

Texas Environmental Education Master Plan

A statewide cooperative project

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Texas Environmental Education Partnership

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Why this project? Why now?

In 1998, the first Texas Environmental Education Master Plan evolved from the ideas and suggestions of hundreds of people across the state of Texas. Over 250 individuals representing diverse interests actively participated in the process over several months. The plan represented the collective thinking of individuals and organizations interested in quality environmental education in Texas. The results of that plan have been realized with the creation of a certification program for environmental educators, one of the first of its kind in the nation; and the adoption of the nationally-recognized guidelines for excellence in environmental education series of publications that include guidelines for materials review, initial preparation and professional development of formal and nonformal educators, and K-12 learning.

Texas now stands ready to address new issues related to environmental education; this master plan details these new strategies and initiatives.

The Texas Environmental Education Master Plan (TEEMP) is intended to be:

- a community-developed, broad-based vision statement to help make environmental education in Texas more effective, inclusive, cooperative, and successful;
- a flexible long-term strategic plan which will be updated and modified as needed with annual action plans to facilitate progress toward common goals and objectives;
- a comprehensive framework into which individual, local, regional, or statewide environmental education program goals and activities can be integrated; and
- a forum to agree upon practical, achievable, statewide environmental education goals and objectives that are appropriate to Texas' unique diversity.

The TEEMP is not intended as:

- an attempt to direct, standardize, homogenize, or centralize programs and activities; or restrict local options or creativity;
- a mandate for programs, solutions, or standards;
- a mechanism to judge the productivity or capability of existing or future programs;
- an attempt to exclude minority views or perspectives, or discourage debate on issues.

Key areas to address

STRUCTURE

- a. Coordinated Leadership
- b. Capacity Building
- c. Support, including political support

PROGRAM

- a. Capacity Building
- b. Guidelines for Best Practices
- c. Outreach
- d. Training and professional development

FUNDING

- a. Revenue Sources
- b. Prioritization

DIVERSITY

- a. Capacity Building
- b. Organizational Commitment
- c. New Program Assessment
- d. Continuing Program Assessment

Introduction

Many challenges face environmental education in Texas. Texas has a wide variety of environmental education materials and training programs, but in such a large geographic area, duplication of effort often occurs. Texas also is faced with an increasing polarization of opinion on what is appropriate in terms of EE for Texas students. The focus of this document is the creation of a master plan that the majority of Texans will support.

Quality environmental education is the key to having citizens who are individually and collectively knowledgeable environmental stewards. By working together to improve environmental education for all Texans we can better conserve, manage, and enhance the natural resources of our geographically, biologically, and culturally diverse state.

Environmental Education in Texas: Challenges and Opportunities

Improving the delivery of environmental education is one of the most exciting challenges of the coming millennium. Three areas of concern for EE are:

- Delivery of scientifically accurate, balanced information to Texas students and educators (both formal classroom teachers and informal educators such as nature center, museum, and zoo professionals);
- Professional development of educators to teach environmental topics; and
- Development of a sustained, coordinated consortium of individuals, organizations, agencies, and corporations dedicated to implementing a vision for Texas EE.

What are the appropriate conditions under which EE should be accomplished in Texas?

Environmental education should be approached as a comprehensive and inclusive effort. In 2000, the Texas Environmental Education Partnership (TEEP), with support from the Texas Association for Environmental Education (TAE), and the Texas Environmental Education Advisory Council (TEEAC), adopted the nationally-endorsed series of guidelines for best practices in environmental education for the state of Texas. While these guidelines are voluntary, their use is strongly encouraged and supported by a variety of stakeholders.

Youths and adults continuously acquire information about the environment through the media and other sources, regardless of whether environmental education is integrated into classroom curricula. The formal and informal classroom should be used to deliver accurate, balanced, scientifically sound information to ensure that Texas youth and all citizens have the tools necessary to make sound choices that will affect all our futures.

Trends in Education and Implications for EE in Texas

In its long-range plan, the Texas Education Agency (TEA) has identified long-term national trends in education that define and constrain the way Americans conceive the future. The following presents some broad social trends likely to affect education, directly or indirectly:

- Increasing dominance of technology in the economy and society;
- Expanding education throughout society, throughout lifetimes;
- Increasing metropolitanization and suburbanization;
- Growth of service-sector employment;
- Rise of knowledge industries and knowledge-dependent society;
- Increasingly global economy;
- Shifts in traditional nuclear family (i.e., more single-parent families);
- Increasing personal and occupational mobility;

- Growing demands for accountability in use of public funds; and Increasing privatization of government services.

