A SUPPLEMENT OF ENVIRONMENTAL EDUCATION ACTIVITIES
FOR THE AMERICAN HISTORY II COURSE AT MOSINEE HIGH SCHOOL

By
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ABSTRACT

The purpose of this project was to create an environmental education activities supplement for use in the American History II course at Mosinee High School in Mosinee, Wisconsin. It was hypothesized that the supplement would increase the amount of environmental education infused into the course during the 2007-2008 school year.

A supplement of seven EE activities specifically designed to be infused into the 19th century-based American History II course was created and distributed to course teachers. A pre-implementation survey of the entire Social Studies Department at Mosinee High School indicated general support for infusing Environmental Education into the existing curriculum. A post-survey and interview of the American History II teachers showed while not all of the activities were implemented, EE infusion into the course did result.

While the supplement of EE activities for the American History II course did increase the amount of EE addressed in the curriculum, opportunities for greater EE infusion in the course and department exist. The members of the Social Studies Department at Mosinee High School have indicated a willingness continue to infuse EE in the American History II course as well as expand EE infusion across the curriculum.
ACKNOWLEDGMENTS

This project is dedicated to my grandparents, Bill and Ruth Sylvester, and Art and Naomi Schaefer who, through their lives' work helped instill in me a love for both the environment and education.

I wish to express my deepest gratitude to the members of the Mosinee High School Social Studies Department for their support and assistance in the implementation of this project. A special thanks to my fellow American History II teacher, Amanda Bieri, for her willingness to review and implement the supplement activities.

I also wish to thank my colleague Cheryl Brimmer for bringing the EE Master's Program to my attention and providing much needed perspective.

My sincere thanks and appreciation to my advisor, Dr. Dennis Yockers of the University of Wisconsin-Stevens Point, for his guidance and support throughout the process of completing this project.

Finally, I would like to thank my parents, Phil and Jean Schaefer and the rest of my family for all of their support.
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CHAPTER 1: INTRODUCTION

STATEMENT OF THE PROBLEM

The purpose of this research is two-fold: develop and implement a supplement of environmental education activities designed to be infused into the sophomore level American History II curriculum at Mosinee High School; and measure faculty attitudes toward using the supplement and its impact on student awareness and knowledge of the role of the environment in American History.

THE SUBPROBLEMS

1. Analyze the current American History II curriculum at Mosinee High School and identify to what extent environmental education is addressed within the curriculum as well as identify areas in which infusion of environmental education would be beneficial.

2. Create a supplement of environmental education activities to be implemented in the American History II course at Mosinee High School.

3. Create a survey to measure Mosinee High School social studies teachers’ presupplement infusion attitudes toward environmental education and perceptions of student awareness and knowledge of the role of the environment in American History.
4. Create a survey to measure Mosinee High School social studies teachers’ attitudes toward environmental education, the use of supplemental environmental education activities in the American History II curriculum, and their perceptions of the impact of the supplemental activities on student awareness and knowledge of the role of the environment in American History.

5. Analyze and interpret the data from the surveys in order to determine teacher attitudes toward implementing the environmental education supplement and teacher perceptions of its impact on student awareness and knowledge of the role of the environment in American History.

THE HYPOTHESIS

1. The creation of an environmental education activities supplement for use in the American History II course will increase the amount of environmental education that is infused into the American History II course at Mosinee High School.

SIGNIFICANCE OF THE PROBLEM

The importance of this study lies in the need for the Social Studies curriculum at Mosinee High School to address the Wisconsin EE goals and academic standards as well as the need to build a bridge between the academic areas of social studies and science which all
too often are confined by students and teachers into separate areas with little in common. Currently, little environmental education is being done in history classes at Mosinee High School. The environment and attitudes toward it have strongly influenced the course of American history. The failure to address this influence is not only a failure to meet state academic standards, it is a failure to adequately prepare students to understand the forces that have shaped and will continue to influence their world. The implementation of the supplemental environment-focused activities in this study will help students to understand the interconnectedness of the world. History and the environment are all part of one system, each impacting the other.

LIMITATIONS

1. The study will not attempt to rewrite the American History II curriculum at Mosinee High School.

2. The study will not attempt to assess student perceptions of changes in their environmental awareness or knowledge as a result of the implementation of the activities in the environmental education supplement.

3. The post-implementation survey will only be taken by the two teachers who will be teaching the American History II course during the 2007-2008 school year.
DEFINITIONS OF TERMS

Environmental Attitude
Set of values and feelings of concern for the environment and the motivation to actively participate in environmental improvement and protection (UNESCO/UNEP, 1978).

Environmental Education (EE)
According to the Wisconsin Environmental Education Board (WEEB) Environmental Education is, “A lifelong learning process that leads to an informed and involved citizenry having the creative problem-solving skills, scientific and social literacy, ethical awareness and sensitivity for the relationship between humans and the environment, and commitment to engage in responsible individual and cooperative actions. By these actions, environmentally literate citizens will help ensure an ecologically and economically sustainable environment” (Wisconsin DPI, 1998).

Environmental Education Activities Supplement
This environmental education activities supplement includes activities that can be infused into the existing American History II curriculum at Mosinee High School. Activities included in the supplement will address the role of the environment in selected events in United States History.
Awareness

Acknowledgement that the environment had and will continue to have an impact on human events.

Knowledge

Acquisition of a basic understanding of the environment and its influence on human events.

Infusion

Infusion means selected environmental education activities are inserted into an existing curriculum in an effort to expand upon or support the existing curriculum (Ramsey, Hungerford, and Volk, 1992).

Mosinee High School

Mosinee High School is a four-year institution (Grades 9-12) with a student population of approximately 690. Mosinee High School is located in Mosinee, Wisconsin, approximately 130 miles north of Madison, Wisconsin.

ASSUMPTIONS

1. A survey can be developed to measure Mosinee High School Social Studies Teachers' attitudes toward environmental education, the use of supplementary environmental education activities in the American History II curriculum, and
their perceptions of the impact of the supplementary environmental education activities on student awareness and knowledge of the role of the environment in American History.

2. Social studies teachers at Mosinee High School will be willing to implement the environmental education activities provided in the supplement and complete corresponding surveys.
CHAPTER 2: REVIEW OF THE RELATED LITERATURE

Does Environmental Education (EE) belong in the Social Studies classroom?

According to Hungerford (2001), one of the myths of environmental education is that the science teacher is the only person who can successfully teach EE. Hungerford explains that many environmental issues can be considered more socio-cultural in nature, than scientific. Social studies classes are the logical location for such socio-cultural examinations (Hungerford, 2001).

Not only is it logical for EE to be taught in the social studies classroom, it is mandatory. The State of Wisconsin has issued the following mandate: “Environmental Education objectives and activities shall be integrated into the kindergarten through grade 12 sequential curriculum plans, with the greatest emphasis in art, health, science, and social studies education” (Engleson and Yockers, 1994). EE activities integrate skills and content across the social studies topics of history, geography, economics, and civics. The national social studies standards for each individual topic area have learning and instructional goals that are aligned with those of EE (EETAP, 1999).

The interconnectedness between the environment and history has long been recognized. Historian Frederick Jackson Turner said “the master key to American history is to be found in the relation of geography to that history” (Rocca, 1994). The five themes of geography set forth in the Guidelines for Geographic Education support this relationship. The themes of “Understanding human and environmental interaction” and
"Understanding human movement" directly connect history and the environment (Rocca, 1994). These themes provide another example of how EE is inherently connected to the social studies.

The history departments of most large universities have recognized the importance of teaching environmental history. These courses not only trace the history of the environmental movement, but also the concepts of frontiers, early resource laws, market forces and land use (Hall, 2003). As the Wisconsin EE Mandate makes clear, it is now imperative that our elementary and secondary history classrooms address environmental history as well. Ramsey, Hungerford, and Volk (1992) found that EE content and skills can often be infused into existing courses without interfering with the content and skills that are already present (Ramsey, Hungerford, and Volk, 1992). This can be done through the development of EE materials for use by non-science teachers within non-science subject areas (Culen, 2001). EE is inherently interdisciplinary and can help educators and students meet the standards set by traditional disciplines (Simmons, 2004). EE, because of its interdisciplinary nature, should be present in the social studies classroom.

