

Missouri Environmental Literacy Plan – June 6, 2011

An Environmental Literacy Plan (ELP) is a comprehensive, integrated plan for incorporating environmental education into public schools.

The No Child Left Inside Act will provide financial support for states which have an Environmental Literacy Plan on file with their state department of education.

There are six major elements in an ELP:

1. specific content standards, content areas and courses or subjects where instruction takes place (Goal 1)
2. description of how state high school graduation requirements will ensure graduates are environmentally literate (Goal 1)
3. description of programs for professional development of teachers to improve their environmental content knowledge, skill in teaching about environmental issues and field-based pedagogical skills (Goal 2)
4. description of how the state education agency will measure the environmental literacy of students (Goal 1)
5. description of how the state education agency will implement the plan, including securing funding and other necessary support (Goal 4)
6. plans and resources for school facilities and grounds (Goal 3)

Environmental Literacy Plan Working Group 2009 to 2011

Coordinator – Jenna Rhodes, Kansas City – Missouri Environmental Education Association

Amy Buechler – Conservation Federation of Missouri – Teaming with Wildlife Coordinator

Debbie Brunner – Dept of Natural Resources

Allen Cooper – National Wildlife Federation

Erica Cox – Missouri State University – State Coordinator of MO Project WET

Kathy Craig – MO Dept of Health and Senior Services

Nikki Davenport – Math/Science Curriculum Coordinator

Linda Dooling – Dept of Education – Director of Teacher Development

Fran Fry – Teacher, Niangua Schools

Regina Knauer – Missouri Dept of Conservation – Education Programs / Curriculum Supervisor

Shannon Koenig – Dept of Higher Education

Jim Lubbers – Dept of Natural Resources – Environmental Education Specialist

Heather MacCleoud – Dept of Higher Education

Angelette Prichett – Dept of Higher Education

Andrea Putnam – Department of Natural Resources – State Parks

Nancy Snider – Missouri Dept of Conservation – Education Consultant

Donna Utter – Abitibi Bowater Recycling – Area Manager

Jan Weaver – University of Missouri – Columbia

Goals Summary p. 2

Goals & Strategies Summary p. 2

Goals, Strategies & Objectives Summary p. 3

Goal 1- Missouri Students will be Environmentally Literate p. 6

Goal 2 - Formal and Non-Formal Educators Will Understand and Use Best Practices in EE p. 9

Goal 3 - Educational Settings and Resources Will Foster Environmental Literacy p. 12

Goal 4 - Environmental Education in Missouri Will be Sustainable p. 16

GOALS

Goal 1 - Missouri Students Will be Environmentally Literate

Goal 2 - Formal and Non-Formal Educators Will Understand and Use Best Practices in Environmental Education

Goal 3 - Educational Settings and Resources Will Foster Environmental Literacy

Goal 4 - Environmental Education in Missouri Will be Sustainable

GOALS + STRATEGIES

Goal 1 - Missouri Students Will be Environmentally Literate

Strategy 1. Determine how EE is actually implemented in Missouri schools.

Strategy 2. Identify barriers to teaching EE in Missouri schools

Strategy 3. Develop resources for overcoming barriers discovered in Strategy 2

Strategy 4. Evaluate student performance on measures of environmental literacy using multiple strategies.

Goal 2 - Formal and Non-Formal Educators Will Understand and Use Best Practices in Environmental Education

Strategy 1. Set nationally aligned, state approved standards for EE certification in Missouri

Strategy 2. Create pathways and courses for EE certification.

Strategy 3. Engage pre-service teachers in EE certification through college programs.

Strategy 4. Engage in-service teachers in EE certification through professional development.

Strategy 5. Engage non-formal educators in EE certification through professional development.

Goal 3 - Educational Settings and Resources Will Foster Environmental Literacy

Strategy 1. Create a state recognized "Green Ribbon Schools" program for schools.

Strategy 2. Ensure Missouri students participate in a high-quality outdoor educational experiences in elementary, upper elementary/middle and high school (3 times in their school career).

Strategy 3. Ensure school yard programs are supported in all districts.

Strategy 4. Create a web-based database for curricula and other environmental education resources.

Strategy 5. Create stand-alone environmental science courses for use in middle and high school settings as well as through virtual programs.

Strategy 6. Create a Missouri Environmental Education Grants Program.

Goal 4 - Environmental Education in Missouri Will be Sustainable

Strategy 1. Create a State Office of Environmental Education within the Department of Elementary and Secondary Education (DESE).

Strategy 2. Create a State Environmental Education Interagency Committee (SEEIC) to coordinate state level EE efforts.

Strategy 3. Create a State Environmental Education Advisory Board (SEEAB) to coordinate state organization efforts.

Strategy 4. Develop sustainable funding streams for the State Office of Environmental Education, Missouri Environmental Education Association (MEEA) and other environmental education providers.

GOALS + STRATEGIES + OBJECTIVES

Goal 1 - Missouri Students will be Environmentally Literate

Strategy 1. Determine how EE is actually implemented in Missouri schools.

Objective 1 - Survey a representative sample of Missouri schools about how they teach Grade Level Expectations related to EE.

Strategy 2. Identify barriers to teaching EE in Missouri schools.

Objective 1 - Evaluate curricula and textbooks used in schools for their alignment with NAAEE Guidelines.

Objective 2 - Evaluate administrator and teacher familiarity with EE standards and environmental literacy.

Objective 3 - Evaluate availability (perceived and actual) of high quality EE curricula for teachers.

Objective 4 - Evaluate availability of upper level environmental coursework for students.

Objective 5 - Compile a list of barriers.

Strategy 3. Develop resources for overcoming barriers listed in Strategy 2

Objective 1 - Identify the resources needed to overcome barriers

Objective 2 - Identify new and existing resources for overcoming barriers and implement their use

Strategy 4. Evaluate student performance on measures of environmental literacy using multiple strategies.

Objective 1 - Evaluate student environmental literacy using current assessments.