Similarly, important long-term education trends that have been identified include the following:

- Increasing competition among schools for students, educators, and funds;
- Increasing calls for education accountability at all levels;
- More school districts and states contracting for education services;
- Rising demand for education professionals;
- Expanding investments in technology infrastructure and equipment for schools; and
- Increasing use of technology to change what happens in the classroom or school.

Initiatives and mandates affecting science education in Texas

EIC: Using the Environment as an Integrated Context for Learning

The following programs are examples of the EIC approach to learning:

Texas STRANDS Project

In 2004, the Texas Education Agency, in cooperation with the Lower Colorado River Authority (LCRA) identified schools to participate in the Texas Strands Project beginning in the spring of 2005. This project uses an instructional strategy that employs natural and socio-cultural environments as the context for learning while taking into account the best practices of successful educators, using the EIC method. This approach uses a school's surroundings, parks, and community as a framework within which students can construct their own learning, guided by teachers and administrators using proven educational practices.

NWF Outdoor Classrooms

There are 102 Schoolyard Habitats Sites in Texas. NWF's Schoolyard Habitats program provides administrators and educators a framework for incorporating environment-based education into their school curriculum or youth service programs. Through the creation and use of wildlife habitat sites, the Schoolyard Habitats program gives formal and non-formal educators the resources they need to create and use an outdoor learning site on school/facility grounds and provides interdisciplinary curricula based on the national Standards of Learning. Schoolyard Habitats sites provide students with a place to experience hands-on learning and connect to the natural world while providing local wildlife with essential habitat. First-hand, students see and experience the difference that stewardship makes toward improving the environment.

Differentiated Instruction

Differentiated instruction applies an approach to teaching and learning so that students have multiple options for taking in information and making sense of ideas. The model of differentiated instruction requires teachers to be flexible in their approach to teaching and adjusting the curriculum and presentation of information to learners rather than expecting students to modify themselves for the curriculum. Classroom teaching is a blend of whole-class, group and individual instruction. Differentiated Instruction is a teaching theory based on the premise that instructional approaches should vary and be adapted in relation to individual and diverse students in classrooms.

To differentiate instruction is to recognize students varying background knowledge, readiness, language, preferences in learning, interests, and to react responsively. Differentiated instruction is a process to approach teaching and learning for students of differing abilities in the same class. The intent of differentiating instruction is to maximize each student's growth and individual success by meeting each student where he or she is, and assisting in the learning process.

Teaching for Conceptual Understanding and Authentic Assessment

Interactive engagement promotes conceptual understanding. Students are engaged in activities that are minds-on (always) and hands-on (usually). These activities generate immediate feedback through discussion with peers and the teacher. The motivation for this type of instruction is rooted in the fact that many students leave science classrooms with misconceptions about the natural world in life, earth, and physical sciences. Additionally, the National Science Education Standards call for an improvement in conceptual understanding.

In his book, *Assessing Student Performance*, Grant Wiggins defines authentic assessment as "...Engaging and worthy problems or questions of importance, in which students must use knowledge to fashion performances effectively and creatively. The tasks are either replicas of or analogous to the kinds of problems faced by adult citizens and consumers or professionals in the field."

In authentic assessment (AA), assessment drives the curriculum. That is, teachers first determine the tasks that students will perform to demonstrate their mastery, and then a curriculum is developed that will enable students to perform those tasks well, which would include the acquisition of essential knowledge and skills. AA springs from the following reasoning and practice:

1. A school's mission is to develop productive citizens.
2. To be a productive citizen, an individual must be capable of performing meaningful tasks in the real world.
3. Therefore, schools must help students become proficient at performing the tasks they will encounter when they graduate.
4. To determine if it is successful, the school must then ask students to perform meaningful tasks that replicate real world challenges to see if students are capable of doing so.

