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The Michigan Environmental Literacy Plan

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MIELP

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Prepared by

The Michigan Environmental Literacy Plan Task Force

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Cover photos courtesy of (from left to right) Great Lakes Stewardship Initiative, Michigan Department of Natural Resources, and Oakland County Parks and Recreation Commission

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Michigan Environmental Literacy Plan Task Force

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Preface

The development of the Michigan Environmental Literacy Plan (MI ELP) began at the first Michigan No Child Left Inside Summit in 2009. A work group formed at that meeting became the Michigan Environmental Literacy Plan Task Force. Over the next 5 years, the membership of the Task Force expanded while work on the Plan continued. During this time, a large, diverse, group of stakeholders provided input on the content of the Plan. The final development and writing of the Plan was supported by a grant from the Great Lakes Fishery Trust.

The Plan is designed to meet the eligibility requirements for funding under the federal No Child Left Inside Act, should the Act be passed. Even more importantly, the Plan will provide educators, school administrators, parents, and others involved in the environmental education of children with common goals and action strategies that can maximize our education efforts and our results. Together, we can get children outdoors, improve their health, raise their academic achievement and enthusiasm for learning, and create the next generation of environmentally literate stewards of Michigan's natural resources.

Elements of an Environmental Literacy Plan

The Environmental Literacy Plan needs to be able to do the following for students and teachers (No Child Left Inside Act of 2013):

A. Prepare students to understand ecological principles, the systems of the natural world, and the relationships and interactions between natural and man-made environments.
B. Provide field and hands-on experiences as part of the regular school curriculum and create programs that contribute to healthy lifestyles through outdoor recreation and sound nutrition.
C. Provide environmental service learning opportunities.
D. Provide targeted professional development opportunities for teachers that improves the teachers' knowledge, skills, and educating students
E. Describe the measures the State will use to assess the environmental literacy of students, including-
    i. Academic content standard, content areas regarding environmental education, and courses or Environmental education from K to 12.
    ii. The relationship of the plan to the secondary school graduation requirements of the State.
    iii. How the State educational agency will implement the plan,
    iv. How the State educational agency will update the plan not less than every 5 years.

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Executive Summary

Achieving environmental literacy results in a number of benefits for Michigan citizens and in turn can lead to economic benefits for the state. When schools expand and adapt the curriculum to include learning opportunities which promote environmental literacy in nearby nature and the local community, students achieve higher test scores, improve their problem solving skills, exhibit more responsible behavior in school, live healthier lives, and show deeper civic engagement in their community. In turn, these benefits can lead to economic benefits as our natural resources are sustained and the vitality of our human resources is increased.

The Michigan Environmental Literacy Plan (MI ELP) is the result of 5 years of work by the MI ELP Task Force, a group of dedicated stakeholders representing a broad spectrum of interested organizations including state agencies. The MI ELP Task Force was awarded a grant from the Great Lakes Fishery Trust to complete the development of this Plan.

This Plan was written for all those interested in helping improve the health, academic success, and job readiness of students through environmental literacy.

The MI ELP Task Force, with stakeholder input, developed the following:

Environmental Literacy Definition

Environmentally literate citizens are knowledgeable of Michigan's natural resources, the principles and systems that govern the natural world, and how human actions affect that natural world. They are able to use their knowledge to identify and address environmental issues. They are actively working, both individually and collectively, toward environmental stewardship and healthy lifestyles.

Vision

Michigan's citizens will be environmentally literate and connected with the natural world. They will live healthy lifestyles, have a strong sense of their place in the world, be equipped to be stewards of Michigan's natural resources, and able to innovatively contribute, both economically and environmentally, to a strong Michigan.

Mission

The Michigan Environmental Literacy Plan is a statewide roadmap that identifies goals and strategies focused on:

- providing education, including professional learning for educators, that leads to engaged, civically inclined students and natural resource stewardship
- promoting strong collaborations between schools and their local businesses, organizations, and communities, moving them toward sustainability
- creating a sense of place in Michigan's people and communities

In order to make this vision a reality, there must be a specific plan. The MI ELP is designed to be that Plan, with solid, realistic outcomes and actions that, when implemented, should result in the overall goal of environmental literacy for Michigan's children. In the process, implementation of this Plan will also address the secondary goals of improving the physical, social, and intellectual health of children by connecting them with the outdoors, nature, and their local community. The MI ELP is also designed to meet the eligibility requirements for funding under the federal No Child Left Inside Act of 2013, should it be passed.

Environmental literacy develops over time, through learning experiences that occur over a students' entire career in school, and across many subject areas (e.g., science, mathematics, social studies, and English language arts). In this way, the environment can serve as a framework for learning a wide range of important content in the school's curriculum. This Plan is arranged into 3 sections with 5 broad goals which encompass all the aspects of environmental literacy:

Student Experiences

The best practices of environmental and place-based education call for educators to go beyond book learning by using a variety of hands-on, outdoor, field, and service learning experiences throughout the preK-12 curriculum. Such encounters with the natural world help students get to know their local community and give them a context for, and a place to practice using, the information learned in more traditional ways.

Goal 1: Ensure students know and understand the systems of the natural world and the interactions between the living and non-living components of the environment, including human interactions, which are fundamental to environmental literacy.

Goal 2: Ensure that students have hands-on and field experiences, outdoor play time (both structured and unstructured), and service learning opportunities that lead to environmental literacy.

Goal 3: Ensure students understand the actions that lead to natural resource stewardship, know the value of civic action, and have opportunities to be civically active.

Professional Learning

In order to reach the overall goal of environmental literacy, educators must first become proficient providers of environmental education that includes place-based education, field experiences and service learning opportunities. Providing professional learning for environmental education is a high priority because coursework specifically focused on environmental education is not required to obtain a preK-12 teaching certificate in most teacher-training programs in Michigan.

Goal 4: Ensure that educators (preK-12 teachers, school administrators and non-formal educators, etc.) are equipped with the knowledge, skills, support, and resources necessary to provide the educational opportunities for students that lead to environmental literacy.

Content Integration and Assessment

There are no formal Michigan standards for environmental literacy and the instruction that supports environmental literacy is often embedded within more traditional school subjects. Therefore, instructional goals for environmental literacy should be cross-walked to the relevant content standards for other subjects. Assessment (including both standardized and classroom-based assessment of students) can assist teachers and other education leaders in understanding the impact of instruction for environmental literacy on students' learning.

> **Goal 5**: Identify the Michigan content standards that have connections to environmental literacy and utilize new or existing classroom assessments to provide evidence of student learning related to environmental literacy, field experiences, and service learning opportunities.

The Michigan Environmental Literacy Plan (MI ELP) will provide educators, school administrators, parents, and others involved in the environmental education of children with common goals and action strategies that can maximize our education efforts and our results. Together, we can get children outdoors, improve their health, raise their academic achievement and enthusiasm for learning, and create the next generation of environmentally literate stewards of Michigan's natural resources.

Introduction

What Is Environmental Literacy?

Environmental literacy goes beyond the meaning and the use of words that are usually associated with general literacy. Environmental literacy includes learning about the natural world and its processes, as well as how we as humans interact with nature. This form of literacy doesn't stop with knowing about nature, but is also about using our knowledge to identify and solve environmental problems. Recognizing how our own lives depend on a healthy environment, we advocate for personal and societal actions that care for and sustain the environment. When we make choices and take actions based on whether those choices and actions will have a positive impact on the environment, we are practicing environmental stewardship. Environmental literacy that leads to environmental stewardship is the core of this Plan. The definitions used by the Michigan Environmental Literacy Plan (MI ELP) Task Force are provided below.

The MI ELP Task Force, with stakeholder input, developed this definition for environmental literacy:

Environmentally literate citizens are knowledgeable of Michigan's natural resources, the principles and systems that govern the natural world, and how human actions affect that natural world. They are able to use their knowledge to identify and address environmental issues. They are actively working, both individually and collectively, toward environmental stewardship and healthy lifestyles.