Objective 2 - Create and implement new "no stakes" assessments for determining mastery levels of process and knowledge of EE for use in Missouri classrooms of all grades (Pre K-12) by educators to use in association with North American Association for Environmental Education (NAAEE) Guidelines for Excellence.

Objective 3 - Use results of student performance to guide educational policy.

Goal 2 - Formal and Non-Formal Educators Will Understand and Use Best Practices in Environmental Education

Strategy 1. Set nationally aligned, state approved standards for EE certification in Missouri

Objective 1 - Use NAAEE Guidelines to create a nationally accredited EE certification program for educators in Missouri.

Objective 2 - Have DESE approve a certification program for Missouri teachers (should happen in tandem with the preceding objective).

Strategy 2. Create a pathway and courses for EE Certification.

Objective 1 - Develop a pathway to certification that would allow pre-service teachers to complete certification as part of a 4 year program and alternative certification candidates, in-service and non-formal educators to complete certification in a minimum amount of time.

Objective 2 - Develop the courses.

Objective 3 - Develop a mechanism for offering these courses on-line and/or in workshops with approved faculty at higher education institutions.

Objective 4 - Recruit faculty to teach the courses.

Objective 5 - Ensure that the courses are approved electives at teacher colleges in Missouri.

Objective 6 - Over time, encourage other qualified entities to offer approved EE certification courses.

Strategy 3. Engage pre-service teachers in EE Certification through college programs.

Objective 1 - Recruit at least one faculty member in each college of education to share information about certification.

Objective 2 - Seek funding for scholarships for EE Certification to help pay for courses or for certification.

Strategy 4. Engage in-service teachers in EE Certification through professional development.

Objective 1 - Develop a plan for marketing EE Certification.

Objective 2 - Develop a plan for ensuring that there is the programmatic capability to provide timely and cost effective certification for teachers that want it.

Objective 3 - Seek funding for scholarships for EE Certification to help pay for courses or for certification.

Strategy 5. Engage non-formal educators in EE Certification through professional development.

Objective 1 - Develop a plan for marketing EE Certification.

Objective 2 - Develop a plan for ensuring that there is the programmatic capability to provide timely and cost effective certification for non-formal educators that want it.

Objective 3 - Seek funding for scholarships for EE Certification to help pay for courses or for certification.

Goal 3 - Educational Settings and Resources Will Foster Environmental Literacy

Strategy 1. Create a state recognized "Green Ribbon Schools" program for schools.

Objective 1 - Develop a "Green Ribbon Schools" program for use in Missouri.

Objective 2 - Pilot the "Green Ribbon Schools" program.

Objective 3 - Recruit at least 5% of Missouri public schools for participation in the "Green Ribbon Schools" program.

Strategy 2. Ensure Missouri students participate in a high-quality outdoor educational experience in elementary, upper elementary/middle and high school (3 times in their school career).

Objective 1 - Define and identify quality outdoor experiences.

Objective 2 - Develop a plan for implementing quality outdoor experiences in schools.

Objective 3 - Document students' participation in quality outdoor experiences and the costs and benefits of these experiences.

Strategy 3. Ensure School yard programs are supported in all districts.

Objective 1 - Develop models for supporting school yard programs.

Objective 2 - Pilot models for supporting school yard programs.

Objective 3 - Disseminate models for supporting school yard programs and evaluate effectiveness throughout Missouri with the goal of having at least one program in each district.

Strategy 4. Create a web-based environment for curricula and other environmental education resources.

Objective 1 - Create a library of lessons and curricula that meet NAAEE Guidelines for Excellence for all subject areas and at all grade levels to be housed at the Missouri Environmental Education Association (MEEA) website www.meea.org.

Objective 2 - Develop an on-line source of Missouri-based data sets for teachers and students to use to investigate local, regional and state environmental issues.

Objective 3 - Develop and test a model website for posting podcasts.

Objective 4 - Promote the use of MEEA and NAAEE lessons and curricular resources among formal and non-formal educators in Missouri.

Strategy 5. Create stand-alone environmental science courses for use in middle and high school settings as well as through virtual programs.

Objective 1 - Create environmental science courses for middle and high school that align with North American Association for Environmental Education (NAAEE) Guidelines for Excellence, as well as state standards for process and knowledge.

Objective 2 - Create an online environmental science course that aligns with NAAEE Guidelines for Excellence, as well as standards for process and knowledge.

Strategy 6. Create a Missouri Environmental Education Grants Program.

Objective 1 - Set up the program.

Objective 2 - Promote the program and award grants.

Goal 4 - Environmental Education in Missouri Will be Sustainable

Strategy 1 - Create a State Office of Environmental Education in the Department of Elementary and Secondary Education (DESE).

Objective 1 - Define the responsibilities of the office.

Objective 2 - Define the structure of the office, lines of reporting and procedures for evaluation and setting priorities.

Objective 3 - Plan for the long term financial support of the office during and following initial start-up.

Strategy 2 - Create a State Environmental Education Interagency Committee (SEEIC) to coordinate state level EE efforts.

Objective 1 - Define the responsibilities of the committee and its initial membership.

Objective 2 - Start the committee.

Strategy 3 - Create a State Environmental Education Advisory Board (SEEAB) to coordinate state organization efforts.

Objective 1 - Define the responsibilities of the board and its initial membership.

Objective 2 - Start the board.

Strategy 4 - Develop sustainable funding streams for the State Office of Environmental Education, Missouri Environmental Education Association (MEEA) and other environmental education providers.

Objective 1 - Identify all possible income streams and the resources needed to access them.

Objective 2 - Match funding streams to existing and/or future benefits, outcomes, products or services provided by the state EE office or MEEA.

Objective 3 - Develop and implement annual fundraising targets and efforts and evaluate their effectiveness.