Development and Support of Highly Qualified Teachers

The federal No Child Left Behind legislation raises the bar for teacher certification and standards by requiring a highly qualified teacher in every classroom by the 2005-2006 school year. There are a number of targeted professional development activities incorporated in larger comprehensive initiatives such as TRFI and the Reading, Math and Science initiatives included in the SSI. Developing shared strategies for the development of highly qualified new teachers is a major focus of the P-16 Council. TEA also is conducting several evaluations of teacher training. For example, Rider 45 provides for an evaluation of teacher training activities funded through the SSI, which encompasses the Texas Reading, Math and Science Initiatives. The evaluation will review: 1) the effectiveness of teacher training programs in furthering student achievement outcomes; and 2) the efficiency of these programs in using allocated funds.

Engineering and Technology Initiatives

Texas Science, Technology, Engineering, and Math Initiative

The T-STEM Initiative promotes education strategies that integrate the teaching of science, technology, engineering, and mathematics in a way that challenges students to innovate and invent. T-STEM coursework requires students to demonstrate their understanding of these disciplines in an environment that models real world contexts for learning and work. Students participating in T-STEM education graduate prepared to pursue postsecondary level coursework and careers in science, technology, engineering, and math. The T-STEM network will serve as a conduit for sharing best practices and lessons learned from T-STEM Academies and Centers with all Texas middle and high schools. Through the network, schools across the state will have access to relevant professional development, rigorous math and science curriculum, lesson plans infused with real-world activities in math and science, and expert and peer advice.

Rationale

Under appropriate conditions, environmental education is good for Texas for the following reasons:

Environmental education is a long-term goal. The Master Plan will assist in developing a model for environmental education that will serve the citizenry for years to come, as new environmental concerns develop.

Environmental education enhances student achievement. In 1998, the State Education and Environmental Education Roundtable reported that integrating environmental education into students' curricula can improve their achievements in science, language arts, and social studies. Further, there is evidence of increased skills in problem-solving, critical thinking, and decision making, as well as gains in standardized test scores and grade point averages. Students are more enthusiastic and engaged in learning because environmental education provides teachers with a variety of approaches to help them relate studies to their daily lives.

Environmental education supports conservation efforts. An environmentally literate public will be far better equipped to be stewards in helping to conserve precious natural resources for future generations.

Environmental education supports the business community. Texas now has a rapidly expanding economy and also is a primary target for business relocation. Businesses are attracted to communities where the quality of the environment is high and that offer educated work forces. Employees who are environmentally literate help business achieve profitability by reducing waste and pollution.

Environmental education improves the quality of life in the community. Learning more about the environment equips people to participate meaningfully in the democratic process regarding environmental issues.

Environmental education saves tax dollars. Adults who have greater knowledge of the environment support decreasing environmental regulation, according to the November 1997 Roper Starch Worldwide Report. Thus, proactive environmental education is often a more efficient, less expensive solution than strict regulatory controls and heads off problems before governmental intervention is required.

Stakeholders

Who will benefit as a result of this plan? Who are the intended audiences that will be addressed? They include beneficiaries who will learn as a result of the implementation of this plan, educators who will implement educational programs and initiatives, and supporters who provide assistance.

Beneficiaries	Educators	Supporters
Citizens of Texas, including: <ul style="list-style-type: none"> • PreK-12th grade learners • College and university learners • Adult learners 	Educators from formal education organizations such as: <ul style="list-style-type: none"> • Public/private schools (PreK-12), including day-care • State and private colleges and universities • Home school associations Educators from nonformal education organizations such as: <ul style="list-style-type: none"> • Parks, zoos, and museums • Nature and EE centers • Soil and water conservation districts • Local, regional, and state governmental agencies • Business and industry • Environmental organizations • Community-based groups 	<ul style="list-style-type: none"> • Business community • Agricultural community • Community-based groups • Environmental organizations • State and federal agencies • Education organizations • Faith-based groups • Legal groups