Is an EE activities supplement for American History needed?

The ways to infuse and integrate EE into all academic disciplines seems unlimited. Indeed, the goals of EE strongly correspond to those of education in general. However, evidence indicates that interdisciplinary integration of EE across all disciplines and grade levels is not occurring. One of the major reasons for this lack of integration is deficiency in materials. In his article, The Status of Environmental Education with Respect to the
Goal of Responsible Citizenship Behavior, Culen delineates common failures in EE teaching resources: weakness in providing adequate background information and a lack of criteria for evaluating student performance. Culen concludes that without adequate background information and evaluation criteria, confidence among non-science teachers in their ability to effectively integrate EE into their classroom declines. Materials, therefore, should be developed for use by non-science teachers within non-science subject areas (Culen, 2001).

In a study of the attitudes and perceptions of Wisconsin teachers regarding teaching about the environment conducted by Lane and Wilke (1994), teachers who reported that they did not infuse EE concepts into their teaching cited materials as a factor. The second most common response given by these teachers as to what would influence them to teach about the environment was better access to resources (Lane and Wilke, 1994). A survey conducted by Smith-Sebasto (1998) showed similar findings with educators indicating better access to resources would influence the extent to which they would include EE concepts in their teaching. Access to quality EE materials is clearly a factor in many teachers’ decision whether or not to integrate EE concepts into their teaching.

What goals would a quality EE activities supplement for American History address?

The North American Association for Environmental Education (NAAEE) publication Excellence in Environmental Education-Guidelines for Learning (Pre K-12) presents four topic areas or strands that address different aspects of Environmental Education. The strands and their accompanying guidelines are correlated with national standards in other
subject areas including the Social Studies, history, geography, economics, civics and government. The strands are as follows: Strand 1: Questioning, Analysis and Interpretation Skills; Strand 2: Knowledge of Environmental Processes and Systems; Strand 3: Skills for Understanding and Addressing Environmental Issues; Strand Four: Personal and Civic Responsibility (1999). A quality EE activities supplement for American History would address each of the strands in some manner. The strand that most lends itself to incorporation in a history course is Strand 2: Knowledge of Environmental Processes and Systems, specifically, Strand 2.3-Humans and Their Societies and its guidelines A) Individuals and groups, B) Culture, C) Political and economic systems, and E) Change and conflict. Also with direct application to history are Strand 2.4 Environment and Society and it guidelines A) Human/environment interactions, B) Places, C) Resources, and D) Technology (NAAEE, 1999).

Wisconsin's Department of Public Instruction (DPI) also delineates key aspects of EE in its model academic standards for EE. The Wisconsin DPI divides EE standards into the following categories: Questioning and Analysis, Knowledge of Environmental Processes and Systems, Environmental Issue Investigation Skills, Decision and Action Skills, and Personal and Civic Responsibility (Wisconsin DPI, 1998). Quality EE materials in Wisconsin should address standards that fall under these categories.

Indeed, the Wisconsin DPI's academic standards for the Social Studies demonstrate that there are strong connections between EE and the Social Studies. For example, the following are Geography standards for Grade 12: A.12.5 *Use a variety of geographic*
information and resources to analyze and illustrate the ways in which the unequal global distribution of natural resources influences trade and shapes economic patterns; A.12.11 Describe scientific and technological development in various regions of the world and analyze the ways in which development affects environment and culture; and A.12.12 Assess the advantages and disadvantages of selected land use policies in the local community, Wisconsin, the United States and the world (Wisconsin DPI, 1998).

In addition to meeting the goals set by the state and national standards, an EE activities supplement for American History should use Environmental History to put other aspects of history into a broader context. As Brian Black states, “...history becomes a dynamic interplay between land or natural resources and human culture” (65, 2003). Black also highlights the idea of Carl Sauer that human activities are just a part of a larger system of life and must be understood as such. Environmental history can illustrate this perspective (Black, 2003). According to Kathryn Morse, “[Environmental History] connects the history of ideas about nature with the history of Americans’ actual physical efforts to transform the earth, and to draw material, social, and intellectual sustenance from the world around them” (68, 2003).

Summary
EE, by its very nature, is interdisciplinary. In order to meet state and national education standards, EE must be infused into a broad range of disciplines, including social studies. The infusion of EE into American History courses can be facilitated through the development of quality EE instructional materials and teacher in-services.
CHAPTER 3: METHODOLOGY

THE PROBLEM
The purpose of this research is two-fold: develop and implement a supplement of environmental education activities designed to be infused into the sophomore level American History II curriculum at Mosinee High School; and measure faculty attitudes toward using the supplement and its impact on student awareness and knowledge of the role of the environment in American History.

THE SPECIFIC TREATMENT OF EACH SUBPROBLEM
Subproblem 1: To analyze the current American History II curriculum at Mosinee High School to identify to what extent environmental education (EE) is addressed within the curriculum as well as identify areas in which infusion of EE would be beneficial.

The American History II curriculum will be analyzed to determine which Wisconsin Social Studies Standards related to EE it addresses. The curriculum will also be analyzed to determine which Wisconsin Environmental Education Standards it addresses. The Wisconsin Environmental Education Standards will be examined for applicability to American History II. A list will be generated of possible themes, units, and/or individual topics within the curriculum into which EE activities could be infused to address environmental education standards not previously addressed.
Subproblem 2: The creation of a supplement of EE activities to be implemented in the American History II course at Mosinee High School.

Specific themes, units, and/or individual topics for which supplementary EE activities will be developed or adapted will be identified. Research of existing Social Studies and EE resources, activities, and curricula will be conducted to identify the types of activities to generate or adapt for the supplement. Studies on effective EE practices will be reviewed and consulted as activities are developed.

After the supplement of activities is complete, an introduction explaining how teachers can use the supplement will be written. A bibliography of resources used in the development of the supplement will also be compiled.

Subproblem 3: The creation and implementation of a survey to measure Mosinee High School Social Studies Teachers' pre-supplement implementation attitudes toward environmental education and perceptions of student awareness and knowledge of the role of the environment in American History.

A review of previously developed evaluation tools of teacher attitudes toward environmental education will be conducted. The survey will be in the form of a rating scale and short answer questions. Additional qualitative information will be gathered by conducting interviews with the teachers. The survey will be implemented prior to the
beginning of the 2007-2008 school year. The data generated by the survey will then be compared and interpreted for meaning.

Subproblem 4: The creation and implementation of a post-implementation survey to measure Mosinee High School American History II Teachers' attitudes toward environmental education (EE), the use of supplemental EE activities in the American History II curriculum, and their perceptions of the impact of the supplemental activities on student awareness and knowledge of the role of the environment in American History.

A careful review of previously developed evaluation tools of teacher attitudes toward environmental education will be completed. The survey will be in the form of a rating scale and short answer questions. Additional qualitative information will be gathered by conducting interviews with the teachers.

The survey and interview will be implemented at the end of the semester during which the supplemental activities are to be infused into the curriculum. The data generated by the survey will then be compared and interpreted for meaning.

Subproblem 5: Comparison and interpretation of the data gathered from the surveys and interviews in order to determine teacher attitudes toward implementing the environmental education supplement and its impact on student awareness and knowledge of the role of the environment in American History.
Pre- and post-evaluation data will be compiled. Pre-survey results from each respondent will be compared to those from other respondents to determine the attitudes of individual teachers and the department as a whole toward environmental education. Post-implementation survey and interview responses will be analyzed to determine how much of the supplement was implemented and identify reasons supplement lessons were or were not enacted. The future likelihood of the use of the EE activities supplement for Mosinee High School will be explained and limitations of the study will be identified.
CHAPTER 4: RESULTS

Subproblem 1: To analyze the current American History II curriculum at Mosinee High School to identify to what extent environmental education (EE) is addressed within the curriculum as well as identify areas in which infusion of EE would be beneficial.