DRAFT

Goal 1 - Missouri Students will be Environmentally Literate

Background and Rationale for Strategic Approaches

Missouri Grade Level and Course Level Expectations K-12 already include the items listed in the NAAEE Guidelines for Learning (Pre K-12) and the Environment is included as a "Foundation Knowledge and Skill" in the Department of Elementary and Secondary Education's recently released Career Clusters plan.

Students are tested in Communication Arts and Mathematics in grades 3 and(?) 8, in Science in grades 5 and 8, and have course level exams for English 1 & 2, Algebra, Geometry, US History, US Government and Biology in high school. Of the large number of topics that have to be covered on any given test, the number of items that deal explicitly with environmental literacy is probably low (however, the number of Ecology questions on the Biology EOC this year was large). So it is likely that current assessment of environmental literacy on state mandated tests is infrequent and probably not representative. Missouri does not have a state-mandated exam for high school graduation.

Missouri is a "no mandate state". The Department of Elementary and Secondary Education (DESE) sets standards (Show-Me Standards), grade level expectations (GLEs) and course level expectations (CLEs for high school courses), provides curriculum frameworks and is responsible for choosing questions for the required standardized tests. School districts, schools and teachers choose the curricula, textbooks, coverage, sequence and timing of subjects taught in schools.

Because DESE already incorporates the environment into Grade and Course Level Expectations, current assessments are infrequent and possibly not representative, and Missouri is a "no mandate state" efforts to improve students' environmental literacy should focus on what is happening at the local level and what needs to be done in schools and school districts to advance Environmental Literacy. Therefore the strategies are:

- Strategy 1 - Determine how EE is actually implemented in Missouri schools.
- Strategy 2 - Identify barriers to teaching EE in Missouri schools.
- Strategy 3 - Develop resources needed for overcoming barriers listed in Strategy 2.
- Strategy 4 - Evaluate student performance on measures of environmental literacy using multiple strategies.

Strategy 1. Determine how EE is actually implemented in Missouri schools

Objective 1 - Survey a representative sample of Missouri schools about how they teach Grade Level Expectations related to EE.

Action Items:

1. Determine the specific goals of a survey and how the information would be used (see strategy 2).
2. Determine the number, distribution and kinds of schools (early elementary, upper elementary, middle/jr high, high school) to be surveyed.
3. Develop survey questions.
4. Implement the survey and follow-up surveys if necessary.
5. Analyze the data to answer questions that will address the goals of the survey.

Strategy 2. Identify barriers to teaching EE in Missouri schools

Objective 1 - Evaluate curricula and textbooks used in schools for their alignment with NAAEE Guidelines.

Action Items:

1. Use the survey to identify what curricula and textbooks are used and what is taught.
2. Assess the taught curricula and textbooks for alignment with NAAEE Guidelines.

Objective 2 - Evaluate administrator and teacher familiarity with EE standards and environmental literacy.

Action Items:

1. Use the survey to assess educational background of administrators and teachers.
2. Use the survey to assess environmental literacy of administrators and teachers.
3. Use the survey to assess the availability of professional development.

Objective 3 - Evaluate availability (perceived and actual) of high quality EE curricula for teachers.

Action Items:

1. Use the survey to determine how schools and districts select curricula and textbooks.
2. Use the survey to determine whether the criteria for selection affect use of high quality EE curricula and textbooks.
3. Use the survey to determine whether administrators and teachers are familiar with current EE curricula.

Objective 4 - Evaluate availability of upper level environmental coursework for students.

Action Items:

1. Use the survey to evaluate how often upper level environmental courses are offered in a school or district.
2. Use the survey to identify which factors affect offerings - (i.e. small enrollment, lack of expertise in the school, courses don't count for graduation requirements).

Objective 5 - Compile a list of barriers.

Action Items:

1. Use the information in Objectives 1 through 4 to identify barriers to teaching EE.
2. Use other sources (such as interviews with non formal educators, administrators in DESE, and other state departments, community members) of information to refine a list of barriers.
3. Determine if barriers are different for different regions or types of schools.

Strategy 3. Develop resources for overcoming barriers listed in Strategy 2.

Objective 1 - Identify the resources needed to over come barriers.

Action Items:

1. Generate list of what is needed - possible needs are:
 - a. minimum standards for upper level environmental courses;
 - b. new upper level courses aligned with North American Association for Environmental Education (NAAEE) standards available through Missouri Virtual Instruction Program (MoVIP);
 - c. upper level courses approved for graduation credit for required science courses;
 - d. upper level courses approved for admissions credit at two and four year institutions in Missouri;
 - e. curriculum frameworks that connect explicitly to environmental topics and concepts;
 - f. library of environmental education curriculum resources;
 - g. grants for environmental education;
 - h. professional development for teachers.

Objective 2 - Identify new and existing resources for overcoming barriers and implement their use.

Action Items:

1. Generate list of resources - these could include:
 - a. additional funding;
 - b. more involved stakeholders;
 - c. better marketing of existing programs and resources;
 - d. new programs and resources.

Strategy 4. Evaluate student performance on measures of environmental literacy using multiple strategies.

Objective 1 - Evaluate student environmental literacy using current assessments.

Action Items:

1. The Department of Elementary and Secondary Education (DESE) should determine which questions in the current MAP and Course Level Exams measure environmental literacy.
2. DESE should report scores on those questions by school in such a way that the integrity of questions and the privacy of students is protected but that the data are available for assessing progress on environmental literacy.

Objective 2 - Create and implement new "*no stakes*" assessments for determining mastery levels of process and knowledge for EE for use in Missouri classrooms of all grades (Pre K-12) by educators to use in association with North American Association for Environmental Education (NAAEE) Guidelines for Excellence.

