Kentucky Environmental Literacy Plan Implementation

Introduction

Several elements of education for environmental literacy are present in many Kentucky school districts and classrooms. However, in reality only a small number of students are offered the opportunity to participate in authentic, environment-based learning in the context of their local community. To date, no Kentucky district has fully integrated all elements of environmental literacy education at a core level. From the state level to the district level to individual schools, we also must reduce "teaching in silos" to better integrate environmental literacy across all the content areas of math, English/language arts, social studies, science, practical living, and career/college readiness. While it could take years to fully implement the seven goals described in the KELP, the team ultimately hopes to see the articulated goals effectively accomplished.

The implementation plan includes the following elements: a timeline with an implementation cost estimates, common core crosswalk documents, and anticipated obstacles and solutions to these challenges. By recognizing the challenges and suggesting solutions, we can help bridge these gaps and increase the success of the plan. The crosswalk documents align the *Common Core State Standards for Math and English Language Arts* with the *North American Association for Environmental Education Guidelines for Excellence in Environmental Education*. Each crosswalk includes the following components: the state common core standard, alignment with the North American Association for Environmental Education Guidelines for Excellence, and examples of lessons that could be taught to meet those content standards. Table 1 provides an example. The full crosswalk documents are found on the KEEC/KDE Websites.

To ensure successful implementation of the Plan, all K-12 education system stakeholders need to be involved, including:

- Commissioner of Education,
- State curriculum specialists,
- State assessment experts,
- School district staff, including but not limited to administrators and non-teaching staff,
- Individual schools and school personnel at all subjects and grade levels,
- Local Site Based Decision Making Councils,
- Teacher preparation universities and colleges,
- Community organizations, including non-profit, corporate, and government institutions,
- Non-formal environmental educators,
- Student and parents,
- Education-related professional organizations.

College and Career Readiness Anchor Standards for Listening and Speaking (K-12)	***NAAEE: Guidelines for Learning (Elementary Grades)***	***NAEE Guidelines for Learning (Middle School Grades)***	***NAAEE: Guidelines for Learning (Secondary Grades)***	***Suggestions for Implementation***
3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.	1D. **Evaluating accuracy and reliability –** Learners understand the need to use reliable information to answer their questions. They are familiar with some basic factors to consider in judging the merits of information. 3.1D. **Working with flexibility, creativity, and openness –** Learners understand the importance of sharing ideas and hearing other points of view.	1D. **Evaluating accuracy and reliability –** Learners are able to judge the weaknesses and strengths of the information they are using. 3.1D. **Working with flexibility, creativity, and openness –** Learners are able to consider the assumptions and interpretations that influence the conclusions they and others draw about environmental issues.	1D. **Evaluating accuracy and reliability –** Learners can apply basic logic and reasoning skills to evaluate completeness and reliability in a variety of information sources. 3.1D. **Working with flexibility, creativity, and openness –** While environmental issues investigations can bring to the surface deeply held views, learners are able to engage each other in peer review conducted in the spirit of open inquiry.	Evaluate arguments presented from opposing viewpoints on environmental issues from current and/or local environmental events

Table 1: Crosswalk Document Example for State ELA Learning Standards.

Each of these entities has an important role to play in integrating of the goals, content, planning and training at the state, district, and school level. Since teachers and other school staff are vital to the integrating the plan at the school level, they too must be environmentally literate in order to successfully convey the content to their students. Community partnerships are important collaborators especially for technical and financial support, areas essential for the long-term success and sustainability of the plan.

This plan will be changed over time. This flexibility allows for the integration of the state common core standards for additional subjects, such as science and social studies, as they are made available. It will also facilitate changes as needed through evaluation of successful implementation at the school and district levels. Additional resources, tools, and information can be included as they become available. The Environmental Literacy Plan Implementation Advisory Team has recommended that the state revisit and revise the plan on a yearly basis beginning with the first review in January, 2014. After the first five years of annual revisions, the team will recommend a timeline for additional reviews.

Goal 1

Identify specific content standards, content areas, and courses or subjects where instruction will take place.

Objectives

1. Examine specific content standards, content areas, courses, subjects, and school settings where instruction could take place.
2. Use KDE standards as a basis for incorporating environmental literacy into school practices.