An inquiry into the existence of an Environmental Education (EE) Curriculum Plan for the Mosinee School District revealed that no such EE plan currently exists. Students are exposed to EE through Outdoor Education experiences and Science courses. However, in the curriculum data base, these courses are not linked to the EE Standards. It is not surprising that in a district that lacks an EE plan the history curriculum would have few links to EE.

A review of the American History II curriculum at Mosinee High School revealed that EE was not really addressed to any extent. The only Wisconsin Environmental Education Standard addressed to any clear measure was standard B.12.11 - Assess how changes in the availability and use of natural resources (especially water and energy sources) will affect society and human activities; such as, transportation, agricultural systems, manufacturing. The fact that this standard was addressed was a result of the nature of Wisconsin’s History as a lumbering center and not of a conscious effort by educators to include EE. Other Wisconsin EE Standards that could possibly be construed as being
addressed within the curriculum are listed in Table 4.1 Wisconsin EE Standards Addressed in American History II.

The extent to which these are possibly addressed is a result of the nature of the subject matter within the course. The Wisconsin History and Settling the Frontier and Industrialization Units, by the very nature of the subject matter, could be interpreted as addressing the above EE standards. However, any such occurrence is not expressly written into the curriculum.

**Table 4.1 Wisconsin EE Standards Addressed in American History II**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
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<tbody>
<tr>
<td>B.12.5</td>
<td>Analyze past and current trends in ecosystem degradation and species extinction</td>
</tr>
<tr>
<td>B.12.8</td>
<td>Relate the impact of human activities in ecosystems to the natural process of change, citing examples of succession, evolution, and extinction</td>
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<tr>
<td>B.12.9</td>
<td>Evaluate ways in which technology has expanded our ability to alter the environment and its capacity to support humans and other living organisms</td>
</tr>
<tr>
<td>B.12.10</td>
<td>Identify and evaluate multiple uses of natural resources and how society is influenced by the availability of these resources</td>
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<tr>
<td>B.12.14</td>
<td>Investigate how technological development has influenced human relationships and understanding of the environment</td>
</tr>
<tr>
<td>B.12.15</td>
<td>Describe changes in the rates of human population growth in various societies and the factors associated with those changes related to economic and environmental sustainability</td>
</tr>
<tr>
<td>B.12.16</td>
<td>Analyze how natural resource ownership and trade influences relationships in local, national, and global economies</td>
</tr>
<tr>
<td>B.12.22</td>
<td>Research individuals who have made important contributions to the field of resource management</td>
</tr>
<tr>
<td>C.12.1</td>
<td>Compare the effects of natural and human-caused activities that either contribute to or challenge an ecologically and economically sustainable environment</td>
</tr>
<tr>
<td>C.12.2</td>
<td>Explain the factors that contribute to the development of individual and societal values</td>
</tr>
<tr>
<td>C.12.3</td>
<td>Maintain a historical perspective when researching environmental issues; include past, present, and future considerations</td>
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There are many units within the American History II curriculum in which the infusion of EE would be beneficial. The units identified as those into which EE could be best infused were identified as: Westward Expansion, Wisconsin History, and Settling the Frontier and Industrialization. See Table 4.2 American History II Units of Study. These units were selected because the subject matter in each lends itself to the application of EE. Other units within the curriculum did not lend themselves toward EE infusion. Units that were determined to not be areas of EE infusion included: The War of 1812, the Era of Good Feelings, Jacksonian Democracy, An Era of Crisis and Compromise, and The Civil War.

Table 4.2 American History II Units of Study

<table>
<thead>
<tr>
<th>Unit Title</th>
<th>Best Potential for EE Infusion</th>
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<tbody>
<tr>
<td>Westward Expansion</td>
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<tr>
<td>The War of 1812</td>
<td></td>
</tr>
<tr>
<td>The Era of Good Feelings</td>
<td></td>
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<tr>
<td>Jacksonian Democracy</td>
<td></td>
</tr>
<tr>
<td>Wisconsin History</td>
<td>X</td>
</tr>
<tr>
<td>An Era of Crisis and Compromise</td>
<td></td>
</tr>
<tr>
<td>The Civil War &amp; Reconstruction</td>
<td></td>
</tr>
<tr>
<td>Settling the Frontier and Industrialization</td>
<td>X</td>
</tr>
</tbody>
</table>

Subproblem 2: The creation of a supplement of EE activities to be implemented in the American History II course at Mosinee High School.

Units in the American History II course at Mosinee High School into which EE activities would be infused were identified as Westward Expansion, Wisconsin History, and Settling the Frontier and Industrialization. It was determined that supplemental EE activities could be infused into these units while enhancing existing activities. The
intention of the supplemental activities was to increase the extent to which EE standards were addressed within the history curriculum and in so doing create a richer understanding of the role of the environment in American History.

Supplementary activities developed address the following topics: Lewis and Clark – Buffer Zones and the American Serengeti; Ecosystems and Wisconsin History; Water Crossings and Wisconsin History; Lumber Industry Influence on Marathon County; Water Use Then and Now; and Hetch Hetchy – Issue Analysis (See Appendix A).

The lesson Lewis and Clark – Buffer Zones and the American Serengeti was developed for the Western Expansion Unit. The lesson focuses on the factors that lead to a surplus or deficit of animal populations and how such a surplus/deficit impacted the Lewis and Clark Expedition. The Wisconsin History Unit includes the lesson Ecosystems and Wisconsin History which was adapted from an Ecology Infusion Portfolio Project created by the researcher for the NRES 612 course: Ecological Basis for Environmental Education. The Ecology Infusion Portfolio Project was designed to infuse the study of ecology into an American History course. Based on the history of Wisconsin’s forests, the lesson focuses on how the environment impacts the structure of human ecosystems and how human activities feedback of the environment. Also designed for the Wisconsin History Unit, the Water Crossings lesson is an adaptation of a Project WET activity of the same name. This brief activity has students consider the role rivers and streams had on the settlement of Wisconsin. The Lumber Industry Influence on Marathon County lesson is intended to provide students with an understanding of how the lumber industry
influenced the development of the county. The lesson is composed of several activities including a partial adaptation of Lesson 5: Many Forests, Many Values, Many Reasons from the LEAF Lesson Guide Unit 7-8. The remaining activities were designed for the Settling the Western Frontier and Industrialization Unit. Water Use Then and Now, which is meant to get students thinking about the role of water in their daily lives, is adapted from the Project WET activities The Long Haul and Easy Street. The Hetch Hetchy – Issue Analysis is a revision of an activity created by the researcher for the NRES 705 course: Environmental Issues Investigation & Action designed to infuse issue analysis into an American History course. This lesson is designed to teach students the proper methods of issue analysis using a key event in American Environmental History.

The activities were compiled into a binder of supplemental activities for American History II at Mosinee High School (See Appendix A). The activities were compiled in the order they would be conducted during the course. A uniform format was used which provided the lesson title, unit, time needed, materials needed, day-by-day instructions, assessment, standards addressed, and references. All handouts needed for each activity were provided after the reference section. A letter of introduction to educators on how to use the supplement was also written (See Appendix A).

Subproblem 3: The creation and implementation of a survey to measure Mosinee High School Social Studies Teachers’ pre-supplement integration of attitudes toward environmental education and perceptions of student awareness and knowledge of the role of the environment in American History.
An examination of existing evaluation tools of teacher attitudes toward EE and its implementation in their classroom showed several common topics. A survey conducted by Lane (1994) assessed perceived competencies, attitudes toward, and time devoted to EE by Wisconsin teachers. The survey also addressed reasons why teachers do not infuse EE and what would influence them to do so (Lane, 1994). A study conducted by Ernst (2007) assessed topics similar to Lane. Ernst asked questions regarding reasons educators infuse EE and influences on those educators’ abilities to use EE. Potential barriers to EE implementation were also addressed (Ernst, 2007). Smith-Sebasto (1998) also asked questions regarding the extent to which educators felt comfortable implementing EE programs, how much time they spent on EE, the importance educators put on meeting the goals of EE, and what factors would increase the use of EE concepts. The similar topics addressed by these studies demonstrated some of the items that must be addressed by the survey used to measure Mosinee High School Social Studies Teachers’ attitudes toward EE before using the EE history supplement.