Action Items:

1. Form assessment writing teams composed of formal educators, non-formal educators, and DESE personnel for each grade level and content area.
2. Write multiple grade and subject specific assessments to mirror NAAEE Guidelines for Excellence.
3. Set up a web-based "*no stakes*" assessment tool on the Missouri Environmental Education Association (MEEA) website that
 - a. can be used by anyone in a school or community;
 - b. rotates questions so the test can be retaken multiple times if desired;
 - c. reports a score back to the user and a designated recipient, like a teacher or principal;
 - d. collects data on the grade level and school or community of the user together with the user's score;
 - e. compiles the scores by region, school or community and by grade level:
4. Post the scores by region and grade level on the MEEA website. With permission of district, schools and teachers, post district or school level data. Include a complete list of districts so that district participation can be tracked.
5. Encourage schools and communities to use the test to do a "*no stakes*" test of their environmental literacy and to track improvements in the scores over time by engaging members of local and state conservation and environmental groups to promote the test in their districts.

Objective 3 - Use results of student performance to guide educational policy

Action Items:

1. The results from objectives 1 and 2 should be compiled and tracked over time.
2. These results should be published in a reader friendly format on the web and distributed to schools, the media and state and local governmental bodies.

Goal 2 - Formal and Non-Formal Educators Will Understand and Use Best Practices in Environmental Education

Background and Rationale for Strategic Approaches

Currently there is no teacher certification in environmental education recognized by the Department of Elementary and Secondary Education.

Missouri does have an environmental education certification program that was established in 2005 by the Missouri Environmental Education Association. However, it may require revision to align with the more recently established NAAEE standards for certification in order for national accreditation to take place.

Many of the state's colleges and universities have environmental courses, as well as degree programs in environmental studies and environmental science. However, there is no formal integration of teacher education programs and environmental instruction. Whatever happens in terms of environmental education for education majors happens because of individual initiatives on the part of a faculty member or student.

In-service teacher professional development related to environmental education is available through several agencies and organizations. The Missouri Department of Conservation offers Project WILD and Learning Tree. Project WET and Leopold workshops are housed at Missouri State University and its Bull Shoals Field Station. Other professional development workshops are offered at various education conferences, such as the Department of Elementary and Secondary Education's Science and Math Interface Conference, and Science Teachers of Missouri Conference, which is now combined with the Missouri Environmental Education Association Conference.

Non-formal educators in state agencies receive training in environmental content, methods and pedagogy related to the delivery of their specific programs. Other non-formal educators can pick up training in many of the workshops provided for in-service teachers, but many most likely learn what they know from program materials or by observing other educators.

Because there is no nationally aligned, state approved certification, provision of environmental education in teacher colleges is piecemeal, and because professional development for in-service and non-formal educators is usually intended to serve specific program outcomes, we propose the following strategies:

- Strategy 1 - Set nationally aligned, state approved standards for EE certification in Missouri.
- Strategy 2 - Create a pathway and courses for EE Certification.
- Strategy 3 - Engage pre-service Teachers in EE Certification through college programs.
- Strategy 4 - Engage in-service Teachers in EE Certification through professional development.
- Strategy 5 - Engage non-formal Educators in EE Certification through professional development.

Strategy 1. Set nationally aligned, state approved standards for EE certification in Missouri.

Objective 1 - Use NAAEE Guidelines to create a nationally accredited EE certification program for educators in Missouri.

Action Items:

1. Convene members of the State Environmental Education Interagency Committee (SEEIC) and the State Environmental Education Advisory Board (SEEAB) to develop a draft certification program.
2. Distribute the draft program widely, including to the Department of Elementary and Secondary Education (DESE) and the Department of Higher Education (DHE) if they are not members of the SEEIC, for feedback on the program.
3. Get approval of the SEEIC and SEEAB.
4. Get the program accredited by NAAEE. This will include one or more methods of certification in environmental education - courses taken, a Praxis test (i.e., Pennsylvania has an environmental Praxis), a test created and administered by MEEA or some other organization, and/or a portfolio.

Objective 2 - Have DESE approve a certification program for Missouri teachers (*should occur in tandem with the preceding strategy*).

Action Items:

1. Meet with DESE, the Missouri Standards for Teacher Education (MoSTEP) Committee and the Missouri Advisory Council of Certification of Educators (MACCE) to learn how a certification is created.
2. Follow the steps needed for certification, incorporating as much as possible of the standards and expectations of the nationally accredited certification program.

Strategy 2. Create a pathway and courses for EE Certification (to happen concurrently with Strategy 1).

Objective 1 - Develop a pathway to certification that would allow pre-service teachers to complete certification as part of a 4 year program and alternative certification candidates, in-service and non-formal educators to complete certification in a minimum amount of time.

Action Items:

1. Identify a group of interested education professionals, faculty, in-service teachers and non-formal educators.
2. Set up a schedule of work meetings to develop pathways to certification that include coursework but also accept alternative assessments, like an environmental Praxis.
3. Set learning outcomes for 2 to 4 specific courses that would pull together environmental content knowledge and information from other courses and would teach key EE topics and concepts not taught in other ways. Additional requirements could be met by content specific courses that might or might not be part of other certification requirements or part of general education requirements, e.g. ecology, environmental science, geology, public policy.
4. Submit a draft of the pathways to the SEEIC, SEEAB, DESE, DHE and teacher groups for comment and approval.

Objective 2 - Develop the courses.

Action Items:

1. Identify a group of interested education professionals, faculty, in-service teachers and non-formal educators.
2. Set up a series of three daylong workshops to develop each course - syllabus, teaching goals, assessments, books, readings and other curricular activities, etc.
3. Use the materials to develop a course workbook that would be the foundation of each of the two to four required courses.

Objective 3 - Develop a mechanism for offering these courses on-line and/or in workshops with approved faculty.

Action Items:

1. Identify one or more institutions that would be open to hosting an on-line course.
2. Find out what is needed to have a course offered - course approval, willing faculty, other resources.
3. Set up the course on the books of the institution(s).

Objective 4 - Recruit faculty to teach the courses.

Action Items:

1. Identify a small number of faculty who might be interested in teaching the courses.
2. Provide training in how to teach a certified course, including use of the course workbook.
3. Set up a mechanism for compensating faculty for their time - possibly from course fees.