KEY: = Timeframe for Implementation $ = No Cost $$ = Low to Mid Cost $$$ = High Cost		**0-6 months**	**6 Months – 1 Year**	**>1 Year**	**>2 Years**	**>3 Years**	**>4 Years**	**On-Going**
State A	Content specific groups and environmental educators examine the current content standards to identify those that directly address environmental concepts or could potentially be taught in an environmental context.	**$$**						
State B	Crosswalk documents are currently under development for those content areas in which Kentucky Core Academic Standards (KCAS) already exist. Content specific teams designated by KDE will review these existing crosswalk documents prepared by KAEE/KUPEE members. Additionally, KDE may draw on content specific professional development organizations to serve on these teams. As new content standards are adopted by the state, additional content specific teams will be responsible for 1) reviewing existing crosswalk documents and 2) create a crosswalk document illustrating the areas of alignment between the existing Kentucky content standards and the North American Association for Environmental Education's *Excellence in Environmental Education Guidelines for Learning (PreK-12)* (2008). Crosswalk documents from all content areas will be synthesized to create a comprehensive list of alignment gaps.			**$$**				
State C	Grade level teams identify existing courses or suggest new courses to implement environmental education in schools.			**$$**				
State D	Identify model curriculum and instructional units in all content areas to guide teachers in the effective implementation of identified standards.				**SS**			
State E	Identify non-traditional opportunities, both during and beyond the school day, to integrate environmental education into the school setting (e.g., field study experiences, cafeteria programs, facilities management, green schools programs, outdoor classrooms, service learning, civic engagement).	**SS**						

Potential Obstacles and Solutions to Implementing Goal 1

Goal 1	Potential Obstacles	Potential Solutions
Identify specific content standards, content areas, and courses or subjects where instruction will take place.	• Limited stakeholder engagement • Funding • Lack of designated advocate • Misunderstanding of the interdisciplinary, environment-based context.	• Funding for KDE Environmental Education consultant position • Develop characteristics of a model curriculum • Collate data from successful course/subjects • Marketing—presentations (KASA), alternate means of sharing information • Seek grant funding including corporate sponsorship • Development of an electronic clearinghouse

GOAL 2

Incorporate requirements that will ensure high school graduates are environmentally literate.

Objectives:

1. Identify a variety of ways that schools can ensure that their high school graduates are environmentally literate.

2. Identify existing high school graduation requirements that could be adapted to meet this goal (e.g., formal service learning projects and place-based projects) by incorporating environmental literacy.

KEY: = Timeframe for Implementation $ = No Cost $$ = Low to Mid Cost $$$ = High Cost		**0-6 months**	**6 Months – 1 Year**	**>1 Year**	**>2 Years**	**>3 Years**	**>4 Years**	**On-Going**
State A	At the next opportunity, KDE will include environmental literacy as one of the unifying concepts in the current high school graduation requirements for science.	$						
State B	At the next opportunity, KDE will include the term "environmental literacy" in the overall high school graduation requirements.		$$					
State C	Develop a list of ways districts can adapt existing high school graduation requirements to include environmental literacy. Samples of these requirements will be listed in the Implementation Plan.		$$					
Local D	Modify existing community service requirements to focus on environmental service learning projects.	$$						
Local E	Include environmentally oriented careers in all career development activities including Individual Learning Plans and Career Pathways. Kentucky has adopted 14 of the established 18 Pathways. Each Pathway has distinct career clusters and each cluster has specific curricula. Effort can be made to identify and promote those curricula which contribute to environmental literacy.				$$			

Potential Obstacles and Solutions to Implementing Goal 2

Goal 2	Potential Obstacles	Potential Solutions
Incorporate requirements that will ensure high school graduates are environmentally literate.	• Limited stakeholder engagement • Limited existing examples	• Marketing—presentations (KASA), alternate means of sharing information • Inclusion of environment as a unifying concept within state graduation requirements

GOAL 3

Provide programs for professional development of K-12 educators and administrators to improve their environmental content knowledge, skill in teaching about environmental issues, and field-based pedagogical skills while ensuring utilization of this information.