The MI ELP Task Force adopted this definition of environmental stewardship from the Environmental Protection Agency *(U. S. Environmental Protection Agency, 2013):*

Environmental Stewardship is voluntary commitment, behavior, and action that results in environmental protection or improvement. Stewardship refers to an acceptance of personal responsibility for actions to improve environmental quality and to achieve sustainable outcomes. Stewardship involves lifestyles and business practices, initiatives, and actions that enhance the state of the environment. Some examples are: living or conducting business in such a way as to minimize or eliminate pollution at its source; using energy and natural resources efficiently; decreasing the use of hazardous chemicals; recycling wastes effectively; and conserving or restoring forests, prairies, wetlands, rivers, and urban parks. Stewardship can be practiced by individuals, groups, schools, organizations, companies, communities, and state and local governments.

Why Is Environmental Literacy Important?

Environmental literacy results in a number of benefits including improved academic and social skills; more active, less stressful, and healthier lives; more innovative thinking; more civic engagement; and more interest in caring about and for our natural resources. In turn, these benefits can lead to economic benefits as our natural resources are sustained and the vitality of our human resources is increased. These results are essential for Michigan to reverse the current trends in children's health, academic progress, and job preparedness and move forward throughout the 21st century.

Current Trends

One of the most significant changes in the lives of children over the last several decades has been the reduction in the amount of time they spend outdoors. A 2010 study found that children spend more than 7 hours a day with electronic media but just minutes a day outside (Rideout, M.A., Foehr, Ph.D., & Roberts, Ph.D, 2010). In addition, the time outside is more likely to be spent in organized activities rather than in unstructured play. A number of troubling trends in children's health have been linked to a childhood spent indoors, such as the rising rates of obesity, Type 2 diabetes and other chronic diseases, depression, Vitamin D deficiency, and impaired vision (Kumar, Muntner, Kaskel, Hailpern, & Melamed, 2009). Trends toward lower academic test scores, fewer problem solving skills, fewer social skills, less creativity, and more students with learning disabilities also correlate to an indoor childhood. The reasons children spend so little time outdoors are complex and include choices made by the children, their parents, their teachers, and their school systems. The increased popularity of electronic devices, parents and educators who view outdoor spaces as unsafe, and a lack of funding for school fieldtrips are listed as some of the key contributing factors (Bartosh, 2003). As a result, many of our children are missing experiences in, and knowledge of, the natural world.

"Children spend more than 7 hours a day with electronic media but just minutes a day outside"

The current trends in health and education also have economic impacts, from the cost of parents staying home with chronically sick kids to fewer students prepared for productive careers, including those in the globally competitive fields of science, technology, engineering, and mathematics. In addition, students are losing the outdoor experiences that create a sense of place or belonging, which will connect them to Michigan as adults and lead them to become stewards of our natural resources. As economic activity related to Michigan's natural resources increases (e.g., tourism, commercial and sport fishing, hunting, mining, energy production), sustaining our resources becomes essential. By directing time, energy, and resources to environmental literacy, we are also investing in Michigan's economic future.

Benefits of Environmental Literacy

The current trends impacting today's children and the state's economy add urgency to the need for dynamic environmental and outdoor learning in preK-12 education. Intentionally including environmental literacy in the preK-12 curriculum may be a powerful way to address these trends, with benefits in the following areas:

Intellectual/Academic Skills

According to a number of studies, students who play and learn in outdoor settings perform better on tests, get better grades, and are less disruptive in the classroom. Additionally, learning or playing outside results in students who are more engaged in the learning process, able to concentrate better, think more creatively, and better problem solvers (Chawla & Escalant, 2007). Low-income and under-resourced students are particularly helped by being outside (Coyle, 2010).

STEM (Science, Technology, Engineering and Mathematics) Skills

The use of the environment as a focus for both classroom learning and outdoor experiences results in better reasoning, problem-solving, and systems-thinking skills of students (Ernst & Monroe, 2004). Increased success in those fundamental skills is also strongly correlated to a greater interest in the STEM subject areas (Coyle, 2005). Another important skill improved by environmental education is creativity. Students who can accurately assess risks and develop effective and innovative solutions to problems will be better prepared for the growing number of jobs in the STEM fields. Developing such a workforce will be essential in moving Michigan toward economic and environmental sustainability.

Social Skills

Play in diverse natural environments reduces or eliminates anti-social behavior such as violence, bullying, vandalism, and littering and reduces school absenteeism (Moore & Cosco, 2000) There is also evidence that symptoms of ADD/ADHD are reduced by contact with nature (Kuo & Faber Taylor, 2004). Unstructured outdoor play, especially in natural areas, is a factor in developing cooperation, conflict resolution, and leadership skills (American Institutes of Research, 2005).

Health Improvements

Children who play outside in natural settings are more active than children who stay indoors. Therefore, they are less likely to suffer obesity and less likely to contract Type 2 diabetes and other diseases associated with a sedentary lifestyle (Centers for Disease Control and Prevention, 2007). Being outside reduces the risk of becoming nearsighted and the increased exposure to sunlight restores Vitamin D levels. Just having a view of nature through a window can result in lowered stress levels and increase attention spans (Wells & Evans, 2003). In addition, environmental education addresses nutrition and other factors that contribute to healthy lifestyles (Michigan Good Food Charter, 2010).

Environmental Stewardship

Time in nature during childhood is the basis for a later stewardship ethic (Wells & Lekies, 2006). When children experience special natural places in the company of caring adults, the memories can inspire acts of stewardship for a lifetime (Chawla L. , 2007). As students learn more about the environment they are more likely to act to take care of the environment (Duffin, Powers, Tremblay, & PEER Associates, 2004). Students who participate in field and service-learning experiences in the community develop a stronger sense of place, which increases their civic engagement as adults (Coyle, 2005).

Conclusion

Overall, when schools expand their curriculum to include environmental literacy, and their classrooms to include nearby nature and the local community, students achieve higher test scores, improve their problem solving skills, exhibit more responsible behavior in school, live healthier lives, and show deeper civic engagement in their community.

Why Does Michigan Need an Environmental Literacy Plan?

Michigan has a long history of environmental activism and environmental education efforts, resulting in a wide spectrum of organizations engaging people in a variety of ways around the state. Over the years there have been attempts to bring these diverse groups under one umbrella, but none were successful. Then in 2005, Richard Louv's book "Last Child in the Woods" publicized the research on the trend toward an indoor childhood and its impacts (Louv, 2005). This book became a call to action for Michigan's environmental education community. It also created interest in other groups concerned with improving children's health and/or their academic achievement. With the introduction of the federal No Child Left Inside (NCLI) Act of 2009, Michigan's own No Child Left Inside Coalition (MNCLI) was formed and efforts to write a plan that would meet the requirements of the NCLI Act began. Should the Act be passed, Michigan will now be eligible to apply for funding to support the implementation of the MI ELP.

> *"An environment-based education movement —at all levels of education— will help students realize that school isn't supposed to be a polite form of incarceration, but a portal to the wider world."*
>
> *— Richard Louv*
> *Last Child in the Woods*

The following Vision and Mission statements were drafted by the MI ELP Task Force and then refined using stakeholder feedback that was provided at various input sessions held throughout the development of the Plan.

Vision

Michigan's citizens will be environmentally literate and connected with the natural world. They will live healthy lifestyles, have a strong sense of their place in the world, be equipped to be stewards of Michigan's natural resources, and able to innovatively contribute, both economically and environmentally, to a strong Michigan.