The survey developed for Mosinee High School Social Studies Teachers was reviewed by the project advisor included five Likert-type questions and eight short answer questions (See Appendix B). The Likert-type items assessed teachers’ attitudes toward the role of EE in the social studies curriculum and American History curriculum, the current level of EE infusion, and the perceived amount of student awareness and knowledge regarding the role of the environment in American History. The short answer questions addressed the amount of EE training teachers had received, EE topics currently addressed,
requirements for further implementation of EE, and knowledge of Wisconsin Social Studies and Environmental Education Standards.

Subproblem 4: The creation and implementation of a post-survey to measure Mosinee High School American History II Teachers' attitudes toward environmental education (EE), the use of supplemental EE activities in the American History II curriculum, and their perceptions of the impact of the supplemental activities on student awareness and knowledge of the role of the environment in American History.

The post-implementation survey to measure Mosinee High School American History II Teachers' attitudes toward environmental education is identical to the pre-survey with the addition of one-on-one interview questions (See Appendix C). Unlike the pre-survey, which was administered to the entire social studies department, the post-survey with interview questions was administered to only those teachers who implemented the supplement plans. Only two instructors teach the course for which the supplement was designed and, therefore, are the only members of the department who had the opportunity to implement the supplement's lessons.

Subproblem 5: Comparison and interpretation of the data gathered from the pre- and post-surveys and interviews in order to determine teacher attitudes toward implementing the environmental education supplement and its impact on student awareness and knowledge of the role of the environment in American History.
Pre-Implementation Survey

The pre-survey was administered in August 2007 to all five members of the Mosinee High School Social Studies Department (See Appendix B). All members of the department indicated they had taken an Environmental Education course. One member initially responded they had not taken a course, but upon further discussion realized they had probably taken an EE course because it was a program requirement. Another responded that their EE course was “a long time ago.” Three department members were able to identify the topic(s) of the EE course(s) they had taken.

The department members were in relative agreement regarding the role of EE in the curriculum. Four of five respondents indicated a level of agreement with the statement “EE has a place in the high school social studies curriculum” while all five were in agreement that “EE has a place in the American History curriculum.”

The department members were split in their responses regarding their perception of student awareness and knowledge of the role of the environment in history. In response to the statement “I feel that my students are aware of the role of the environment in American History,” two answered “Agree” while three indicated “Moderately Disagree.” The split was also apparent in the responses to the fifth item “I feel that my students are knowledgeable regarding the role of the environment in History.” The responses were evenly spread between “Agree,” “Disagree,” and “Moderately Disagree.” Two people answered “Strongly Disagree.”
The department was also split regarding the extent to which it infused EE. Two teachers responded they often incorporate EE into their courses. When asked to briefly describe how they incorporated EE into their courses (topics, activities, etc), these teachers identified the Wisconsin History Unit and enrichment activities such as looking at the environmental recovery of Hiroshima and Nagasaki after the atomic bombs dropped. The one teacher who answered she “Sometimes” addresses EE identified the following topic areas she covers: the role of government in regulating environmental issues, the conservation movement (John Muir, Theodore Roosevelt), and westward expansion (buffalo, Native Americans, trains, etc.). The remaining two members of the department said they rarely use EE. One of these teachers listed the failure of the Jamestown colony due to environmental conditions, the development of different economies in the Northern and Southern United States due to climate and land features, Southern dependence on slave labor and king cotton, and oil in the Middle East as EE topics she covers in her courses. The remaining teacher did not list any EE related topics covered in her courses.

All department members indicated they would be willing to infuse EE into their American History courses if they were given lesson plans and materials that fit into the existing course sequence and structure. All members also indicated that in order to feel more comfortable implementing EE into their courses they would need more time and professional development on the EE standards and issues to be covered.

The entire department indicated an awareness that some of the Wisconsin Social Studies Standards related to the environment and only one member was unaware that Wisconsin
had model academic standards for EE. However, two department members did not know that many of the Wisconsin EE standards correspond to the social studies.

The pre-survey indicated the extent to which the department infused EE into their courses varied greatly and often depended on the nature of the course material.

Post-Implementation Survey and Interview

The post-implementation survey and interview were conducted in the spring of 2008. Only the two members of the Mosinee High School Social Studies Department who teach American History II and had the opportunity to implement the supplement took part in the post-survey and interview.

A comparison of the pre- and post-survey responses indicates a minimal increase in teacher awareness and attitudes toward EE. One possible explanation for this is the two teachers taking part had indicated a positive attitude toward EE in the pre-survey. With the exception of the item indicating how EE is incorporated into courses, only two survey questions showed a change from the pre- to post-surveys. Both teachers indicated on their pre-surveys that they “Strongly Disagreed” with the statement “I feel that my students are knowledgeable regarding the role of the environment in American History.” On the post-survey one respondent changed her answer to “Moderately Disagree” while the other changed it to “Disagree.” The second change was an indication by one of the teachers that, post-implementation, she was aware of the existence of the Wisconsin Model Academic Standards for EE.
The post-implementation interview revealed the extent to which the supplement's lessons were used in American History II. Both teachers indicated they had implemented at least portions of three of the six lessons. The lessons implemented, at least in part, were Lewis & Clark-Buffer Zones and the American Serengeti, Ecosystems and Wisconsin History, and Water Use Then & Now.

Both teachers implemented Lewis & Clark-Buffer Zones and the American Serengeti in its entirety. The instructors felt that the lesson was easily infused into the existing curriculum and had a positive impact on student awareness and knowledge of the role of the environment in the targeted time period of American History.

The Ecosystems and Wisconsin History lesson was implemented, in part, by both teachers. Both teachers incorporated the lesson's reading A Brief History of Wisconsin's Forests into their Wisconsin History Unit. Only one of the teachers framed the reading discussion using the lesson questions: How does the environment impact the structure of human ecosystems? and How does the activity of a human ecosystem feedback on the environment? This teacher indicated she continued to use the questions throughout the remainder of the semester to frame other content material. Neither teacher implemented Days 2-6 of the lesson. Both cited time constraints for this decision and one also indicated being uncomfortable with the science content.

The Water Use Then & Now lesson was implemented in almost its entirety by both instructors. The classes calculated the water use of an 1890 family and compared it to
their own current use. This activity led to some spirited class discussions on water use. Neither teacher was able to implement the water carrying competition due to winter weather. Both indicated their intention to implement this activity during the second semester.

Regarding the remaining three lessons, both indicated that they chose not to implement them due to time constraints. There are 90 days per semester. When standardized testing days, special event days, and final exam days are taken into account, there were only 82 days left for instruction during the first semester. Six to seven of those days, depending on the teacher, were used to implement lessons from the EE supplement. That calculates to 7.3-8.5% of instructional time devoted to EE.

When asked what, in addition to more instructional time, she would need to implement the other lessons, one teacher reported she would need a stronger background in the scientific issues. This concern was especially strong for the Hetch Hetchy-Issue Analysis lesson. Suggestions for improving the supplement also included adding a table of contents, which was later added (See Appendix A). The use of the supplement also sparked discussion about other EE related activities that could be infused into the course, including a Project WILD activity about cotton production.

Overall, the teachers who used the supplement found it to be useful. The organization of the lessons and accompanying materials was easy to follow and the information presented fit into the existing curriculum. The teachers felt their students responded positively to
the EE infusion activities and both teachers indicated they would use portions of the supplement in the future.
CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

SUPPORT FOR THE HYPOTHESIS

The creation of an environmental education activities supplement for use in the American History II course will increase the amount of environmental education that is infused into the American History II course at Mosinee High School.