Objectives:

1. Identify successful practices for implementing environmental literacy professional development throughout the state.
2. KDE will work with KEEC, Kentucky Education Association (KEA), KUPEE, Kentucky Educational Television (KET) and other appropriate agencies to develop a comprehensive professional development series for pre-service and in-service teachers.

KEY: = Timeframe for Implementation $ = No Cost $$ = Low to Mid Cost $$$ = High Cost		**0-6 months**	**6 Months – 1 Year**	**>1 Year**	**>2 Years**	**>3 Years**	**>4 Years**	**On-Going**
State A	KDE and KEEC will collaborate to develop recommendations and standards for environmental education professional development, including programs for use as part of a district's professional development plan.			**$$**				
State B	Identify the available programs and approaches to environmental education professional development.		**$$**					
State C	A. Utilize an electronic environmental education clearinghouse such as www.eeinkentucky.org that would serve as a repository for environmental education resources. This resource could: 1. Serve as a means to connect formal educators with professionals who can assist with the integration of environmental concepts into all content areas. 2. Provide online professional development opportunities, as appropriate, to improve environmental content knowledge.		**$$**					
State D	KDE, EPSB, KEEC and KUPEE will cooperate to integrate environmental literacy requirements into pre-service education programs.					**$$**		

KEY: = Timeframe for Implementation $ = No Cost $$ = Low to Mid Cost $$$ = High Cost		**0-6 months**	**6 Months – 1 Year**	**>1 Year**	**>2 Years**	**>3 Years**	**>4 Years**	**On-Going**
State E	KDE, EPSB, KEEC and KUPEE will collaborate to promote and enhance the environmental education endorsement program for in-service teachers, including incentivizing teacher participation in the environmental education endorsement programs.				**$$**			
Local F	Provide professional development that incorporates established best practices in environmental education, including: 1. Establishing Professional Learning Communities (PLCs) to identify problem areas (curriculum, audience, etc.). 2. Developing Communities of Practice (CoPs) to implement pedagogical content knowledge. 3. Fostering mentorships. 4. Offering on-site, active, hands-on workshops.			**$$**				
Local G	Provide training for district level instructional supervisors that explain how to integrate environmental education into all content areas.				**$$**			
Local H	Provide training for administrators, highlighting case studies of successful integration of environmental education that demonstrates increased student engagement and improved student performance (including a discussion of PLCs and CoPs).				**$$**			
Local I	Provide training for teachers in the areas of: 1. Integration of environmental education into existing standards and courses; 2. Environmental content knowledge; 3. Outdoor safety and classroom management practices.			**$$**				
Local J	Engage School-Based Decision Making Councils in successful environmental education integration.			**$$**				
Local K	Engage Parent Teacher Associations/ Parent Teacher Student Association (PTA/PTSA) and other parent groups in successful environmental education integration.			**$$**				
Local L	Provide training on the use of appropriate technology to enhance the implementation of environmental education into all content areas.						**$$**	

Potential Obstacles and Solutions to Implementing Goal 3

Goal 3	Potential Obstacles	Potential Solutions
Provide programs for professional development for K-12 educators and administrators to improve their environmental content knowledge, skill in teaching about environmental issues, and field-based pedagogical skills while ensuring utilization of this information.	• Limited stakeholder engagement • Lack of coordination among different stakeholders • Funding • Misunderstanding of the interdisciplinary, environment-based context.	• Marketing—presentations (KASA), alternate means of sharing information • Utilize the KUPEE network for train the trainers format • Provide information from successful programs • Seek grant funding including corporate sponsorship • Incentivize environmental education expertise • Development of an electronic clearinghouse

GOAL 4

Develop a system of assessments to measure the environmental literacy of Kentucky students.

Objectives:

1. KDE will identify current state assessments that can be used or adapted to measure the environmental literacy of Kentucky's students.