Mission

The Michigan Environmental Literacy Plan is a statewide roadmap that identifies goals and strategies focused on:

- *providing education, including professional learning for educators, that leads to engaged, civically inclined students and natural resource stewardship*
- *promoting strong collaborations between schools and their local businesses, organizations, and communities, moving them toward sustainability*
- *creating a sense of place in Michigan's people and communities*

In order to make this vision a reality, there must be a specific plan. The MI ELP is designed to be that Plan, with solid, realistic outcomes and actions that, when implemented, should result in the overall goal of environmental literacy for Michigan's children. In the process, implementation of this Plan will also address the secondary goals of improving the physical, social, and intellectual health of children by connecting them with the outdoors, nature, and their local community.

This Plan is intended for all those interested in helping improve the lives of students through environmental literacy, such as educators and parents. The goals and actions recommended in this Plan may involve, in addition to students and educators, medical professionals, city planners, public officials, business owners, members of environmental organizations and others. This systemic approach is consistent with recommendations from the National Science Foundation, the National Environmental Education Advisory Council, and others cited in the NCLI Act.

How Was This Environmental Literacy Plan Developed?

The Michigan Environmental Literacy Plan (MI ELP) Task Force is a group of dedicated stakeholders representing a broad spectrum of interested organizations that recognizes the importance of developing an environmental literacy plan for Michigan. The MI ELP Task Force set out to ensure that, at a minimum, Michigan would have an environmental literacy plan in place that would allow Michigan to be eligible for federal funding under the proposed NCLI legislation. The MI ELP Task Force has met regularly for nearly 5 years to shepherd and facilitate the development of the MI ELP.

In the Fall of 2011 the MI ELP Task Force was awarded a grant from the Great Lakes Fishery Trust (GLFT) to complete the development of an environmental literacy plan for Michigan. The National Wildlife Federation (NWF) took on the task of acting as fiscal agent for the MI ELP Task Force and received and administered the grant funds on the Task Force's behalf.

Throughout the development of the Plan, alignment of the goals, outcomes, and actions of the MI ELP with current initiatives in Michigan remained a critical focus for the MI ELP Task Force. In addition, historical Michigan-based reports and plans were extensively reviewed and evaluated in an effort to learn from past successes and challenges. The MI ELP

Task Force reviewed a vast body of research and literature (national and international) to ensure that best and promising practices informed the development of the Plan. Furthermore, over 25 state environmental literacy plans were consulted to make sure the MI ELP goals were consistent with those of other state plans and initiatives as appropriate.

Many stakeholders contributed to the development of the MI ELP. Broad-based input and feedback was gathered through surveys and focus-groups, as well as through one-on-one meetings with representatives from the education and conservation communities, non-profit organizations, local community and park organizations, and professional associations.

Connecting with key organizations in the state was another major focus of the MI ELP Task Force as development proceeded. State agencies such as the Michigan Department of Environmental Quality (MDEQ), the Michigan Department of Natural Resources (MDNR) and the Michigan Department of Education (MDE) were sought out and their involvement was key throughout the process. Each agency has representation on the MI ELP Task Force and has made large contributions to advancing the development of the MI ELP. State-wide organizations and efforts such as the Great Lakes Stewardship Initiative (GLSI), Michigan Alliance for Environmental and Outdoor Education (MAEOE), and the Michigan No Child Left Inside Coalition (MNCLI) have been integral in propelling this work forward and sustaining the necessary momentum needed to see the MI ELP to fruition.

To capitalize on the growing knowledge and work being done to advance environmental literacy throughout the United States, the MI ELP Task Force consulted with national experts and regularly met with the Midwest Environmental Literacy Collaborative, a group focused on developing and advancing state ELPs and greener, sustainable schools.

Guiding Principles

The following set of guiding principles, identified by the MI ELP Task Force and confirmed by stakeholders, helped maintain a consistent focus and direction throughout the development of the Plan:

1. Every student should experience the outdoors.
2. Every child should have the opportunity to discover a sense of place and become stewards of their world.
3. Education is not just for children, but also for teachers, parents, and the community.
4. Structure what we already have so it works more effectively and efficiently.
5. All of Michigan plays a role in reversing the indoor childhood trend.

Overall Plan Goals

The set of actions being recommended in this Plan are arranged around 5 broad goals, which encompass all the aspects of environmental literacy. These goals are:

Student Experiences

Goal 1: Ensure students know and understand the systems of the natural world and the interactions between the living and non-living components of the environment, including human interactions, which are fundamental to environmental literacy.

Goal 2: Ensure that students have hands-on and field experiences, outdoor play time (both structured and unstructured), and service learning opportunities that lead to environmental literacy.

Goal 3: Ensure students understand the actions that lead to natural resource stewardship, know the value of civic action, and have opportunities to be civically active.

Professional Learning

Goal 4: Ensure that educators (preK-12 teachers, school administrators and non-formal educators, etc.) are equipped with the knowledge, skills, support, and resources necessary to provide the educational opportunities for students that lead to environmental literacy.

Content Integration and Assessment

Goal 5: Identify the Michigan content standards that have connections to environmental literacy and utilize new or existing classroom assessments to provide evidence of student learning related to environmental literacy, field experiences and service learning opportunities.

Student Experiences

The goals, outcomes, and actions of the Student Experiences section are designed to help educators be more effective in teaching for environmental literacy. For the purpose of this Plan, the term "educators" includes formal classroom teachers, pre-service teachers, preschool teachers, college professors, school administrators, parents, and non-formal educators who provide educational programs at nature centers, parks, or other facilities or settings.

The best practices of environmental education call for educators to go beyond book learning by using a variety of hands-on, outdoor, field, and service learning experiences throughout the preK-12 curriculum. Such encounters with the natural world help students get to know their local community and give them a context for, and a place to practice using, the information learned in more traditional ways.

It is especially important that young children have many opportunities to play, observe, explore, and just be, in natural areas. This unstructured time fosters an active lifestyle; develops a sense of place; and encourages cooperation, creativity, and the use of all of their senses. A foundation like this helps children succeed in school. Being in nature is also a very good way for children to begin caring about nature (Finch, 2012).

While early experiences are essential, they alone will not result in environmental literacy. As cognitive abilities grow, so do the ways students can experience nature. Outside activities can become more structured and include more focused observations and data collection. It is these purposeful types of outdoor activities that are considered field experiences. When the activity combines student learning with an intentional benefit to others, it becomes service learning. Outdoor experiences are also more likely to be considered "authentic," meaning students are participating in real situations using real equipment to perform actual tasks. For example, paddling a canoe is an authentic experience while watching a training video on how to paddle a canoe is not.

The best practices of environmental and place-based education, including authentic experiences and investigations of real world problems in the local community, develop skills that increase job readiness. Social skills, like cooperation and conflict resolution; academic skills, like writing and mathematics; and STEM skills, like problem solving, systems thinking, and creativity, are all improved. As a result, students are better prepared to be productive citizens.

In addition to having students apply knowledge and practice skills, local authentic field and service learning experiences result in a deeper understanding and connection to their local community — a deeper sense of place. Another outgrowth of field and service learning experiences is a sense of caring for the places students come to know. They see for themselves the effects of their own actions and can begin to make choices based on that knowledge. These are the steps that lead to taking civic action and becoming environmental stewards.

Goal 1: Ensure students know and understand the systems of the natural world and the interactions between the living and non-living components of the environment, including human interactions, which are fundamental to environmental literacy.

Outcome 1.1. Students, beginning in early childhood, develop a fundamental knowledge and understanding of the systems of the natural world and the interactions between the living and non-living components of the environment.

Action 1.1.1. Incorporate the best practices of environmental education, including place-based education, hand on learning, and field experiences into school-adopted curricula for preK-12 education.

Action 1.1.2. Integrate the principles of ecology, natural systems, and environmental interactions into the teaching and learning of all curriculum areas.

Action 1.1.3. Engage PreK-12 students regularly in hands-on, investigative, inquiry-based teaching and learning about Michigan's natural resources and their local environment.