The supplement of EE activities designed for infusion in Mosinee High School’s American History II course was successful in increasing the amount of EE addressed in the course. A review of EE standards and EE related social studies standards, along with a review of the areas of study enabled the identification of units into which EE activities could most easily be infused into the existing curriculum. Six lessons were designed and compiled into a supplement for use by course teachers. During the semester the supplement was implemented, the number of days dedicated to purposeful EE infusion in the course increased by as much as eight and a half percent (6-7 class periods) over previous semesters. The lessons that were infused resulted in positive feedback from teachers and the survey of department members indicated an overall acceptance of including EE in the social studies curriculum.

IMPLICATIONS FOR EE IN SOCIAL STUDIES EDUCATION

The creation and implementation of the supplement did highlight some challenges facing the infusion of EE into any existing curriculum. Results from the pre- and post-surveys and interviews indicated two major hurdles that need to be crossed if EE is ever going to
be purposefully addressed across the social studies curriculum. These hurdles are increased professional development opportunities and preparation time. A third problem specific to the Mosinee School District came to light during supplement preparation: the absence of a district EE plan.

The first challenge is increasing educators’ experience with EE. While department members indicated a positive attitude toward EE and remembered having taken a course in EE, many said they would need more professional development before they felt comfortable teaching EE. This challenge could be met by the researcher providing the department with the necessary training specifically targeted toward the needs of the department. The department could also dedicate the professional development funds it receives during alternate years to attend an EE conference.

The second challenge facing EE implementation across the social studies curriculum is time. The need for more class time and preparation time was expressed throughout the department as necessary for EE implementation. While it is unlikely that additional preparation time can be obtained, department members do have the opportunity to collaborate for one hour every two weeks. In addition to using the time for restructuring the curriculum, the department could set aside some of that time to discuss ways in which EE could be infused into the new curriculum. This collaborative time could help the department decide how it can address EE throughout the curriculum, making EE not just an addition to the existing curriculum, but an integral component of the revised curriculum.
In a school district, such as Mosinee, that does not currently have an EE curriculum plan, it may be difficult to meet these challenges. As will be discussed later, the high school social studies department is working to develop its own EE plan of action. Convincing the school district to support and adopt a district-wide K-12 EE curriculum plan is the third challenge. Until the district adopts an EE plan, individual departments and teachers will have to go it alone if they hope to meet the EE standards.

The Social Studies Department at Mosinee High School has begun to take the necessary steps toward meeting the EE standards. The supplement of EE activities for American History II was the first step. The next step is revising the departmental curriculum to shift the starting time period addressed in the American History curriculum from exploration to the mid-19th century. This shift will allow more in-depth coverage of events and will allow for more time to include EE. The curriculum revision will also include the creation of an Environmental History Course. The concept for the course has been received positively by all members of the department and by school administration. A course description and unit list will be written by the fall of 2008 and submitted to the district’s Curriculum and Standards Committee for review and approval. The projected start date for the course is the 2010-2011 school year.
PROPOSED RECOMMENDATIONS FOR FURTHER EE INFUSION
INTO THE MOSINEE HIGH SCHOOL SOCIAL STUDIES CURRICULUM

1. Conduct an EE professional development seminar for the Social Studies Department and/or dedicate professional development funds for department members to attend an EE conference or workshop.

2. Continue implementation of the Supplement of EE Activities for American History II.

3. Use department collaborative time to identify ways in which EE could be further infused into existing high school social studies courses.

4. Expand curriculum revision and development to address EE standards across the social studies curriculum, including the development of an Environmental History course.

5. Research impact of Social Studies EE curriculum on student learning.

6. Advocate for the development and adoption of a district-wide K-12 EE curriculum plan.

Beyond the classrooms of the Mosinee School District, more needs to be done to increase how social studies teachers address EE. As the review of the literature indicates, there is strong support for the infusion of EE into the social studies curriculum. A review of the Social Studies journals indicates research of actual application of EE in secondary social studies classrooms, however, is limited. In order to encourage wide-spread application of EE in social studies classrooms, there needs to be a unified effort by a large number of
social studies educators who work together to develop lesson plans and teaching modules that address social studies topics from an EE point of view. Such a consortium could contribute greatly to how and how much EE is infused into social studies classrooms.
REFERENCES


Wisconsin Department of Public Instruction. (1998). Wisconsin’s Model Academic Standards for Environmental Education.

APPENDIX A

LETTER OF INTRODUCTION

&

SUPPLEMENT OF EE ACTIVITIES
Dear Educator,

The following is a compilation of activities that are designed to infuse Environmental Education into the American History II curriculum at Mosinee High School. Activities are presented in the order in which they are meant to be implemented. The curricular unit in which each is designed to be used is clearly stated under the lesson title.

To facilitate use, there is a uniform format for all lesson information. In addition to the title and unit, the time required, materials needed, assessment, and references used for each lesson are provided. All handouts required for each lesson are provided at the end of the lesson description.

These lessons are meant to provide students with a richer understanding of how the environment influenced American History. Please feel free to change and adapt the lessons as necessary for use in your classroom.

Sincerely,

Bethany Schaefer
Mosinee High School
Social Studies Department
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For the Teacher Background Information on Hetch Hetchy  p.65
Lesson Title: Lewis & Clark-Buffer Zones and the American Serengeti

Unit: Westward Expansion – Lewis and Clark Section

Time needed: Three 43-minute class periods

Materials needed:
Access to the internet (Student Access for Day 1, Teacher access for Days 2 & 3)
LCD Projector (optional)
Handout “Bison in Decline” Preface questions and Map

DAY 1

Internet Activity: Lewis and Clark Into the Unknown journal entry and Discoveries sheet (see Lewis & Clark Corps of Discovery handout).

DAY 2

Day 2 Part 1

Introduction
Over the last few days we have been discussing Lewis and Clark. On the Discoveries sheet you noted many of the species that they observed and discovered along the way. One animal that they discussed in their journals was the bison. The story of the buffalo shows the tremendous change settlement had on the animals that existed on the land long before European settlement. We will be following the story of the bison throughout our study of the 1800s.

Preface (http://www.lewis-clark.org/content/content-article.asp?ArticleID=451)
Students will read the Preface to “Bison in Decline” and answer the following questions (answers are in bold):

1. Do we know for certain the number of bison in North America at the time of the Lewis and Clark expedition? No

2. When settlers on the eastern and gulf coasts began growing their own crops, how did they begin to view bison? The began to be seen as mammalian “weeds” and bovine “rats”.

3. What happened to the bison as settlers began moving west? They were killed or pushed westward.

4. After what year were there no wild bison east of the Mississippi River? 1832
5. What new circumstances in the 19th century would cause the downfall of the bison in North America? *Climate changes, habitat, demography, technology, politics, and economics*

6. How may wild bison were believed to be remaining in the United States by the 1880s? **835**

**Day 2 Part 2 Map**

Provide students with an outline map of the United States. Direct them to depict on the map the progressive decline of the bison using the information from the reading and using the maps in their texts. Remind them that they are to fill out the legend and label their maps. Students should label the following: (*Note 2 items on the map the “American Serengeti” and “Major Buffer Zone” are will be covered in Day 2.)

***Wisconsin Connection: Bison were once found in southeastern Wisconsin, but they were extirpated (killed off/none left in the area) by the early 1830s. The last two bison east of the Mississippi River were shot in Wisconsin in 1832.*

- Bison absent by 1730
- Bison absent by 1760
- Bison absent by 1790
- Bison absent by 1801
- Bison absent after 1832

*Optional Activity: Students will select one of the “Discoveries” from the Lewis & Clark Corps of Discovery handout and identify the location of that discovery on either their own map or a compilation class map.

**DAY 3**

Identify the learning target for the day:

- Define, Locate, and explain the significance of the “American Serengeti” and “Buffer Zones”.