2. KDE will create a plan for implementation of those assessments, emphasizing collection of data from multiple sources.

3. KDE will create a plan for effectively analyzing and utilizing data from the assessments.

KEY: = Timeframe for Implementation $ = No Cost $$ = Low to Mid Cost $$$ = High Cost		**0-6 months**	**6 Months – 1 Year**	**>1 Year**	**>2 Years**	**>3 Years**	**>4 Years**	**On-Going**
State A	Develop appropriate Environmental Literacy Program Review procedure. The results of the Program Review will be included in the School Report Card. To the degree possible, this Program Review should mirror those already mandated by the Kentucky legislature and conform to the existing definition. A "Program Review" is: ***"a systematic method of analyzing components of an instructional program, including instructional practices, aligned and enacted curriculum, student work samples, formative and summative assessments, professional development and support services, and administrative support and monitoring,"*** *KRS 158.6453(1)(i)* (KDE, 2010)." In addition, the Environmental Literacy Program Review will serve the same three functions outlined by KDE: 1. Improving teaching and learning for all students in the environmental literacy program. 2. Allowing all students equal access to the skills that will assist them in being productive citizens. 3. Allowing students to demonstrate their environmental literacy in ways other than a paper-and-pencil test. NOTE: Implementation of the Program Review should be considered a long-term goal, to be employed after the currently mandated Program Reviews are established and fully functional. The Environmental Literacy Program Review will exist outside the legislatively mandated accountability model.						**$$$**	

KEY: = Timeframe for Implementation $ = No Cost $$ = Low to Mid Cost $$$ = High Cost		**0-6 months**	**6 Months – 1 Year**	**>1 Year**	**>2 Years**	**>3 Years**	**>4 Years**	**On-Going**
State B	Identify environment related questions on all existing state assessments. Report the achievement on these questions as a subset of the exam scores.			**$$**				
State C	Identify the questions on the End of Course exams that relate to environmental literacy topics and report the scores as a data set of the exam scores.			**SS**				
State D	Develop open response and/or constructed response questions targeting environmental literacy that will then be embedded into the state's annual assessment.			**$$**				
State E	Develop guidelines to include environmental literacy in the Comprehensive School Improvement Plan.			**$$**				
Local F	Include environmental literacy as a component of the School Report Card and School Improvement Plan.				**$$**			
Local G	Develop a survey similar to the Teaching, Empowering, Leading and Learning (TELL) survey, administered by KDE and given to educators (teachers, principals and other certified education professionals) to serve as a formative assessment, to document baseline opinions and outlooks, and identify the greatest needs in implementing environmental literacy education in Kentucky.			**$$**				
Local H	KDE will collaborate with the KUPEE network to support research that establishes a baseline and documents the effectiveness of environment-based education and related professional development on student learning.						**$$**	
Local I	Develop a district Environmental Literacy Plan (ELP) that meets the Program Review criteria. This plan should include a plan to effectively analyze and utilize data for all relevant assessments.						**$$**	

Potential Obstacles and Solutions to Implementing Goal 4

Goal 4	Potential Obstacles	Potential Solutions
Develop a system of assessments to measure the environmental literacy of Kentucky students.	• Limited stakeholder engagement • Lack of designated advocate • Funding • State policies • Assessment vendor policies	• Funding for KDE Environmental Education consultant position • Marketing—presentations (KASA), alternate means of sharing information • Integrate environmental literacy into assessment vendor contracts • Reform state assessment policies • Seek grant funding including corporate sponsorship

GOAL 5

Secure funding and other necessary support for implementation of the KELP.

Objective:

1. Collaborate with Kentucky organizations receiving funding for environmental education to examine ways they can help meet the requirements of the KELP.
2. Identify a variety of sources for additional funding, focusing particularly on sustainable funding sources.
3. Institutionalize environmental education at the state level.

KEY: = Timeframe for Implementation $ = No Cost $$ = Low to Mid Cost $$$ = High Cost		**0-6 months**	**6 Months – 1 Year**	**>1 Year**	**>2 Years**	**>3 Years**	**>4 Years**	**On-Going**
State A	Create and fund an environmental education consultant position within KDE.		**$$$**					
State B	Research other environmentally related agencies and organizations to ascertain possible sources of sustainable funding and foster potential partnerships. * If Strategy A is funded, this could drop to $, no cost.							**$$**
State C	Develop a list of all public and private funds currently spent on environmental education in Kentucky. The list will be available through the environmental education clearinghouse. * If Strategy A is funded, this could drop to $, no cost.							**$$**
State D	Investigate the possibility of collaborating with Kentucky industries that could provide environmental education funding. * If Strategy A is funded, this could drop to $, no cost.							**$$**
Local E	Determine which local industries and community resources could become funding sources or provide other types of assistance to implement components of KELP effectively. * If Strategy A is funded, this could drop to $, no cost.							**$$**