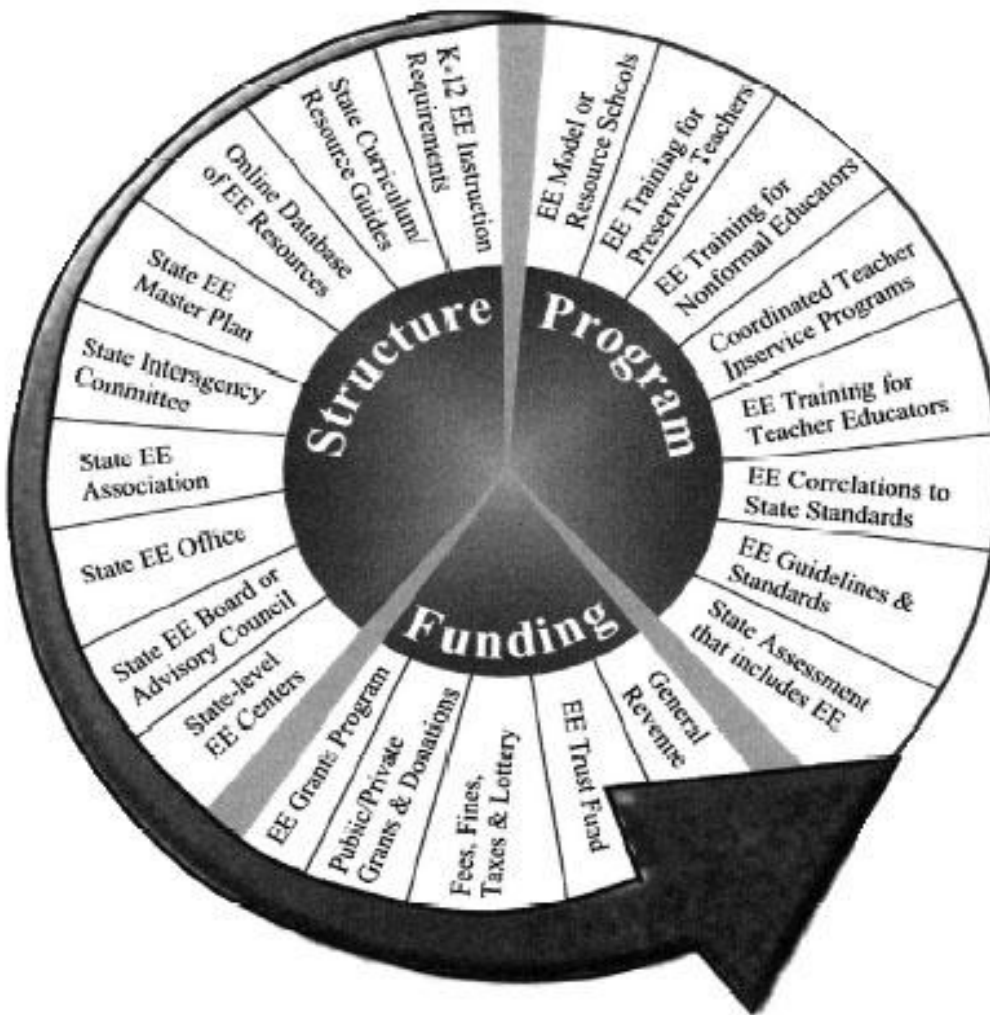
Definitions of Environmental Education

The UNESCO, Tbilisi Declaration of 1978 developed a definition of environmental education that has served as a framework for many EE programs and services over the past 30 years. It states: environmental education is a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action.

The following was definition adopted on February 18, 1998 by a diverse group of stakeholders working on the original Texas EE Master Plan: Environmental education is a process of helping individuals understand the environment, their place in it, and related issues. It also is a process through which diverse Texas publics can develop the knowledge, skills, and commitment necessary to participate in resolving environmental issues.

National Models

The model shown here defines components of a comprehensive environmental education program. This list of components is based on research with six communities with comprehensive environmental education programs, and is only one model of many. In recent years a fourth component, diversity, has been added to this model, and should be addressed in this master plan. Not all components shown in this model are necessary to have in place for a comprehensive EE program. The prioritization of components and how they are archived varies from state to state. Ultimately, comprehensive EE programs involve a majority of the components listed.



Components of a State-Level Comprehensive EE Program, revised 1998 (Ruskey and Wilke 1994)

Texas Environmental Education Master Plan

The format of this master plan is designed to follow the basic structure of the model seen below, but will concentrate specifics into an overall set of goals listed under each of the four components. Objectives and strategies will be developed for each heading and subheading as needed. Sections may be deleted if they are deemed not relevant or necessary to this plan.