**Day 3 Part 1**

Students should watch the lecture sections “American Serengeti” and “A Peaceable Kingdom” by Dan Flores (and/or read the text). See the links below. During this activity, students should identify the location of the “American Serengeti” and why it was given that name. Students also need to define what is meant by “Buffer Zones.”

http://www.lewis-clark.org/content/content-channel.asp?ChannelID=117

**Day 3 Part 2**

Students will identify the location of the “American Serengeti” on the Map.
Assessment: In addition to grading the maps, a series of questions regarding the map will be asked on the unit test along with the following essay question.

Essay Question: Explain what is meant by the term “buffer zone” and how the presence and absence of buffer zones affected the Lewis and Clark Expedition.

Standards Addressed

WI Social Studies Standards

A.12.4 Analyze the short-term and long-term effects that major changes in population in various parts of the world have had or might have on the environment

A.12.13 Give examples and analyze conflict and cooperation in the establishment of cultural regions and political boundaries

B.12.12 Analyze the history, culture, tribal sovereignty, and current status of the American Indian tribes and bands in Wisconsin

WI Environmental Education Standards

B.12.2 Describe the value of ecosystems* from a natural and human perspective; e.g., food, shelter, flood control, water purification

B.12.8 Relate the impact of human activities in ecosystems* to the natural process of change, citing examples of succession, * evolution, * and extinction (see SC Earth and Space Science)

B.12.13 Analyze how different political and governmental systems manage resource development, distribution, consumption, and waste* disposal (see SS Political Science and Citizenship: Power, Authority, Governance, and Responsibility)
Lesson Title: Ecosystems and Wisconsin History

Unit: Wisconsin History

Time: Six 43-minute class periods (can be shortened to 2 periods, if student research is not conducted.

Materials: Copies of A Brief History of Wisconsin’s Forests
Copies of Vocabulary list (optional)

DAY 1

Day 1 Part 1
Introductory Brainstorming (Time: Approximately 5-10 minutes)
Introduce the Activity by informing students that over the next few days they will be studying Wisconsin History. Wisconsin History is generally taught in Fourth Grade. Ask students to brainstorm topics they remember from their earlier studies of Wisconsin History. Place a list on the board. Questions that may help students remember include: Who were among the earliest inhabitants of the state? Do you remember specific tribal names? Why did the first Europeans come to Wisconsin? Why did Europeans come to northern Wisconsin?

Day 1 Part 2
Introductory Instruction (Time: Approximately 10-15 minutes)
After the class has generated their list of ideas, ask the students: What was one thing everyone in Wisconsin prior to 1900 had in common? Student answers will vary. Point out that all of the groups had some connection with the environment. Introduce to students that over the next few days, they will be examining the role the environment had in influencing Wisconsin History. Write the following questions on the board and direct students to write them in their notes:
1. How does the environment impact the structure of human ecosystems?
2. How does the activity of a human ecosystem feedback on the environment? (Ginnett, 2006b)

Then, ask students: How many of you know what an ecosystem is? What is it? Instruct students to write the following definition in their notes: Ecosystem: an assemblage of organisms together with their physical and chemical environment (Ginnett, 2006c). Then ask students to put the definition in their own words.

Then discuss with students what each of the questions above is asking. Make sure to make the following clarifications: Humans have interacted with and had an impact upon the natural environment throughout human history. Different groups of people, at different times, have had different interactions and impacts. Question 1: Humans have lived and developed in natural ecosystems. Therefore, their cultural traditions are often linked to the ecology of the area in which they live. Question 2: Humans’ increasing resource consumption has had an impact on the environment (habitat loss/degradation) (Ginnett, 2006b). Once students understand what the questions are asking, move on to the
next activity. *These questions can be used to evaluate any future topic in the course, especially during the Frontier and Industrialization Unit.
Note: One way to measure student understanding of the questions is to have them work in groups to restate them in their own words and report back to the class as a whole.

**Day 1 Part 3**

**Jigsaw or Individual Application Activity (Time: Approximately 25 minutes)**

Pass out a copy of the reading *A Brief History of Wisconsin’s Forests* or have students access the article online (see Literature Cited) (*A Brief History*). Divide students into groups of six. Each group should be broken down in to pairs of two. Assign each pair a section of the article to read and use to answer the two ecosystem questions. The article can then be divided into the following sections: Forests Before European-American Settlement, Forests Since European-American Settlement, and Conservation. After each pair has concluded its activities, the groups should come together and share their results. Note: This activity can be done in a variety of groups as well as individually. As a class, discuss general findings.

**Assessment:** Collect the written responses for each student pair. Evaluation of written responses will vary from teacher to teacher. Mosinee High School is in the process of implementing the 6+1 Traits of writing, thus evaluation at Mosinee will be conducted using the Ideas and Organization areas of the 6+1 Scoring Rubric.

**Assignment:** Each student is to read the entire article *A Brief History of Wisconsin’s Forests.*

**DAY 2**

**Day 2 Part 1**

**Introductory Activity (Time: Approximately 5 minutes)**

As students enter, direct them to copy the following terms and definitions into their notes OR provide students with a copy:

**Disturbance:** A natural or human action that causes change in forest ecosystems by damaging or killing some existing plants (e.g., fire, flooding, logging, insect infestation, wind).

**Succession:** The change from one biologic community to another over time.

**Primary Succession:** The establishment of vegetation in an area that lacks biologic communities, soil and immediate sources for plant reproduction.

**Secondary Succession:** The establishment of vegetation in an area that has some plant remnants capable of reproduction.

**Ecosystem Culture:** Cultures that exist in a close relationship with the natural resource base and have a relatively low impact on landscape ecology.

**Exploitation Culture:** Cultures that have a utilitarian and market approach to natural resources. (Ginnett, 2006a).

**Day 2 Part 2**

**Introductory Discussion (Time: Approximately 5 minutes)**
Going term by term, ask the students to describe how each of the above terms applies to the history of Wisconsin’s forests. If students are struggling, have them refer back to their reading assignment, *A Brief History of Wisconsin’s Forests*.

**Day 2 Part 3**

**Place-Based Ecological Issue (Time: Remainder of the class period – Time will vary)**

There are several options for place-based inquiry that can be developed to correspond to many localities around northern Wisconsin. Many local historical societies are willing and eager to develop programs for students. For the purposes of this lesson, one of the following activities will be planned in anticipated partnership with the Marathon County Historical Society: 1. A walking tour of Mosinee highlighting the connections to the lumber industry. 2. A guest speaker on Marathon County logging and forest history. 3. A field trip to Wausau, WI to visit the Marathon County Historical Society and take a walking tour of the city (with an emphasis on connections to the logging history). 4. A field trip to different types of forests in the local area so students can experience the different stages of succession.

**DAYS 3 & 4**

**Interactive Inquiry, Integrated Curriculum, and Multicultural Component Activity (Time: Approximately 2 hours)**

Introduce students to their research activity for the unit. Concept: Each student (or group of students) will select (or be assigned) one cultural group from Wisconsin History. Each group will then create a scrapbook or poster containing the following: 1. A description of that group’s activities and interactions with the environment that answers the three Human Ecology questions from Day 1; 2. One written primary source from the group describing interactions with the land (either in their homeland, Wisconsin, or both) accompanied by a one paragraph student summary of the source.; 3. A map of where their assigned cultural group lived in Wisconsin; 4. A second artifact (drawing, photo, song, etc.) illustrating the cultural group’s impact or reliance upon the environment accompanied by a one paragraph description of the artifact and its significance; and 5. A list of Works Cited.

The following is a list of potential topics: Ojibwa (Chippewa), Menominee, Dakota, Ho-Chunk, French, Norwegians, Swedes, Fins, Polish, Germans, (Loggers, or life in a lumber camp could also be considered a culture).

Plan at least two days of research in the school library and/or writing lab. One excellent research web site to have students visit is that of the Wisconsin Historical Society (www.wisconsinhistory.org).

**DAY 5**

**Project Presentation & Discussion (Time: 1 hour)**

Divide students into small groups (group size will vary depending on class size). Each group will present their project findings to small groups during each round (each student presenting their findings to approximately three small groups). After each group member has presented to three groups, the next group of presenters take their place. This
is a variation of a round-robin technique that is usually less intimidating for student presenters and it allows them to refine their presentation with each group.