Objective 5 - Ensure that the courses are approved electives at teacher colleges in Missouri.

Action Items:

1. Identify a small number of colleges to pilot approval.
2. Find out what the procedure is for having courses approved as electives.
3. Get courses approved.
4. Use experience from the initial approval to refine the process and expand approvals to other schools.

Objective 6 - Over time, encourage other qualified entities to offer approved EE certification courses.

Action Items:

1. Develop a mechanism for approving courses to ensure that the same content, skills and pedagogy are taught in any course offered for the certification program.
2. Develop a list of qualified entities - colleges of education, agency staff, Regional Professional Development Centers (RPDCs) that might be interested in offering a course.
3. Set up a mechanism for them to teach the course.

Strategy 3. Engage pre-service Teachers in EE Certification through college programs.

Objective 1 - Recruit at least one faculty member in each college of education to share information about certification.

Action Items:

1. Identify faculty at a small number of institutions who would be strong supporters of pre-service certification.
2. Meet with the faculty and set goals for recruiting for pre-service certification, develop plans with outputs and outcomes and provide necessary training for recruiting and advising students.
3. Ensure that faculty has the necessary resources and department and college approval to proceed with recruitment.

Objective 2 - Seek funding for scholarships for EE Certification to help pay for courses or for certification.

Action Items:

1. Identify potential need for scholarships.
2. Seek donations for scholarships.
3. Set up mechanism for awarding scholarships.

Strategy 4. Engage in-service Teachers in EE Certification through professional development.

Objective 1 - Develop a plan for marketing EE Certification.

Action Items:

1. Identify reasons why teachers would pursue an additional certification and the pathways to reaching them.
2. Identify barriers to teachers pursuing additional certification.
3. Develop and disseminate information on the certification program that would make it appealing to teachers.

Objective 2 - Develop a plan for ensuring that there is programmatic capability to provide timely and cost effective certification for teachers that want it.

Action Items:

1. Map existing resources to identify geographic gaps and frequency of offerings.
2. Make a plan to fill gaps by using existing resources, identify new resources needed to expand offerings.

Objective 3 - Seek funding for scholarships for EE Certification to help pay for courses or for certification.

Action Items:

1. Identify potential need for scholarships.
2. Seek donations for scholarships.
3. Set up mechanism for awarding scholarships.

Strategy 5. Engage non-formal Educators in EE Certification through professional development.

Objective 1 - Develop a plan for marketing EE Certification.

Action Items:

1. Identify reasons why non-formal educators would pursue an additional certification and the pathways to reaching them.
2. Identify barriers to non-formal educators pursuing additional certification.
3. Develop and disseminate information on the certification program that would make it appealing to non-formal educators.

Objective 2 Develop a plan for ensuring that there is programmatic capability to provide timely and cost effective certification for non-formal educators that want it.

Action Items

1. Map existing resources to identify geographic gaps and frequency of offerings.
2. Make a plan to fill gaps by using existing resources, identify new resources needed to expand offerings.

Objective 3 Seek funding for scholarships for EE Certification to help pay for courses or for certification.

Action Items

1. Identify potential need for scholarships.
2. Seek donations for scholarships.
3. Set up mechanism for awarding scholarships.

Goal 3 - Educational Settings and Resources Will Foster Environmental Literacy

Background and Rational for Strategic Approaches

There are approximately 2300 school buildings in Missouri. These constitute the most important educational setting for Missouri students.

While there are LEED schools in Missouri (4 listed), recycling programs in every school district, schools that have used stimulus funds to develop alternative heat sources, and even a green cleaning act that requires Missouri schools to use environmentally sensitive cleaning products, there is no state approved or supported green schools program. Kansas has a program that has enrolled 361 schools in its program, so there is potential to support a similar program here in Missouri.

The Department of Natural Resources is piloting a camp-based outdoor experience for 4th grade students. Several school districts also provide significant outdoor experiences for their students and many individual teachers organize field trips to state parks and other sites. However, many schools don't have the resources for field trips, easy access to outdoor spaces or teachers who know how to integrate positive outdoor experiences into their curriculum.

The Missouri Department of Conservation has curricula and grants to support outdoor classrooms on school grounds, and several national organizations provide grants for gardens. However, outdoor classrooms and gardens are usually dependent on one or a few committed teachers. If the teacher leaves the outdoor space often languishes in the absence of school or community commitment.

There are a great variety of environmental lessons and curricula on the web, but they are not always organized in a way that makes them easy to find. There are also a lot of Missouri specific data that could be used for developing relevant classroom exercises, but again, not easy to find. And last but not least, there is not a site where students and teachers can access or download podcasts or videos on Missouri specific topics.

Some Middle, Junior and High Schools in Missouri are too small or isolated to develop or support stand-alone environmental courses.

Because there is no state green schools program many students may not have positive outdoor experiences at any point in their school career; school yard programs often do not survive a change in teachers, the existing EE curricula are scattered and little of what there is includes Missouri information, and not every school has the capacity to support a stand alone environmental course settings and resources should focus on the following strategies:

- Strategy 1 - Create a state recognized "Green Ribbon Schools" program for schools.
- Strategy 2 - Ensure Missouri students participate in a high-quality outdoor educational experience in elementary, upper elementary/middle and high school (3 times in their school career).
- Strategy 3 - Ensure schoolyard programs are supported in all districts.
- Strategy 4 - Create a web-based environment for curricula and other environmental education resources.
- Strategy 5 - Create stand-alone environmental science courses for use in middle and high school settings as well as through virtual programs.
- Strategy 6 - Create a Missouri Environmental Education Grants Program.

Strategy 1. Create a state recognized "Green Ribbon Schools" program for schools.

Objective 1 - Develop a "Green Ribbon Schools" program for use in Missouri.

Action Items:

1. Research the Department of Education's Green Ribbon Schools program for implementation in Missouri.
2. Convene a group of educators, natural resource representatives and businesses to design a Green Ribbon Schools program.
3. Develop a business plan for supporting the program over the long term. This might involve service fees, selling materials to schools, providing workshops, finding donors and applying for grants.