Potential Obstacles and Solutions to Implementing Goal 5

Goal 5	Potential Obstacles	Potential Solutions
Secure funding and other necessary support for implementation of the KELP.	• Lack of designated advocate • Time and appropriate resources to facilitate	• Funding for KDE Environmental Education consultant position • Seek grant funding including corporate sponsorship • Development of an electronic clearinghouse

GOAL 6

KDE will encourage school districts to improve the sustainability of their buildings and grounds in order to use the facilities to improve student environmental literacy.

There are currently several laws in place that strongly support schools in constructing and operating schools in an environmentally sound and energy efficient manner. Therefore, this goal emphasizes the importance of these practices, especially in an instructional context. A summary of these regulations is found in Appendix B.

Objectives:

1. Increase student environmental literacy by using the school buildings and grounds as a learning laboratory.

2. Increase the number of high performance school buildings and properties based on low-impact design and green infrastructure principles, such as the guidelines for Leadership in Energy and Environmental Design (LEED); Kentucky Green and Healthy Schools Design Manual; Energy Star; and American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

KEY: = Timeframe for Implementation $ = No Cost $$ = Low to Mid Cost $$$ = High Cost		**0-6 months**	**6 Months – 1 Year**	**>1 Year**	**>2 Years**	**>3 Years**	**>4 Years**	**On-Going**
State A	Identify schools and resources available for an annual tour of successful environmental education campuses, outdoor classrooms and high performance schools for administrators, School-Based Decision Making Council members and school board members.	**$**						
State B	Encourage schools and districts to participate in established state and national programs that recognize sustainability efforts, particularly energy efficiency efforts of both students and staff.							**$**
State C	Share resources that encourage environmental literacy learning through use of more sustainable facilities: grants, funding opportunities, school sustainability successes and ways to implement objectives, through the environmental education clearinghouse. An example of school sustainability project success is the Energy Education Collaborative, which was an effort funded by the Kentucky Department of Energy Development and Independence (DEDI). Through the Energy Education Collaborative, DEDI brought together the KEEC, the Kentucky Chapter of the National Energy Education Project, the Kentucky Energy Efficiency Program for Schools, and the Kentucky School Board Association's School Energy Manager Project. Working together, these individual groups were able to coordinate their individual program resources for mutual benefit to all involved.							**$$**

KEY: = Timeframe for Implementation $ = No Cost $$ = Low to Mid Cost $$$ = High Cost		**0-6 months**	**6 Months – 1 Year**	**>1 Year**	**>2 Years**	**>3 Years**	**>4 Years**	**On-Going**
State D	Identify additional funding mechanisms or resources to implement sustainable physical plant construction and renovation requirements as determined by the statutory requirements of KRS 157.450-455 and KRS 160.325.							**$**
Local E	Strongly encourage the formation of sustainability teams in each school that involve teachers, students, administrators, and facilities services staff to focus on issues such as energy efficiency, water conservation, and solid waste management.			**$**				
Local F	Promote recycling or other energy saving measures to further fund environmental literacy efforts within the school and district, including the development of outdoor classrooms.							**$**
Local G	Support the implementation of the Kentucky Green and Healthy Schools program at all grade levels.					**$**		
Local H	Use input from facilities services staff to develop a checklist that will help them improve sustainability of the school physical plant.			**$**				
Local I	Involve students in the design and daily operations of the school facility, especially when it has curricular connections. For example, students may contribute ideas for design of a new school or become involved in the planning and design of an outdoor classroom.							**$**
Local J	Identify and encourage student participation in local, state, and national programs that support sustainable practices.							**$**
Local K	Encourage school districts to partner with area school districts in hiring the services of a school energy manager, whose primary responsibility is energy management. *$$ if shared between districts. Cost savings generated by the manager would exceed the salary	$$$ *						

Potential Obstacles and Solutions to Implementing Goal 6

Goal 6	Potential Obstacles	Potential Solutions
KDE will encourage school districts to improve the sustainability of their buildings and grounds in order to use the facilities to improve student environmental literacy.	• Limited stakeholder engagement • Lack of information • Misunderstanding of the interdisciplinary, environment-based context. • Funding	• Marketing—presentations (KASA), alternate means of sharing information, data sharing from existing projects • Seek grant funding including corporate sponsorship • Development of an electronic clearinghouse • District/school advocate • Collaborate with appropriate personnel including an engineer in the KDE District Facilities branch • Professional development including PLCs

GOAL 7

KDE will encourage teachers and administrators to provide students with opportunities for positive interactions with the natural environment.