STRUCTURE

- a. Develop Coordinated Leadership
- b. Build Capacity
- c. Increase Support, including political support

FUNDING

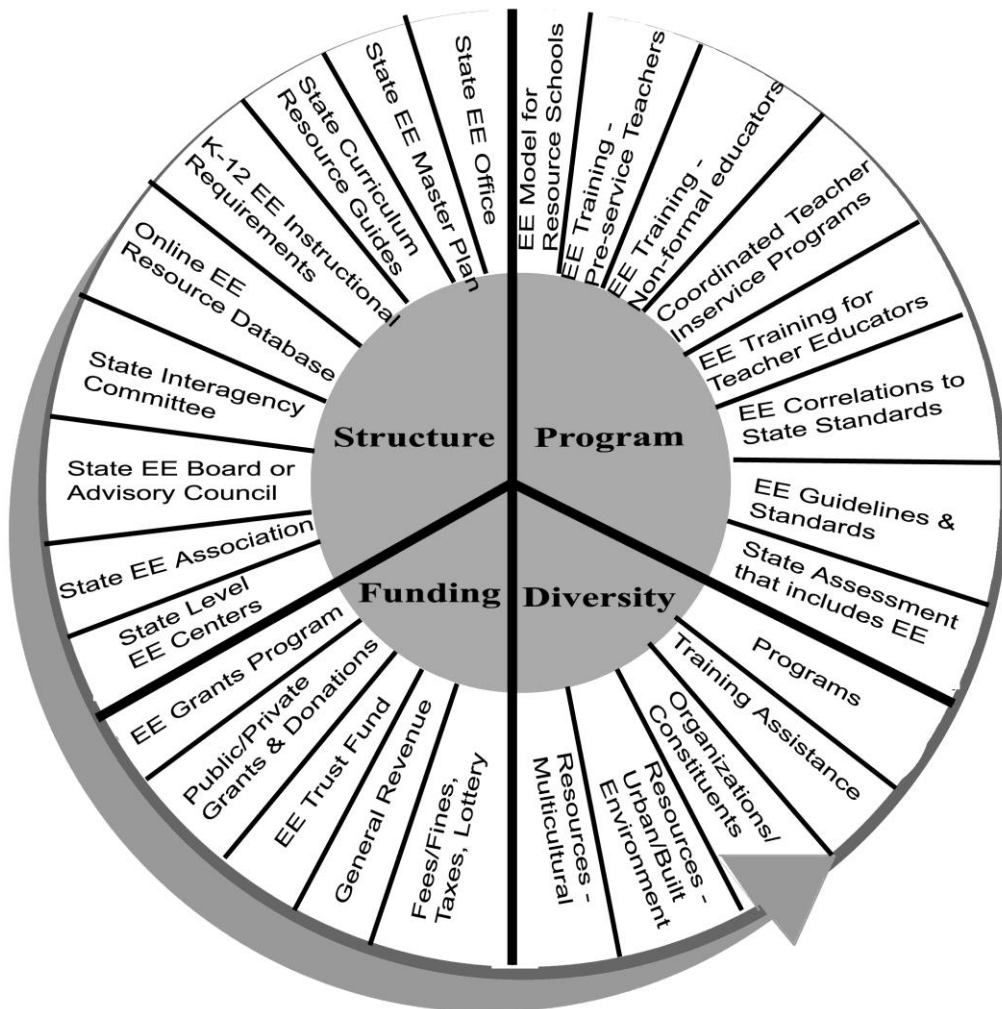
- a. Develop Revenue Sources
- b. Prioritize Funding Needs

PROGRAM

- a. Build Capacity
- b. Promote Guidelines for Best Practices
- c. Develop Outreach
- d. Support training and professional development

DIVERSITY

- a. Build Capacity
- b. Promote Organizational Commitment
- c. New Program Assessment
- d. Continuing Program Assessment



Next Steps

A summary of recommendations for follow-up once the plan is approved.

Once the goals identified in this plan are developed and approved, it is critical that all concerned individuals and groups are involved in the implementation as well. Particularly important to the success of the plan is the cooperation and mutual support of the affiliated EE organizations such as the Texas Environmental Education Partnership (TEEP), Texas Association for Environmental Education (TAE), the Texas Environmental Education Advisory Committee (TEEAC), the Texas Environmental Awareness Network (TEAN), and the Texas Statewide Systemic Initiative (SSI), which are doing projects similar to those proposed in this plan. It is critical that we help identify the unique role of each organization and eliminate duplication of effort.

References

Ruskey and Wilke (1994) Promoting Environmental Education: A Handbook for Strengthening EE in your State and Community. University of Wisconsin-Stevens Point Foundation Press.