Objective 2 - Pilot the "Green Ribbon Schools" program.

Action Items:

1. Pilot the program with 5 to 10 schools to answer the questions of whether it accurately reflects their "greenness", their environmental education effectiveness and is relatively easy to complete.
2. Revise the program based on that feedback.

Objective 3 - Recruit at least 5% of Missouri public schools for participation in the "Green Ribbon Schools" program.

Action Items:

1. Launch the program on the MEEA website and promote schools signing up.
2. Begin compiling a database of green schools and comparable non-green schools for comparative purposes.

Strategy 2. Ensure Missouri students participate in a high-quality outdoor educational experience in elementary, upper elementary/middle and high school (3 times in their school career).

Objective 1 - Define and identify quality outdoor experiences.

Action Items:

1. Decide what constitutes a quality outdoor experience.
2. Using the survey and other info sources, identify and catalogue existing programs and efforts to provide quality outdoor experiences based on the previously established criteria.

Objective 2 - Develop a plan for implementing quality outdoor experiences in schools.

Action Items:

1. Using the survey identify and catalogue barriers to implementation and/or expansion of these programs (ignorance, perception, time, funding, training, rules, distance, etc.).
2. Using the survey identify and implement ways around these barriers, including outreach and education, and finding funds to support outdoor experiences.

Objective 3 - Document students' participation in quality outdoor experiences and the costs and benefits of these experiences.

Action Items:

1. Develop surveys for assessing outdoor experiences and disseminate them to schools.
2. Actively seek data from the surveys.
3. Compile the information and draw supportable conclusions about the costs and benefits in dollars, disciplinary referrals, test scores and other evaluation criteria and prepare a report.
4. Disseminate the report along with recommendations on creating more effective outdoor experiences.

Strategy 3. Ensure School yard programs are supported in all districts.

Objective 1 - Develop models for supporting schoolyard programs.

Action Items:

1. Gather information on programs that have been established and factors affecting their persistence.
2. Research models for sustaining programs after the initial investment has been made, or after the initiating teacher has left.
3. Based on the research, develop one or more similar models for the maintenance of schoolyard programs.

Objective 2 - Pilot models for supporting school yard programs.

Action Items:

1. Pilot the model in five to ten schools with existing program and follow the schoolyard programs over several years and several teachers to evaluate sustainability.
2. Revise and implement an improved model in more schools.
3. Gather data on the costs and benefits of schoolyard programs.

Objective 3 - Disseminate models for supporting schoolyard programs and evaluate effectiveness throughout Missouri with the goal of having at least one program in each district.

Action Items:

1. Using the information from 3.3.2 (the previous objective) develop a workshop and a manual that teaches how to maintain schoolyard programs over time.
2. (Unclear wording) Work with new and existing schoolyard programs (identified through the Department of Conservation and other agencies) to provide a workshop and/or manual to teachers with existing programs.
3. Work with the Department of Conservation to refine criteria for investing in schoolyard programs.

Strategy 4. Create a web-based environment for curricula and other environmental education resources.

Objective 1 - Create a library of lessons and curricula that meet NAAEE Guidelines for Excellence for all subject areas and at all grade levels to be housed at the Missouri Environmental Education Association (MEEA) website www.meea.org.

Action Items:

1. Create lesson and curricular templates.
2. Find existing lessons and curricula that meet requirements.
3. Request submission of lessons and curricula from formal and non formal educators across the state.
4. Review submitted lessons and curricula for NAAEE Guidelines for Excellence alignment.
5. Identify gaps in grade level and/or topic offerings and invite educators to develop lessons to fill them.
6. Post aligned lessons.

Objective 2 - Develop an on-line source of Missouri-based data sets for teachers and students to use to investigate local, regional and state environmental issues.

Action Items:

1. Research what data sources are available and easy for teachers and students to use.
2. Design and develop a user-friendly data interface and instructions on how to use it.
3. Pilot the project on the MEEA website with 5 to 10 schools to seek feedback on its usability and effectiveness.
4. Based on feedback, revise and launch website widely.

Objective 3 - Develop a website for posting environmental podcasts from students and educators.

Action Items:

1. Research web-based interfaces for viewing and posting podcasts, including set up and maintenance costs.
2. Design and develop a user-friendly interface with instructions on how to use it.
3. Pilot the project on the MEEA website with 5 to 10 schools to seek feedback on its usability and effectiveness.
4. Based on feedback, revise and launch website widely.

Objective 4 - Promote the use of MEEA and NAAEE lessons and curricular resources among formal and non-formal educators in Missouri.

Action Items:

1. Request that all relevant educational sites (DESE, the Regional Professional Development Centers and others) provide links to MEEA and NAAEE and vice versa on their websites.
2. Research and implement an effective marketing strategy to increase awareness of MEEA and NAAEE among educators and to increase membership in either or both organizations.

Strategy 5. Create stand-alone environmental science courses for use in middle and high school settings, as well as virtual programs.

Objective 1 - Create environmental science courses for middle and high school that align with North American Association for Environmental Education (NAAEE) Guidelines for Excellence, as well as state standards for process and knowledge.

Action Items:

1. Research existing environmental science courses offered in order to determine needs.
2. Form a committee composed of appropriate formal and non-formal educators depending on content and age group needs.
3. Have the Committee create curricula for courses to fill the identified needs.
4. Make courses available on the MEEA website, www.meea.org.

Objective 2 - Create an online environmental science course that aligns with NAAEE Guidelines for Excellence

Action Item:

1. Research existing online environmental science courses to determine level of alignment with NAAEE Guidelines for Excellence.
2. Form a committee composed of appropriate formal and non-formal educators to develop online environmental science course aligned with NAAEE Guidelines for Excellence.
3. Submit the course for approval to the Missouri Virtual Instruction Program (MoVIP).
4. Recruit faculty to teach the course.