Outcome 1.2. Students recognize how human systems and cultures depend on natural resources and the environment, the role humans play in environmental systems, and how students' personal actions affect the environment.

Action 1.2.1. Visit local settings, such as community businesses, parks, and waste disposal sites, so students experience how human actions impact, and are impacted by, the environment and natural resources.

Action 1.2.2. Develop activities that help students recognize and acknowledge the value and importance of natural resources to both the economy of their local community and to the state of Michigan.

Action 1.2.3. Incorporate environmental differences and the availability of natural resources into the study and discussion of geographic and cultural diversity.

Action 1.2.4. Create projects through which students investigate real world environmental issues and the consequences of the personal choices they make related to those issues.

Action 1.2.5. Have students observe and apply sustainable practices, such as those related to water resources, energy use and production, food production and transportation, goods and materials manufacturing, and waste management.

Outcome 1.3. Students develop STEM skills that support environmental literacy.

Action 1.3.1. Develop students' reasoning and problem-solving skills through inquiry and problem-based teaching and learning.

Action 1.3.2. Develop students' systems thinking, so they are able to identify cause and effect, actions and consequences, responsibility and accountability, and interconnectedness.

Action 1.3.3. Develop good communication skills in students through continued practice in reading, writing, speaking, and listening.

Action 1.3.4. Integrate the use of technology (data collection and analysis, instructional technology, social media, etc.) into the preK-12 curriculum.

Action 1.3.5. Expose students to, and encourage their exploration of, career and volunteer opportunities related to conservation, outdoor recreation, environmental education, and "green" jobs.

Goal 2: Ensure that students have hands-on and field experiences, outdoor play time (both structured and unstructured), and service learning opportunities that lead to environmental literacy.

Outcome 2.1. Students are provided with authentic learning experiences that connect them with the outdoors and natural environments, especially those in their local area.

Action 2.1.1. Increase access to outdoor spaces and provide positive learning experiences in nature for all students.

Action 2.1.2. Integrate field experiences and hands-on learning throughout each school year and at every grade level in the preK-12 curriculum.

Action 2.1.3. Help students develop and conduct service learning projects related to environmental stewardship in their community.

Action 2.1.4. Encourage family and individual experiences that connect students with the outdoors, such as gardening, hiking, fishing and other outdoor recreational activities available in their local area.

Outcome 2.2. Environmental education and increased opportunities for outdoor recreation and activity are used to improve the health of Michigan's children.

Action 2.2.1. Promote physical activity and healthy outdoor lifestyles using the school grounds, field experiences, and local outdoor recreation venues.

Action 2.2.2. Build or expand preK-12 curriculum related to food with connections to nutrition, land use, production science, community economy, and sustainability.

Action 2.2.3. Encourage outdoor recreational activities (hiking, canoeing, fishing, snow sports, gardening, etc.) that utilize Michigan's natural resources as a part of the preK-12 physical education curriculum that promotes a lifetime of physical fitness and a healthy lifestyle.

Goal 3: Ensure students understand the actions that lead to natural resource stewardship, know the value of civic action, and have opportunities to be civically active.

Outcome 3.1. Students gain an understanding of the value of civic action for the environment based on scientific, economic, aesthetic, and ethical considerations.

Action 3.1.1. Provide opportunities for students to describe the scientific, economic, aesthetic, and ethical reasons for environmental stewardship.

Action 3.1.2. Have students research a real world environmental issue and describe how various acts of environmental stewardship can impact that issue.

Action 3.1.3. Develop activities that allow students to recognize the rights and responsibilities of each citizen and explain the value of lifelong civic action for the protection of the environment.

Action 3.1.4. Create opportunities for students to practice socially responsible civic action by participating in service learning projects and making personal choices related to environmental stewardship.

Professional Learning

Professional Learning is designed to enrich or improve the skills and knowledge of all educators. Providing professional learning for environmental education is a high priority because coursework specifically focused on environmental education is not required to obtain a preK-12 teaching certificate in most teacher-training programs in Michigan. As a result, classroom teachers are not generally as familiar with the concepts and best teaching practices for environmental education, so they spend little time on them in the classroom, and even less time on getting their students outdoors. In order to reach the overall goal of environmental literacy, educators must first become proficient providers of environmental education that includes place-based education, field experiences, and service learning opportunities.

Michigan already has many environmental and outdoor education professional learning resources available. Workshops that train educators in the MDEQ's Michigan Environmental Education Curriculum Support (MEECS) program and in a number of nationally recognized environmental curricula, such as Project WILD, Project WET, and Project Learning Tree, are offered frequently. State-wide education associations, e.g., the Michigan Science Teachers Association, Michigan Earth Science Teachers, Metropolitan Detroit Science Teachers Association, and MAEOE, hold annual conferences with sessions focused on environmental education. Also, educational professionals at many nature centers, parks, and environmental organizations are willing and able to mentor educators and offer real-world learning opportunities to their students. While these efforts provide a good foundation, they will need to be expanded and more professional learning opportunities will need to be developed to meet the goals of this section of the Plan.

This portion of the MI ELP focuses on promoting and expanding professional learning opportunities for educators that will:

1. remove barriers to getting students outside
2. increase the use of best practices in environmental education
3. increase collaboration among educators, schools, parents, and local communities
4. meet the Michigan Department of Education standards for professional learning

Standards for Professional Learning
(Michigan Department of Education, 2011)

Learning Communities: Professional learning that increases educator effectiveness and results for all students occurs within learning communities committed to continuous improvement, collective responsibility, and goal alignment.

Leadership: Professional learning that increases educator effectiveness and results for all students requires skillful leaders who develop capacity, advocate, and create support systems for professional learning.

Resources: Professional learning that increases educator effectiveness and results for all students requires prioritizing, monitoring, and coordinating resources for educator learning.

Data: Professional learning that increases educator effectiveness and results for all students uses a variety of sources and types of student, educator, and system data to plan, assess, and evaluate professional learning.

Learning Designs: Professional learning that increases educator effectiveness and results for all students integrates theories, research, and models of human learning to achieve its intended outcomes.

Implementation: Professional learning that increases educator effectiveness and results for all students applies research on change and sustains support for implementation of professional learning for long-term change.

Outcomes: Professional learning that increases educator effectiveness and results for all students aligns its outcomes with educator performance and student curriculum standards.

Goal 4: Ensure that educators are equipped with the knowledge, skills, support, and resources necessary to provide the educational opportunities for students that lead to increased environmental literacy.

Outcome 4.1. Educators are highly competent at employing various instructional methods to use the natural and human-made environments to engage students, meet content expectations across curriculum areas, and educate for environmental literacy.

Action 4.1.1. Ensure that pre-service teacher training includes the content and instructional methods that enable educators to incorporate learning in the outdoors and environmental education throughout school-adopted curricula.

Action 4.1.2. Provide ongoing high-quality professional learning opportunities that enhance educators' content knowledge and skills and encourage the incorporation of best practices of environmental education into the curriculum, including place-based education, service learning, and field experiences.

Action 4.1.3. Provide opportunities for educators to earn continuing education credentials (e.g., digital badges) related to environmental education and environmental literacy from universities, professional associations, and other providers.

Outcome 4.2. Educators are willing and able to use the outdoors as a setting for learning across curriculum areas.

Action 4.2.1. Promote and facilitate the development of quality outdoor learning environments/outdoor classrooms by using "nearby nature", such as school grounds, school and community gardens and neighborhood parks.

Action 4.2.2. Connect teachers with providers of outdoor learning experiences and with tools to help them get their students outdoors.

Action 4.2.3. Encourage the development and use of real world environments in the local area or the school grounds as learning environments by providing case studies and other resources connected to curriculum.

Outcome 4.3. An effective support system is established to help educators use the natural world for environmental education.