**DAY 6**
Quiz (See assessments). You may also choose to have each student to an informal reflection paragraph on what they learned during the Wisconsin History Activities.

**Assessments**
Please see following pages.
Vocabulary Quiz

Part A – Matching. Directions: Match the term with its corresponding meaning. Write the letter of each term next to the definition.

a. Disturbance
b. Succession
c. Primary Succession
d. Secondary Succession
e. Ecosystem Culture
f. Exploitation Culture

____ 1. The change from one biologic community to another over time.
____ 2. A natural or human action that causes change in forest ecosystems by damaging or killing some existing plants (e.g., fire, flooding, logging, insect infestation, wind).
____ 3. The establishment of vegetation in an area that lacks biologic communities, soil and immediate sources for plant reproduction.
____ 4. Cultures that have a utilitarian and market approach to natural resources.
____ 5. Cultures that exist in a close relationship with the natural resource base and have a relatively low impact on landscape ecology.
____ 6. The establishment of vegetation in an area that has some plant remnants capable of reproduction.

Part B – Short Answer. Directions: In the space below (or on back), write one to two paragraphs describing the role of humans in the ecological history of Wisconsin’s Forests. You must use all six vocabulary words from Part A.
**Assessment: Sample Project Rubric**

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**TOTAL (48 Points Possible)**

Comments:
Standards Addressed:

WI Social Studies Standards

A.12.1 Use various types of atlases and appropriate vocabulary to describe the physical attributes of a place or region, employing such concepts as climate, plate tectonics, volcanism, and landforms, and to describe the human attributes, employing such concepts as demographics, birth and death rates, doubling time, emigration, and immigration

B.12.2 Analyze primary and secondary sources related to a historical question to evaluate their relevance, make comparisons, integrate new information with prior knowledge, and come to a reasoned conclusion

B.12.12 Analyze the history, culture, tribal sovereignty, and current status of the American Indian tribes and bands in Wisconsin

D.12.6 Use economic concepts to analyze historical and contemporary questions about economic development in the United States and the world

WI Environmental Education Standards

B.12.2 Describe the value of ecosystems from a natural and human perspective; e.g., food, shelter, flood control, water purification

B.12.5 Analyze past and current trends in ecosystem degradation and species extinction

B.12.8 Relate the impact of human activities in ecosystems to the natural process of change, citing examples of succession, evolution, and extinction

B.12.10 Identify and evaluate multiple uses of natural resources and how society is influenced by the availability of these resources

C.12.1 Compare the effects of natural and human-caused activities that either contribute to or challenge an ecologically and economically sustainable environment

C.12.3 Maintain a historical perspective when researching environmental issues; include past, present, and future considerations

D.12.6 Identify and analyze examples of the impact beliefs and values have on environmental decisions
References:


Lesson Title: Water Crossings and Wisconsin History  
(Adapted from Project WET)

Unit: Wisconsin History

Time: One or Two 43-minute class periods

Materials: Map - Wisconsin Watersheds (1 per student/group) 
Map – Wisconsin Road Map

DAY 1

Day 1 Part 1

Pass out map of Wisconsin Watersheds to students. Review with students what a watershed is. Direct students to identify (using different color markers) how they (as an early explorer) would travel between selected locations. Some of the locations will favor using the rivers for transportation; others will call for river crossings and land travel. Students will then share their decisions in a class discussion.

Day 1 Part 2

Using a current Wisconsin road map, students will identify if there are cities or bridges located near their selected river crossing sites. Students will mark those cities and bridges on their map.

Day 1 Part 3 (Or continuation to Day 2)

Direct students to describe what the positive and negative impacts are of a crossing site on a region. Students should also identify four present cities that they believe were impacted by their location near a body of water or river.

Assessment: Assessment will be based on student essays describing what the positive and negative impacts are of a crossing site on region. Map completion should also be noted. A test question may also be used.

Standards Addressed:

WI Social Studies Standards

A.12.1 Use various types of atlases and appropriate vocabulary to describe the physical attributes of a place or region, employing such concepts as climate, plate tectonics, volcanism, and landforms, and to describe the human attributes, employing such concepts as demographics, birth and death rates, doubling time, emigration, and immigration
A.12.5 Use a variety of geographic information and resources to analyze and illustrate the ways in which the unequal global distribution of natural resources influences trade and shapes economic patterns

WI Environmental Education Standards

B.12.11 Assess how changes in the availability and use of natural resources* (especially water and energy* sources) will affect society and human activities; such as, transportation, agricultural systems, manufacturing

Reference

Lesson Title: Lumber Industry Influence on Marathon County

Unit: Wisconsin History

Time: Eight 43-minute class periods

Special Preparation:

- Contact Marathon County Historical Society (MCHS) at least 2 weeks in advance to arrange the slide/artifact program “Early History of Wausau” (if funds are available for field trip, arrange also for a walking tour of the historic district). *Note: If a field trip is not possible, the MCHS will travel to your classroom to present their program.
- Arrange for field trip funds, bus, forms.

Materials:

- Copies of “Wisconsin Forests and Communities, Then & Now” questions from the LEAF Guide Unit 7-8 Lesson 5. One copy per group
- Video: “Of Time and Timber” – A history of lumbering in the Wisconsin River Valley from 1839-1840

DAY 1

1. Starting Activity (students work on for the first 5 minutes of class): On a sheet of paper, list 3 interesting facts you have learned so far in this unit and then share them with the person sitting next to you.
2. Facilitate class discussion of Starting Activity answers.
3. Divide students into groups.
4. Distribute “Wisconsin Forests and Communities, Then & Now” questions (1 per group) and direct students to work together to provide and answer for each question. (Allow approximately 15 minutes).
5. Facilitate class discussion of student answers.
6. Explain Day 2 Guest Speaker/Field Trip to students. As they can see from the questions, the logging industry played a major role in the founding of their community. The MCHS speaker/trip will provide a program about Wausau. Explain to students that upon their return they will begin to develop a similar program for Mosinee. (Final collection of permission forms, wrap up details.)
7. Show a portion of video “Of Time and Timber”.

DAY 2

1. Field Trip/Guest Speaker – MCHS “Early History of Wausau” slide/artifact program and walking tour of Wausau’s Historic District.
DAY 3

1. Starting Activity: On a sheet of paper list 3 interesting fact from yesterday’s program. Also list 3 places or people that were mentioned.
2. Facilitate class discussion of their responses and other comments on the program. Emphasize the importance of the location of natural resources.
3. Facilitate class or group brainstorming session about how students think Mosinee’s development may have been similar to or different from that of Wausau.
4. Continue brainstorming topics that the class could investigate in the creation of their class program on Mosinee.
5. Assignment: Students will generate a list of five topics they are interested in researching.

DAY 4

1. Starting Activity: Please take out your topic list and share your ideas with the person(s) sitting next to you.
2. Facilitate the development of a class list of topics.
3. Divide students into pairs/groups (as necessary by topics available). Assign topics or have groups select topics.
4. Work with the students to develop a list of expectations for their project. Use this list to develop a grading rubric.
5. Facilitate class brainstorming/discussion of how to research the project.
6. Assignment: Begin research on your project.

DAY 5

1. Research session and/or guest speaker from the community.
2. Assignment: Continue project research.

DAY 6

*Note: Additional days for research should be provided after Day 5. Continue with other topics in current unit before Day 6.

1. In class project work day. Students should compile their information, write their explanation, determine project layout.

DAY 7

1. Starting Activity: Please have your project on your desk.
2. As students provide a brief presentation of their projects, have them locate a position on a class map of downtown Mosinee that best correlates with their topic. If selecting a location is difficult for the group, the class can work together to select one.
3. After all locations are selected, work with the class to develop the route of their walking tour.
4. Collect the projects (printed copies of PowerPoint Slides). *The teacher will need to make copies of the projects (in walking tour order) and map. This will form the walking tour guide.