Objectives:

1. Ensure outdoor experiences are incorporated into the P-12 curriculum.
2. Identify resources that support districts in providing outdoor experiences for students.

KEY: = Timeframe for Implementation **Strategy** $ = No Cost $$ = Low to Mid Cost $$$ = High Cost		**0-6 months**	**6 Months – 1 Year**	**>1 Year**	**>2 Years**	**>3 Years**	**>4 Years**	**On-Going**
State A	Develop motivational resources for teachers, administrators and other educators to plan and participate in significant outdoor experiences for the school community, including: 1. Utilize the environmental education clearinghouse to share best practices for outdoor learning, including classroom management strategies and outdoor safety. 2. Identify partners such as state agencies, educational organizations, businesses, health organizations, and tourism/recreation associations that can support teachers, students, and school districts in getting students outside. 3. Compile and summarize research highlighting the academic, social and health benefits of outdoor learning.	**$$**						
State B	Collaborate with other agencies to identify possible overnight/residential environmental literacy field experiences available during the school year.		**$**					
State C	Recommend the inclusion of an outdoor classroom on every campus by: 1. Creating a process for the design and construction of sustainable outdoor classrooms. 2. Establishing a funding mechanism for the building of outdoor classrooms. 3. Including outdoor classrooms as an incentivized component of a new school's facilities plan. 4. Including facility services staff in the design, construction and maintenance of outdoor classrooms. Ensure facility services staff have the knowledge, skills					**$$**		

	and abilities to properly care for outdoor classrooms.							
KEY: = Timeframe for Implementation $ = No Cost $$ = Low to Mid Cost $$$ = High Cost		**0-6 months**	**6 Months – 1 Year**	**>1 Year**	**>2 Years**	**>3 Years**	**>4 Years**	**On-Going**
State D	The Kentucky Board of Education should establish a policy that ensures school districts create guidelines for instructional use of the outdoors within their school safety programs and addresses restrictive liability concerns.				**$**			
Local E	Identify safe outdoor spaces on the school grounds for appropriate instruction.	**$**						
Local F	Identify appropriate community sites for including outside experiences for students at all grade levels.	**$**						
Local G	Create policy allowing for flexible scheduling that provides adequate time for outdoor instruction.		**$**					
Local H	Create incentives that encourage teachers to take their students outside.							**$**

Potential Obstacles and Solutions to Implementing Goal 7

Goal 7	Potential Obstacles	Potential Solutions
KDE will encourage teachers and administrators to provide students with opportunities for positive interactions with the natural environment.	• Limited stakeholder engagement • Lack of information • Misunderstanding of the interdisciplinary, environment-based context. • Funding • School district policies	• Marketing—presentations (KASA), alternate means of sharing information, data sharing from existing projects • Draft school district policy (including the safety plan) • District/school advocate • Professional development including PLCs • Seek grant funding including corporate sponsorship

Moving Forward

Implementation of KELP will officially begin in December 2012 when the next generation science standards are introduced by the Kentucky Department of Education as approved by the Kentucky Board of Education. At that time the crosswalk document aligning science common core standards and the NAAEE Guidelines for Excellence will be developed. The Implementation Advisory Team will work with districts, schools and teachers to explore and pilot various avenues for implementation. It is anticipated that the strategies of the plan that can be developed in a short time period with little funding (as outlined above) will be undertaken first. One possible venue for this work is by volunteers at professional meetings. An important aspect of the Implementation Advisory Teams' future work is to continue to look for funding sources. This will be accomplished with the support of Kentucky Department of Education and the Kentucky Environmental Education Council.