Action 4.3.1. Build and support systems for connecting schools and educators with community resources, non-formal educators, and other local experts who can facilitate student learning.

Action 4.3.2. Provide ways for preK-12 teachers to share knowledge and support one another in using the natural world.

Action 4.3.3. Encourage and support the development of school partnerships with local community partners and/or non-profit organizations that can provide the tools, resources, professional development and mapping opportunities to help schools incorporate place-based education, field experiences, and hands-on learning.

Action 4.3.4. Prepare educators to be mentors and advocates for reconnecting children and nature.

Action 4.3.5. Create maps to the locations of environmental education resources and to local green spaces that are safe and easy for educators and the community to utilize.

Outcome 4.4. Parents support educators in reconnecting children and nature.

Action 4.4.1. Educate parents about the benefits of getting kids outside.

Action 4.4.2. Engage parents in learning about and teaching outdoor and environmental education principles by encouraging a collaborative effort among community and professional organizations.

Action 4.4.3. Encourage family and individual experiences that connect students with the outdoors, such as gardening, hiking, fishing and other outdoor recreational activities.

Action 4.4.4. Engage parents and community members in supporting field experiences during both the school day and out-of-school time.

Outcome 4.5. School policies and practices support environmental literacy.

Action 4.5.1. Encourage school administrators to support teachers in providing opportunities for students to spend time outdoors.

Action 4.5.2. Develop tools for administrators to evaluate and adapt their risk management and other policies associated with utilizing school grounds and other offsite locations as outdoor classrooms.

Action 4.5.3. Encourage the adoption of an outside recess during the school day.

Action 4.5.4. Urge pre- and after school programs to incorporate connections with the natural world and support environmental literacy.

Action 4.5.5. Support implementation of school Wellness Plans which include guidelines on vending machines, parent snacks/celebration foods in the classroom, and avoiding the use of food items as rewards for student behavior.

Action 4.5.6. Encourage schools to adopt sustainability practices that are good for people, the planet and the fiscal bottom line.

Action 4.5.7. Promote the adoption of "green school" construction practices and the involvement of students in operational "greening" opportunities in their schools.

Action 4.5.8. Support schools in the implementation of the 3 pillars of the U.S. Department of Education's Green Ribbon Schools.

Action 4.5.9. Encourage building administrators to support professional development for teachers in environmental and outdoor education.

Content Integration and Assessment

Environmental education is an important part of a child's formal education. Environmental literacy develops over time, through learning experiences that occur over a students' entire career in school, and across many subject areas (e.g., science, mathematics, social studies, and English language arts). In this way, the environment can serve as a framework for learning a wide range of important content in the school's curriculum.

What students study in traditional school subjects (e.g., reading, mathematics, social studies) is often organized around "content standards" that apply to a particular grade level or to grade level clusters. Ideally, what is taught to students is closely aligned with these standards. Because there are no formal standards for environmental literacy, and because instruction that supports environmental literacy is often embedded within more traditional school subjects, instructional goals for environmental literacy should be cross-walked to the relevant content standards for other subjects. Doing so will help ensure that environmental literacy remains grounded in the essential work of schools.

In recommending changes in education policy and practice, state-level policymakers and leaders rely heavily on the results of standardized tests that are administered to students. This section of the Plan includes several suggestions about ways that state-level assessment strategies, including standardized tests, can help document progress toward this Plan's goals and inform future work in this area.

> *"If we want to have a green jobs economy we need to give our young people the skills they need to get these good paying jobs that will become more and more available and attractive in the coming decade. Indeed, environmental literacy and education are at the very foundation of a green job economy. We cannot have one without the other."*
>
> *— Former U.S. Secretary of Education, Richard Riley, 1993-2001*

In addition to standardized tests, which are administered infrequently, teachers regularly use classroom assessments to gauge their own effectiveness and to measure their students' learning. Environmental literacy (as defined earlier in this Plan) includes several elements (e.g., content knowledge, skill competencies, behaviors). These and the associated instructional approaches that support their development (e.g., hands-on, inquiry-oriented, community-based) require a diversified and creative approach to assessment.

Classroom assessment is as much for helping teachers learn and progress as it is for yielding measurement data at one point in time. Assessment (including both standardized and classroom-based assessment of students) can assist teachers and other education leaders in understanding the impact of instruction on students' learning. If this aspect of assessment is to be fully tapped and used to improve instructional practice, then teachers will need professional development in both formative and summative assessment strategies that explore the different elements of environmental literacy.

Goal 5: Identify the Michigan content standards that have connections to environmental literacy and utilize new or existing classroom assessments to provide evidence of student learning related to environmental literacy, field experiences and service learning opportunities.

Outcome 5.1. Educators and administrators are aware of options that allow students to meet existing state-mandated graduation requirements through courses that focus on or include environmental literacy.

Action 5.1.1. Provide and promote examples of possible or existing curricular options that address environment literacy and help students fulfill graduation requirements.

Action 5.1.2. Investigate the need for new options that reflect the growing importance of environmental literacy in our society.

Outcome 5.2. State-level, standardized assessment instruments are structured in ways that support the assessment of students' environmental literacy.

Action 5.2.1. Identify the content standards that connect to the elements of environmental literacy; create a crosswalk of these connections that educators can use when planning curriculum and instruction.

Action 5.2.2. Determine how current, standardized test data can be used to generate useful information about students' environmental literacy.

Action 5.2.3. Organize and widely communicate the results of such standardized test data about environmental literacy.

Outcome 5.3. Teachers use authentic assessments that generate evidence of students' learning in the various elements of environmental literacy.

Action 5.3.1. Provide educators with professional development in the areas of formative and summative assessment related to critical thinking and problem solving.

Action 5.3.2. Establish a bank of resources for educators that includes 1) general information about assessing environmental literacy, and 2) existing frameworks, surveys, and items that are related to the various elements of environmental literacy and are cross-walked to content standards.

Action 5.3.3. Compile, organize, and disseminate examples of other effective assessment strategies that focus on environmental literacy are drawn from actual classrooms (across grade levels and subject areas).

Action 5.3.4. Create systems for sharing on an on-going basis teacher-generated assessments that measure the elements of environmental literacy.

Outcome 5.4. Environmental Literacy assessment frameworks are investigated for potential use in Michigan.

Action 5.4.1. Examine existing frameworks for assessing environmental literacy (including the framework developed by the North American Alliance for Environmental Education) then develop draft assessments that reflect the goals of this Plan.

Action 5.4.2. Identify best assessment practices from other states and determine if they could be used in Michigan.

Implementation

Coordination and Support

It is the intention of the MI ELP Task Force to remain the body responsible for coordinating implementation efforts and periodic updates of the MI ELP with the support of the Michigan Department of Education.

- The MI ELP Task Force will work to expand the representation it currently has by exploring new relationships with a broader set of stakeholders.
- The MI ELP Task Force will maintain an online presence through the existing website located at www.MIELP.org.
- The MI ELP Task Force will meet not less than quarterly in an effort to maintain momentum and effectively support implementation of the Plan.

Publication and Stakeholder Feedback

In order to make the MI ELP known to the broader stakeholder base, including the preK-12 education community, the MI ELP Task Force expects to make presentations at a number of conferences around the State during 2014-2015. The presentations will focus mainly on the content of the Plan but will also include some background information for those who have not yet been involved in its development.

During a "Plan Release Phase," stakeholders will be notified that the Plan is available for review and discussion. The Plan will be pushed out digitally utilizing various state-wide distribution methods. Surveys and other recognized best practices for conducting public input will be used to collect feedback on the Plan.

Implementation of Actions

The design of the MI ELP allows for a number of actions associated with the goals of the Plan to be undertaken simultaneously. As the Plan is disseminated, stakeholders will be asked to self-identify the actions in which they are willing to participate. Preferably, quality efforts to implement actions related to all five goals would begin in the first year of this Plan. Workgroups may be established where appropriate to maintain communication, collaboration, and consistency across the state. Projects that involve sharing of resources between schools or communities will be encouraged. Capacity building and exploring funding sources will also be important work as implementation gets underway.