Strategy 6. Create a Missouri Environmental Education Grants Program.

Objective 1 - Set up a program to distribute Environmental Education grants. Action Items:

1. Ask the State EE Interagency Committee and the State EE Advisory Board to set goals, and develop eligibility and program criteria for a grants program.
2. Identify funding for awards.
3. Set up a way to evaluate the program's effectiveness in achieving Goals 1 (Missouri Students Will be Environmentally Literate) and 2 (Teachers Will Understand and Use Best Practices).

Objective 2 - Promote the program and issue awards.

Action Items:

1. Set timelines for awards.
2. Set up an evaluation committee.
3. Advertise for proposals.
4. Evaluate proposals and issue awards.

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Goal 4 - Environmental Education in Missouri Will be Sustainable

Background and Rationale for Strategic Approaches

Environmental education efforts in Missouri are widespread, numerous and diverse.

- The Missouri Department of Conservation (MDC) has instructional units in its Discover Nature Schools program for these grades: 3-5 Nature Unleashed-The Untamed World of Missouri Ponds, Forests and Prairies, 6-8 Conserving Missouri's Aquatic Ecosystems, and 9-12 Nature Unbound (being piloted). MDC also runs the National Archery in the Schools Program, provides grants and resources for outdoor classrooms and provides high quality publications, mostly free, on Missouri's natural history. MDC's Nature Centers provide programs for children, family and adults and opportunities for school groups. MDC also provides Project WILD and Project Learning Tree workshops for teachers.
- The Department of Natural Resources (DNR) has curriculum on the Missouri River and on Energy Use, guidelines and information sheets for environmentally-friendly activities. It also coordinates an annual Earth Day event for schools in the state capitol and is piloting a multi-day camp program for grade schools. Additionally it provides high quality publications, mostly free, on Missouri's environment. The Division of State Parks provides settings for field trips and presentations for schools throughout the state.
- Health and Senior Services (HSS) has a website on healthy eating and exercise, and planning health education interventions for individuals and groups.
- The Department of Elementary and Secondary Education (DESE) sponsors an annual conference on Math and Science Education that has significant numbers of environmentally-related presentations and workshops for teacher professional development.
- The Missouri Association of Soil and Water Conservation Districts (MASWCD) coordinate state participation in the Canon Envirothon, an environmental competition for teams of high schools students.
- A number of state agencies (DNR, MDC, HSS) have partnered to set up the "Children in Nature Challenge" which encourages Missouri communities to take the challenge to increase the amount of quality time children spend in nature.
- Science Teachers of Missouri (STOM) and Missouri Environmental Education Association (MEEA) support conferences with professional development presentations in environmental education. Numerous organizations and businesses support nature centers, provide outdoor and environmental experiences, lessons and presentations for school children. MEEA compiles and updates and disseminates a list of these organizations, their events, professional development activities, and grants and awards.
- Colleges and universities in the state incorporate examples of environmental education activities in their course offerings, and Missouri State University hosts the Project WET and the Leopold Education Project coordinators.

However, there is currently little *coordination* of efforts aimed at teacher training, curriculum development, or teaching activities. New efforts consistently fail to consider or seek integration with existing programs and there are numerous and significant gaps in what is offered, especially when efforts are considered from a regional perspective. Therefore the recommended strategies are aimed at strengthening cooperation and coordination, and at securing reliable funding for their continuation over the long term. The strategies are:

- Strategy 1 - Create a State Office of Environmental Education (SOEE) within the Department of Elementary and Secondary Education.
- Strategy 2 - Create a State Environmental Education Interagency Committee (SEEIC) to coordinate state level EE efforts.
- Strategy 3 - Create a State Environmental Education Advisory Board (SEEAB) to coordinate state organization efforts.
- Strategy 4 - Develop sustainable funding for Environmental Education programs.

Strategy 1 - Create a State Office of Environmental Education (SOEE) within the Department of Elementary and Secondary Education (DESE). (Pending funding of No Child Left Inside)

Objective 1 - Define the responsibilities of the office.

Action Items:

1. Approve draft of primary responsibilities. Possible responsibilities include:
 - a. Administer any federal funding received as part of the No Child Left Inside legislation.
 - b. Prepare an annual report on the environmental literacy of Missouri students.
 - c. Prepare an annual report on the impact of *high quality* environmental education on student achievement, disciplinary referrals and attendance.
 - d. Convene the State Environmental Education Interagency Committee (strategy 2) twice a year.
 - e. Work with the State Environmental Education Advisory Board to set annual goals and priorities.
 - f. Work with DESE staff on the integration of environmental education into core and non-core subjects.
 - g. Develop a model curriculum for professional development training for pre and in-service teachers that increases content knowledge, environmental education skills and pedagogical knowledge necessary to teach environmental topics.
 - h. Oversee (hire, train, evaluate) environmental education consultants housed at each Regional Professional Development Center in the state.
 - i. Set up and administer an environmental education website (in cooperation with the Missouri Environmental Education Association website).
 - j. Administer environmental education professional development grants.
 - k. Assist with an annual environmental education conference.

Objective 2 - Define the structure of the office, lines of reporting, and procedures for evaluation and setting priorities.

Action Items:

1. Review, revise and approve number of positions in the office.
 - a. State Coordinator
 - b. Full-time Office Assistant
 - c. Other staff as needed
2. DESE and the Missouri Environmental Education Association (MEEA) (initially) will develop specific responsibilities for each position.
3. DESE and MEEA (initially) will determine competitive salaries.
4. DESE and MEEA (initially) will determine to whom the State Coordinator reports, the criteria used in hiring or firing, how work is prioritized and how work is evaluated for advancement and raises.
5. Once the State Environmental Education Advisory Board (Strategy 3) is established it will work with DESE to provide oversight and help set priorities for the State Office of EE.

Objective 3 - Plan for the long term financial support of the office during and following initial start-up.

