Guide is so user-friendly, educators have greater confidence in designing their instructional program and implementing their lessons.

The wide variety of PLT activities, which are structured around both natural and human-built environments, create an intriguing array of new, sometimes never explored **roles and responsibilities** for students and educators alike.

Educators acquire new ideas from the Guide which often transform the classroom into a stimulating learning environment for students. For example, in the activity "Every Drop Counts," students monitor their daily water use at school, analyze how water is wasted, and then design and implement a water conservation plan for the entire school. They determine the amount of water and money that is saved through their plan and share this information with their fellow students, faculty, and community. This activity clearly empowers students to take responsibility for conserving water on their campuses. The teacher's role is centered around facilitating better access to information and helping students use mathematical reasoning to draw conclusions about something students care about: saving water.

PLT lessons for older secondary students delve more deeply into complex environmental issues. The lessons encourage independent research and greater student **accountability** for project outcomes.

Lesson eight, "Take Action" in the secondary module, "Exploring Environmental Issues: Focus on Forests," guides students to research information about their local forests. Students examine a success story of what one class in New Mexico did to reclaim a state park. Then they design a project to improve a forested area in their region. Once they finish their action project, they evaluate their accomplishments, the problems they encountered, and what they would change next time to be more effective. This kind of reflective assessment, which is performance-based, encourages students to be more accountable for their learning. Given this emphasis on authentic assessment, it is not surprising that a 1995 multi-age, pre-and post-test analysis of the educational effectiveness of PLT, conducted by an independent research arm of the North American Association for Environmental Education, concluded that the educators who had led their pupils through an entire storyline unit (4 to 6 lessons in length) were

universally successful in enabling their students to develop deeper conceptual understanding about the environment and shared attitudes that reflect caring and respect for the environment.

Given these impressive statistically-derived results and the few short examples offered to illustrate the ways PLT activities reflect the basic components of systemic reform, educators can be confident that the PLT Activity Guide and the secondary modules will serve as useful tools to implement systemic reform in their schools.