Evaluation of Plan Implementation

While student assessment data can be used to determine general progress toward environmental literacy, those data alone do not provide information about how this Plan has impacted teaching and learning. The following evaluation methods may be used to determine how effectively the Plan is being implemented.

The key outcomes and corresponding actions of the Michigan Environmental Literacy Plan anchor a collaborative evaluation effort by those involved in implementing the Plan.

- Identify existing sources of data (along with existing gaps in data) related to the implementation of the outcomes and actions of the Plan.
- Where possible, use data to establish baseline measures for implementing selected outcomes and activities. Raise awareness among stakeholders about any needs for additional data.
- Establish a timeline for compiling, analyzing, and reporting data on an on-going basis in order to evaluate progress in implementing the goals of the Plan.

Trend analysis is used to evaluate the overall implementation of professional development for educators that may lead to environmental literacy for students based on various quantitative assessments of participation.

- Define realistic quantitative target goals for the implementation of the Plan's outcomes and activities, including those listed below.
- Track the number of teachers participating in professional development events related to environmental literacy and earning digital badges and other environmental education credentials.
- Track the number of teacher preparation programs offering environmental education courses.
- Track the number of schools participating in Green Schools and other similar programs.

- Correlate the number of students having various types of outdoor experiences with the professional learning experiences of their teachers.
- Track evidence of improving student health and fitness for teachers who have participated in related professional learning experiences.
- Track the number of students participating in service learning experiences and correlate that to the professional learning experiences of their teachers.

Plan Revision

The MI ELP will be revised and updated at least once every 5 years, which would next be in 2019. However, stakeholder feedback will be collected periodically and may warrant more frequent revisions.

Appendix A: Works Cited

American Institutes of Research. (2005). *Effects of Outdoor Education Programs for Children in California.* Sacramento, CA.

Bartosh, O. (2003). Environmental Education: Improving Student Achievement. *Thesis for Masters in Environmental Studies, Evergreen State College*. Olympia, WA.

Centers for Disease Control and Prevention. (2007). Health, United States. *National Center for Health Statistics (PHS, 2007-1232, GPO Stock Number: 017-022-01604-4)*. Washington, DC: U.S. Government Printing Office.

Chawla, L. (2007). Childhood experiences associated with care for the natural world: A theoretical framework for empirical results. *Children, Youth and Environments*, 145-170.

Chawla, L., & Escalant, M. (2007). *Student gains from place-based education, Fact Sheet #2.* Denver: Children, Youth and Environments Center for Research and Design. Retrieved from http://www.peecworks.org/peec/peec_reports/01795CA8-001D0211.37/StudentGainsfromPlaceBasedEdunov28.pdf

Colasanti, K., Cantrell, P., Cocciarelli, S., Collier, A., Edison, T., Doss, J., . . . Smalley, S. (2010). *Michigan Good Food Charter.* East Lansing: C.S. Mott Group for Sustainable Food Systems at Michigan State University, Food Bank Council of Michigan, Michigan Food Policy Council. Retrieved from http://www.michiganfood.org/uploads/files/Charter.pdf

Coyle, K. (2005). *Environmental Literacy in America: What 10 years of NEEFT/Roper Research and related studies say about environment literacy in the US.* Washington, DC: The National Environmental Education and Training Foundation.

Coyle, K. (2010). *Back to School: Back Outside.* Washington, DC: National Wildlife Federation.

Duffin, M., Powers, A., Tremblay, G., & PEER Associates. (2004). *Place-based Education Evaluation Collaborative: Report on Cross-program Research and Other Program Evaluatoin Activities.* Retrieved from http://www.peecworks.org/PEEC/PEEC_Reports

Ernst, J. A., & Monroe, M. (2004). The effect of environment-based education on students' critical thinking skills and disposition toward critical thinking. *Environmental Education Research*, 507-522.

Finch, K. H. (2012). Creation of a Play-Focused Children's Nature Center. *US Play Coalition*. Retrieved from http://usplaycoalition.clemson.edu/resources/articles/Play_Summit_Abstracts.pdf

Kumar, J., Muntner, P., Kaskel, F. J., Hailpern, S. M., & Melamed, M. L. (2009). Prevalence and Associations of 25-Hydroxyvitamin D Deficiency in Children and Adolescents in the United States: Results from NHANES 2001-2004. *Pediatrics*.

Kuo, F., & Faber Taylor, A. (2004). A potential natural treatment for Attention-Deficit/Hyperactivity Disorder: Evidence from a national study. *American Journal of Public Health*, 1580-1586.

Louv, R. (2005). *Last Child In The Woods: Saving Our Children From Nature-deficit disorder.* Chapel Hill: Algonquin Books.

Michigan Department of Education. (2011, November). Professional Learning Policy: Standards for Professional Learning. Michigan. Retrieved from http://www.michigan.gov/documents/mde/PL_Standards_Public_Comment_FINAL_111011_368415_7.pdf

Moore, R., & Cosco, N. (2000). Developing an Earth-Bound Culture Through Design of Childhood Habitats, Natural Living Initiative. *People, Land and Sustainability: A Global View of Community Gardening*.

No Child Left Inside Act of 2013, S. 1306, 113th Cong. (2013). Retrieved from http://thomas.loc.gov/cgi-bin/bdquery/z?d113:SN01306:|/home/LegislativeData.php|

Rideout, M.A., V. J., Foehr, Ph.D., U. G., & Roberts, Ph.D, D. F. (2010). *GENERATION M2. Media in the Lives of 8- to 18-Year-Olds.* Menlo Park: Kaiser Family Foundation. Retrieved from http://files.eric.ed.gov/fulltext/ED527859.pdf

U. S. Environmental Protection Agency. (2013, December). *Environmental Education Model Grants -- Solicitation Notice for2013.* Retrieved from http://www2.epa.gov/sites/production/files/2013-12/documents/2013_model_and_sub-award_grants_rfp_0.pdf

Wells, N. M., & Lekies, K. S. (2006). Nature and the Life Course: Pathways from Childhood Nature Experiences to Adult Environmentalism. *Children, Youth and Environments*, 1-24. Retrieved from http://promiseofplace.org/research_attachments/Wells2006NatureandtheLifeCourse.pdf

Wells, N., & Evans, G. (2003). Nearby nature: A buffer of life stress among rural . *Environment and Behavior*, 311-330.

MI ELP Photo Credits

Clinton River Watershed Council, Pages 3-Bottom right, 6
Great Lakes Stewardship Initiative, Pages 1, 2, 3-Top right, 10-Top left & bottom right, 20
Mary Whitmore, Page 19
Michigan No Child Left Inside Coalition, Page 3-Top left
Michigan Department of Environmental Quality, Page 8
Michigan Department of Natural Resources, Pages 10-Top right,16-Top right
National Wildlife Federation, Page 9
Oakland County Parks and Recreation Commission, Pages 3-Bottom left, 4, 10-Bottom left, 11, 16-Bottom right

Appendix B: Glossary

Authentic Assessment. A form of assessment in which students are asked to perform real-world tasks that demonstrate meaningful application of essential knowledge and skills

- Michigan Department of Education, 2008

Environmental Education. Environmental education (EE) teaches children and adults how to learn about and investigate their environment, and to make intelligent, informed decisions about how they can take care of it

- North American Association for Environmental Education, Retrieved 2014

Environmental Literacy. Environmentally literate citizens are knowledgeable of Michigan's natural resources, the principles and systems that govern the natural world, and how human actions affect that natural world. They are able to use their knowledge to identify and address environmental issues. They are actively working, both individually and collectively, toward environmental stewardship and healthy lifestyles