Action Items:

1. DESE and MEEA will develop a budget for the office that includes salaries, benefits and operating costs and overhead, and any other needs.
2. MEEA (initially) will develop a list of funding sources that include but are not limited to Supplemental Environmental Programs (SEP), fines and penalties for violating state environmental laws, SEPP fees, fees for environmental services and grants that will support the office over the long term.
3. MEEA (initially) will identify the persons, agencies or organizations that can help with securing funds and enlist their assistance in getting funds.
4. See Strategy 4 for more details.

Strategy 2 - Create an State Environmental Education Interagency Committee (SEEIC) to coordinate state level EE efforts.

Objective 1 - Define the responsibilities of the committee and its initial membership.

Action Items:

1. Missouri Environmental Education Association (MEEA), Missouri Department of Conservation (MDC), Department of Natural Resources (DNR) and other interested parties should review, revise and approve draft responsibilities of the committee to be included in a memorandum of agreement:
 - a. Meet at least twice a year to report on ongoing and planned environmentally-related education programs;
 - b. work to eliminate overlap and to leverage resources for greater impact on EE;
 - c. receive and act on reports from the State Office of Environmental Education;
 - d. help the State Office of Environmental Education set priorities;
 - e. other duties and responsibilities as enumerated.

2. MEEA, DNR and MDC should review, revise and approve draft list of **state and federal** agencies interested in state environmental education that could be members:
 Department of Elementary and Secondary Education, Department of Higher Education, Department of Conservation, Department of Natural Resources, and separately, Division of State Parks, Department of Health and Human Services, Department of Agriculture, Department of Economic Development, EPA Region 7.
3. MEEA and other non-state organizations may not be members, but may be present in an ex-officio capacity or may observe proceedings.

Objective 2 - Start the committee.

Action Items:

1. MEEA, MDC, DNR and other interested parties should work together to seek agency commitments to the committee.
2. MEEA, DNR and MDC should find a mutually agreeable time for agency representatives to have meetings with the goal of setting operational procedures and responsibilities, determining regular meeting times and agenda items and signing a memorandum of agreement.

Strategy 3 - Create a State Environmental Education Advisory Board (SEEAB) to coordinate state organization efforts.

Objective 1 - Define the responsibilities of a board and its initial membership.

Action Items:

1. MEEA, CFM, DESE, DNR, MDC and other interested parties should review, revise and approve draft responsibilities of the board to be included in a memorandum of agreement:
 - a. The board should meet at least twice a year;
 - b. review measures of environmental literacy and set goals for environmental education;
 - c. evaluate the State Office of Environmental Education and help the office set priorities for the long term;
 - d. share information about ongoing and planned environmentally-related programs;
 - e. other duties and responsibilities as enumerated.
2. MEEA, CFM, MDC, DESE, DNR and other interested parties should review, revise and approve a draft list of agencies, natural resource organizations, businesses, unions and professional organizations and others interested in environmental education.

Objective 2 - Start the board.

Action Items:

1. MEEA, CFM, DNR, MDC and DESE and other interested parties should work together to seek commitments to the board.
2. MEEA, CFM, DESE, DNR and MDC should find a mutually agreeable time for board members to have a first meeting with the goal of setting operational procedures and responsibilities, determining regular meeting times and agenda items and sign a memorandum of agreement.

Strategy 4 - Develop sustainable funding streams for the State Office of Environmental Education, Missouri Environmental Education Association (MEEA) and other environmental education providers.

Objective 1 - Identify all possible income streams and the resources needed to access them.

Action Items:

1. MEEA should review, revise, and develop an initial list of categories of income:
 - a. Grants
 - b. Supplementary Environmental Projects (SEPs)
 - c. Environmental Fines
 - d. Fees for Environmental Services
 - e. Memberships
 - f. Sales of products and/or services
 - g. Workplace giving programs (*i.e.* Earth Share or United Way)
 - h. Gifts and Planned Giving
 - i. Investments
 - j. Trust Funds
2. Within each category, MEEA should identify or develop one or more possible sources of income and research the goals and needs of the sources in terms of environmental education to ensure that requests for funds match the goals of the funding entity.
3. MEEA should identify the skills needed to develop each source of income.
4. MEEA should identify the person(s) in its organization with the needed skills and should recruit or train to fill gaps in its skill set, in order to develop funding sources.

Objective 2 - Match funding streams to existing and/or future benefits, outcomes, products or services provided by the state EE office or MEEA.

Action Items:

1. MEEA, working with the State Office of EE, should develop a budget for EE programs, projects and initiatives that includes reasonable administrative overhead and makes a distinction between ongoing needs and one-time or short-term needs.
2. MEEA should match the needs of MEEA and the State Office of EE to possible funding streams.
3. MEEA and the State Office of Environmental Education should set annual fund-raising targets and commit the necessary resources to achieving them (at least some of the annual fund-raising should be targeted towards a trust fund to help ensure long term stability).

Objective 3 - Develop and implement annual fundraising targets and efforts and evaluate their effectiveness.

Action Items:

1. Based on their annual or long term priorities, MEEA and the State Office of Environmental Education (within its prescribed limits) should complete two or more significant fund raising efforts each year.
2. The effectiveness of the efforts should be evaluated at the end of the fiscal year.
3. Future efforts should consider the effectiveness of the previous efforts and plans should be revised to improve the success of future efforts. (The annual report submitted by the SOEE should include a summary of the fundraising efforts and the results.)

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Suggested Additions

4H - Goal 3 Strategy 7 - something that involves after school and summer programs

4.1.1

- a. Ecosystem Services Fees
- b. Taxes on outdoor
- c. Checkoffs on tax returns or store funds, including round ups (LL Bean, Patagonia, Orvis, Midway USA)
- d. Ballot initiative (Iowa) will be part of next statewide sales tax initiative,

Certification - consider different language, like Credential, when referring to K-12 teachers since certificate has meanings in that context different from what is being considered for EE

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