— MI ELP Task Force, 2014

Environmental Stewardship. Environmental Stewardship" is voluntary commitment, behavior, and action that results in environmental protection or improvement. Stewardship refers to an acceptance of personal responsibility for actions to improve environmental quality and to achieve sustainable outcomes. Stewardship involves lifestyles and business practices, initiatives, and actions that enhance the state of the environment. Some examples are: living or conducting business in such a way as to minimize or eliminate pollution at its source; using energy and natural resources efficiently; decreasing the use of hazardous chemicals; recycling wastes effectively; and conserving or restoring forests, prairies, wetlands, rivers, and urban parks. Stewardship can be practiced by individuals, groups, schools, organizations, companies, communities, and state and local governments *— Environmental Protection Agency, 2013*

Field Experience. Experiences that extend from the classroom into the field allow students to explore, observe, and investigate things in the natural world that cannot be brought into the classroom learning environment

- Guidelines for Instructional Field Experience, Texas Education Agency, 2002

Place-Based Education. Place-based education uses the local community and environment as a starting point for teaching and learning; emphasizes hands-on, inquiry-based, real-world experiences; and often involves direct collaboration with community partners *— Great Lakes Stewardship Initiative, 2014*

Professional Learning. Professional learning experiences range from awareness building to in-depth application of knowledge and skills, with each of these experiences including problem solving and reflection on the effectiveness of the teaching and learning process in order to improve student outcomes and job performance. Professional learning can occur in a variety of settings, including face-to-face sessions, online courses, and combinations thereof. It provides opportunities for professional discourse, analysis, application, and reflection. It is relevant learning that is essential to ongoing improvements in professional practice and job effectiveness *— Michigan Department of Education, 2011*

Service Learning. Service-learning is a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility and strengthen communities *— Community in Schools, North Carolina, Retrieved 2014*

Appendix C: Other Contributors

Consulting Services Provided In-Kind

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MI ELP Task Force Meeting Hosts

Diagnostic Center for Population and Animal Health, Michigan State University
Huron-Clinton Metropolitan Authority
Kalamazoo Nature Center
Maybury State Park, Michigan Department of Natural Resources
Michigan Department of Environmental Quality
Michigan Historical Center
Michigan State University Museum
Michigan United Conservation Clubs
National Wildlife Federation
Oakland County Parks and Recreation Commission
Thunder Bay National Marine Sanctuary, National Oceanic & Atmospheric Administration
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Appendix D: Michigan Resources

The MI ELP Task Force considered and explored various Michigan-based reports, case studies, initiatives, coalitions, and other relevant resources in Michigan that may be interested in, ready to support, or used to implement the MI ELP. Examples of the Michigan resources explored by the MI ELP Task Force include:

An Economic Opportunity Study for the Michigan Upper Peninsula/Wisconsin Border Region, 2011

Department of Natural Resources Priorities, Director Stokes, 2012

Drivers of Economic Performance in MI: Natural features, green infrastructure & cultural amenities, 2012, H. Charron

Environmental Education: Options for Michigan, a report by the Senate Majority Policy Office

Future Growth of Michigan Agriculture, Michigan Farmland and Agriculture Development Task Force Report, 1994, David Skjaerlund

Governor John Engler's Hunting and Fishing Heritage Task Force Recommendations: A Report Submitted to Governor John Engler by the Hunting and Fishing Heritage Task Force

Great Lakes Stewardship Initiative 10 Year Business Plan, Great Lakes Stewardship Initiative

Great Lakes Stewardship Initiative Overview, 2012

Findings & Recommendations to the GLFT about Integrating PBE, PD & School-Community Partnerships

Great Lakes Literacy: Essential Principles & Fundamental Concepts for Great Lakes Learning, 2010

Green & sustainable Activities that have been conducted in States Approved CTE Agriculture, Food & Nat Resources Programs in MI (2008-2011)

Healthy Kids Healthy Michigan Coalition Policy Action Team Documents, 2012, Jonathan Gold, Vani Katta, Christopher A. Pohlod, Sarah Poole, Amy R. Sheon, Susan J. Woolford

Healthy Kids Healthy Michigan Coalition Policy Action Team Resources; Policy Action Team Documents, 2012, Jonathan Gold, Vani Katta, Christopher A. Pohlod, Sarah Poole, Amy R. Sheon, Susan J. Woolford

Healthy Kids Healthy Michigan: 2011 Issue Briefs, 2012, Advocates for Healthy Weight in Children

Healthy Kids, Healthy Michigan: 2011 Policy Priorities, 2011, Advocates for Healthy Weight in Children

Michigan Association for Environmental and Outdoor Education (MAEOE) Resources: Caring For Future

Michigan Association of Planning Policy Platform, Retrieved 2014, Michigan Association of Planning

Michigan Call to Action to Reduce & Present Obesity Report, 2011, Michigan Department of Community Health (MDCH), Prepared by Public Sector Consultants Inc.

Michigan Department of Natural Resources Key Department Initiatives and Five Goals, Retrieved 2013

Michigan Environmental Education Curriculum Support (MEECS), Michigan Department of Environmental Quality

Michigan Envirothon Manual, Michigan Association of Conservation Districts, 2013

Michigan Envirothon 2010 Annual Report: Inspiring Environmental Stewardship in Michigan High School Students, Michigan Association of Conservation Districts, 2010

Michigan Fitness Foundation, Education Resources, 2014

Michigan Good Food Charter, C.S. Mott Group for Sustainable Food Systems at Michigan State University, Food Bank Council of Michigan, Michigan Food Policy Council

Michigan Healthy Eating and Physical Activity Strategic Plan: 2010-2020, 2011, Michigan Department of Community Health (MDHC), Michigan's Nutrition, Physical Activity and Obesity Program

Michigan No Child Left Inside Coalition, Summit Proceedings, 2011, Michigan Department of Environmental Quality (MDEQ)

Michigan Relative Risk Analysis Project - White Papers - July 1992, 1992, William R. Rustem, Dr. William E. Cooper, Steve Harrington, Audrey S. Armoudlian, Department of Natural Resources

Michigan Statewide Comprehensive Outdoor Recreation Plan 2008 -2012, 2008, Michigan Department of Natural Resources

Michigan Tourism Strategic Plan: 2007-2011, 2007, Michigan Tourism Industry Planning Council

Michigan Turnaround Plan: Laying the Foundation to Build a New Michigan, Business Leaders of Michigan (BLM), 2012

Michigan's Environment and Relative Risk, 1992, William R. Rustem, Dr. William E. Cooper, Steve Harrington, Audrey S. Armoudlian, Department of Natural Resources

Michigan's Environmental Future: A Master Plan for Environmental Education, 1973, Governor's Environmental Education Task Force

Michigan's Transition to a Knowledge-Based Economy: Third Annual Progress Report, 2010, Lou Glazer, Don Grimes, Michigan Future Inc., Leadership Council

Plan Michigan's Environmental Future, 1973, Governor's Environmental Education Task Force

Policy Recommendations and Options for the Future Growth of Michigan Agriculture - A report to Gov. Engler by Michigan Farmland and Agriculture Development Task Force Dec 1994, 1994, Michigan Farmland and Agriculture Development Task Force

Report of the Environmental Education Citizens' Advisory Committee to the Michigan State Board of Education and the Michigan Natural Resources Commission 2/25/1992, 1992, EECAC

Revitalizing Michigan's Central Cities: A vision and Framework for Action, 2003, Michigan Future, Inc.

Special Report on Reconnecting Children & Nature: Three Michigan Communities, 2011, Children and Nature Network

The 2012-2017 Michigan Tourism Strategic Plan, Travel Michigan, the Michigan Development Corporation and the Michigan Travel Commission, Dr. Sarah Nicholls, Michigan State University, 2012

The Michigan Health and Wellness 4 x 4 Plan, Michigan Department of Community Health (MDCH), June 2012

The Michigan Relative Risk Task Force Report on Environmental Education - Submitted by J.P Hill to Gov. John Engler, December 1994, J.P Hill

Young Talent in the Great Lakes: How Michigan is Fairing, 2008, Michigan Future Inc.

Appendix E: Additional Resources

The MI ELP Task Force reviewed additional resources, including international, national, regional and state based publications to enhance the development of the MI ELP. Examples of the resources reviewed include:

A Potential Natural Treatment for Attention-Deficit/Hyperactivity Disorder: Evidence from a National Study (Frances E Kuo, PhD, Andrea Faber Taylor, PhD), 2004, Frances E. Kuo, PhD, and Andrea Faber Taylor, PhD.

AFWA Field Investigations, 2007, Amy E. Ryken, Patricia Otto, Kayleen Pritchard, Katie Owens.

AFWA K-12 Conservation Education Scope and Sequence, 2008, Oksana Bartosh.

America's Great Outdoors: A Promise to Future Generations, 2011 and Home Gown Listening Sessions, 2010

American Beliefs Associated with Encouraging Children's Nature Experience Opportunities, 2010, John Fraser, Joe E. Heimlich, Victor Yocco

American Public Health Association: The Prevention and Public Health Fund, 2012, Vanessa Forsberg, Caroline Fichtenberg

Assessing Environmental Literacy - A Proposed Framework for the Programme for International Student Assessment (PISA) 2015 - Submitted to the OECD Aug 2011, 2011, Karen S. Hollweg, Jason Taylor, Rodger W. Bybee, Thomas J. Marcinkowski, William C. McBeth, Platteville Pablo Zoido

Association of Fish of Wildlife Agencies North America Conservation Education Strategy Foundations: Introductions, Conservation Core Concepts and Benchmarks, 2011

Association of Fish of Wildlife Agencies North America Conservation Education Strategy: State Science Standards and K-12 Field Science Practice - A White Paper, Cassandra T. Rorie, Douglas Wolf, and Jonas Cox

Best Practices of Environmental Literacy Planning - No Child Left Inside Coaltion, May 2009

Climate Literacy: The Essential Principles of Climate Science, 2009

Common Qualities of Effective EL Programs for Local Ed Agencies

Conserving Lands and Prosperity: Seeking a Proper Balance Between Conservation and Development in the Rocky Mountain West, 2012, Paul Lorah, Ph.D., Rob Southwick, Thomas Allen

Current Challenges, Funding and Popularity Trends in Local Parks and Recreation Areas - Responses to a Survey of Park Directors, 2009, Margaret Walls, Juha Siikamäki, Sarah Darley, Jeff Ferris, and Joe Maher

Developing a State Environmental Literacy Plan, North American Association for Environmental Education

Developing a Framework for Assessing Environmental Literacy - NAAEE 2011, Karen S. Hollweg, Jason R. Taylor, Rodger W. Bybee, Thomas J. Marcinkowski, William C. McBeth

DevelopinganEnvironmentalLiteracyPlanforYOURState.pdf, Jennifer Seitz, Elena S. Takaki, Laurie Coventry-Payne, Traci Price

Economic Value of Outdoor Recreation, 2011, Southwick Associates

Environmental Literacy In America, September 2005, Kevin Coyle

Expert Committee Recommendations Regarding the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity: Summary Report, 2011, Sarah E. Barlow

Habitats for Learning: A planning guide for using and developing school land labs, 1995, Dave Landis, Diane C. Cantrell, Joe E. Heimlich

Health Benefits to Children from Contact with the Outdoors and Nature, 2012, Cheryl Charles, Ph.D., Alicia Senauer Loge

IRIS Recent Outdoor Recreation Trends, 2012, H. Ken Cordell, USDA Forest Service

Lots to Lose: How America's Health and Obesity Crisis Threatens our Economic Future, 2012, Nutrition and Physical Activity Initiative

Maryland Partnership for Children in Nature: Progress Summary, 2011

Maryland State Department of Education: Environmental Education Program, 2003, Gary Hedges

National Prevention Council Action Plan, 2012, National Prevention, Health Promotion, and Public Health Council

National Wildlife Federation: Connecting Today's Kids with Nature - Full Report, 2013, Heather White, Esq., National Wildlife Federation

National Wildlife Federation: Connecting Today's Kids with Nature - Summary, National Wildlife Federation

NRPA Parks and Obesity: Resources at Work, July 2011

NRPA: Parks and Other Green Environments: Essential Components of a Healthy Human Habitat

Outdoor Recreation Trends and Futures, 2010, H. Ken Cordell

Outdoor Recreation, Health, and Wellness: Understanding and Enhancing the Relationship, 2009, Geoffrey Godbey, Outdoor Resources Review Group

Parks and Recreation in the United States: Local Park Systems, 2009, Margaret Walls

Parks and Recreation in the United States: State Park Systems, 2009, Margaret Walls

Purpose, Eligibility and Resources, United States Department of Education Green Ribbon Schools (ED-GRS) Program, Retrieved 2013

Recent Outdoor Recreation Trends, 2012, H. Ken Cordell, Athens Research Group

Screening for Obesity in Children and Adolescents: US Preventive Services Task Force Recommendation Statement, 2010, US Preventive Services Task Force

State Parks: Assessing Their Benefits, 2012, Juha Siikamäki

Synopsis of 2010 Research Papers: The Key Benefit – National Recreation and Park Association

The Active Outdoor Recreation Economy, 2006, Outdoor Industry Foundation

The Economics Associated with Outdoor Recreation, Natural Resources Conservation and Historic Preservation in the United States, 2011, Southwick Associates

The Policy Path to the Great Outdoors A History of the Outdoor Recreation Review Commissions, 2008, George H. Siehl

The State of the Great Outdoors America's Parks, Public Lands, and Recreation Resources, 2009, Margaret Walls, Sarah Darley, Juha Siikamäki

Use of Time for Outdoor Recreation in the United States, 1965-2007, 2009, Juha Siikamäki

Appendix F: Legislation

United States House of Representatives Bill Summary and Status: H.R. 2702

Latest Title: No Child Left Inside Act of 2013

Latest Major Action: 7/16/2013 Referred to House committee. Status: Referred to the House Committee on Education and the Workforce.

Sponsor: Rep Sarbanes, John P. [MD-3]

Cosponsors (38)

Related Bills: S. 1306

United States Senate Bill Summary and Status: S. 1306

Latest Title: No Child Left Inside Act of 2013

Latest Major Action: 7/16/2013 Referred to Senate committee. Status: Read twice and referred to the Committee on Health, Education, Labor, and Pensions.

Sponsor: Sen Reed, Jack [RI]

Cosponsors (10)

Related Bills: H.R.2702

Key Elements of an Environmental Literacy Plan

Below is a summary of key elements of the NCLI Act of 2013 identified by the MI ELP Task Force, with the assistance of MDEQ Law Student Interns, regarding the development of state environmental literacy plans. Note: This summary is not intended to be a summary of the proposed legislation.

The Environmental Literacy Plan needs to be able to do the following for students and teachers:

A. Prepare students to understand ecological principles, the systems of the natural world, and the relationships and interactions between natural and man-made environments.
B. Provide field and hands-on experiences as part of the regular school curriculum and create programs that contribute to healthy lifestyles through outdoor recreation and sound nutrition.
C. Provide environmental service learning opportunities.
D. Provide targeted professional development opportunities for teachers that improves the teachers' knowledge, skills, and educating students
E. Describe the measures the State will use to assess the environmental literacy of students, including-
    v. Academic content standard, content areas regarding environmental education, and courses or Environmental education from K to 12.
    vi. The relationship of the plan to the secondary school graduation requirements of the State.
    vii. How the State educational agency will implement the plan,
    i. How the State educational agency will update the plan not less than every 5 years.

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