**DAY 8**

1. Take the class on their walking tour of downtown Mosinee. Stop at each location and allow each project group to read their explanation and answer any questions from the class.
2. Return to class and discuss the success of their tour and how they can share their product with the community. Find future class time to carry through on these suggestions.

**Assessment:**
- Short Answer/Essay Questions on the Unit Test.
- Student Projects. The assessment rubric will be created, in part, with the students. Projects must include three cited sources, one visual image, and an explanation of the importance and environmental connection of the topic.

**Standards Addressed:**

**WI Social Studies Standards**

B.12.2 Analyze primary and secondary sources related to a historical question to evaluate their relevance, make comparisons, integrate new information with prior knowledge, and come to a reasoned conclusion

B.12.8 Recall, select, and explain the significance of important people, their work, and their ideas in the areas of political and intellectual leadership, inventions, discoveries, and the arts, within each major era of Wisconsin, United States, and world history

A.12.11 Describe scientific and technological development in various regions of the world and analyze the ways in which development affects environment and culture

**WI Environmental Education Standards**

C.12.3 Maintain a historical perspective when researching environmental issues; include past, present and future considerations
References:

http://marathoncountyhistory.com

Lesson Title: Water Use Then & Now

Unit: Settling the Frontier and Industrialization

Time: Two+ 43-minute class periods

Materials: Project WET K-12 Curriculum & Activity Guide for worksheets
Copies of Water Use Calculations Worksheet
Copies or transparency of Drought Days Simulation Water Use Chart
Calculators (optional)

DAY 1

Background: As part of this unit students will already be viewing portions of the PBS Series Frontier House. The series is a reality show in which three families from the year 2001 are given the challenge of living like 1883 Homesteaders on the Montana Frontier.

Day 1 Part 1

Students will view Frontier House Episode 2 Ch. 2 Shelter First. This segment is approximately 17 minutes long. However, it can be shortened to 10 minutes if needed by starting at approximately 22:00 minutes on the clock. This segment shows the families dealing with carrying their water from the source creek to their cabins and dealing with other water related issues, such as the use of the outhouse.

Day 1 Part 2

Students will read and fill out the Drought Days Simulation worksheet that will allow them to figure out how much water an 1890s homestead would use.

Day 1 Part 3

As a class, discuss the students’ findings. Does the Frontier House family have reason to complain?

Assignment: Students are to make a list of all of the ways they use water in one day.

DAY 2

Day 2 Part 1

Class compilation of water use. As a class, generate the list of ways students said they used water in a day. Then, using the chart of present-day water use found on the Drought Days Simulation worksheet figure out the approximate water use of the students based on their list. (Other resources can be consulted for approximate water usage for specific activities, if needed.)
Day 2 Part 2 (optional)

Now is the students chance to see what it was like to carry all of the water they use in a day. Divide the students into a minimum of 2 teams. Give each team two one-gallon buckets (or other water carrying containers). Starting at a water source, the teams will work to carry the water in their containers 150 feet (the distance the Frontier House families had to carry their water) to a large trash container. The first one to fill the container to the top (or designated height) will win.

Assessment:
Students will write a one page reaction paper in which they discuss how much water on average they use in one day, how that compares to an 1890 homestead family, what changes have occurred in the last 100 years to increase water use, and what activities they would cut back on if they had to carry all of the water they used in one day. On Day 3, discuss their responses.

Standards Addressed:

WI Social Studies Standards
B.12.9 Select significant changes caused by technology, industrialization, urbanization, and population growth, and analyze the effects of these changes in the United States and the world

WI Environmental Education Standards
B.12.10 Identify and evaluate multiple uses of natural resources* and how society* is influenced by the availability of these resources
B.12.11 Assess how changes in the availability and use of natural resources* (especially water and energy* sources) will affect society and human activities; such as, transportation, agricultural systems, manufacturing
C.12.3 Maintain a historical perspective when researching environmental issues;* include past, present, and future considerations

References

Lesson Title: Hetch Hetchy – Issue Analysis

Unit: Settling the Frontier and Industrialization

Time: Three 43-minute class periods

Materials:
- Copies of the issue analysis grid
- Copies of the transcript of Spencer Michel’s report “The O’Shaughnessy Dam Debate” from the News Hour with Jim Lehrer

**DAY 1**

**Day 1 Part 1**
Introduction to issue analysis. Explain or remind students that there are always several sides to an issue and that people often have more than one reason for taking the position that they do. Direct students that they will be watching a video about just such an issue and that they need to take notes in which they identify the issue, the key players, and their arguments.

**Day 1 Part 2**

**DAY 2**

**Day 2 Part 1**
Finish viewing the video.

**Day 2 Part 2**
Pass out copies of the issue analysis grid to the students. Begin the discussion by identifying the following terms:

- **Issue:** What is the question that needs to be answered?
- **Player:** Individual person or interest group.
- **Position:** How does the individual/group think the issue should be solved?
- **Beliefs:** What does the individual/group believe to be true about the issue?
- **Values:** What does the individual/group feel is important? Examples of values include: social, economic, ecological, recreational, aesthetic, ecological, cultural.

**Day 2 Part 3**
As a class, identify the issue discussed in the video. Then, work together or in small groups to fill in the issue analysis grid.
Day 2 Part 4/Assignment
Divide students into four groups. Assign each group one of four newspaper articles from the time period. Each group member should read their article and answer the corresponding guided reading questions.

DAY 3

Day 3 Part 1
Have students meet in groups based on the article they were assigned the previous day. Have them review their answers to the guided reading questions and elect a representative(s) to speak for the group. The representative of each group should summarize their article. As a class discuss whether or not more players could be added to the issue analysis grid. If so, discuss.

Day 3 Part 2
Ask students if the two Ecosystem questions (from Lesson Titled: Ecosystems and Wisconsin History) could apply to this situation. Discuss. Then ask if the students think that we are still dealing with water issues like Hetch Hetchy today. The answer is yes.

Day 3 Part 3
The controversy of the early Twentieth Century is not over, but has recently reemerged. This activity will demonstrate connections between the past and the present. Pass out the transcript of Spencer Michel’s report “The O’Shaughnessy Dam Debate” from the News Hour with Jim Lehrer. Students should read the article and fill out the issue analysis grid. The analysis for each key player is listed below.

The Issue: Should the O’Shaughnessy Dam be removed and the Hetch Hetchy Valley in Yosemite National Park restored?

Player #1: A key player in the Hetch Hetchy debate is Ron Good and the group he founded, Restore Hetch Hetchy.
Position. Ron Good and Restore Hetch Hetchy take the stance the O’Shaughnessy Dam should be removed and the Hetch Hetchy Valley restored.
Beliefs. Ron Good and Restore Hetch Hetchy believe San Francisco has been provided unfair use of the Hetch Hetchy Valley. They believe that San Francisco is profiting from the sale of water and power generated by the dam and that because the valley is in Yosemite National Park, the dam and reservoir should be removed and the valley returned to be used by all American Citizens.
Values. Based on Good’s statements, it appears that the values of his group are primarily social and economic. Socially, he clearly demonstrates a desire for equal access to the Hetch Hetchy Valley for all Americans because, as part of a National Park, there should be a common bond. This concern for the integrity of the park also demonstrates holding ecological values. His dislike for what he calls a “private enclave” for the City of San Francisco to profit off of clearly demonstrates an economic value.
Player #2: Tom Philips is a Pulitzer Prize winning editorial writer for the Sacramento Bee.

Position. Philips’ position is that the dam is not necessary and should be removed. Beliefs. Philips believes that there are other ways for San Francisco to get its water and power. He believes that the cost to remove the dam and restore Hetch Hetchy would be well worth the billions of dollars it may cost. Values. Philips appears to share many of the same values as Restore Hetch Hetchy. He emphasizes the uniqueness of the valley and its social and ecological values. He also states that the country has been getting by with only one Yosemite Valley when it should have two to enjoy, so recreational and aesthetic values may also be applied. Economically, he is willing to pay what it takes to restore the valley.

Player #3: Norm Rickson is the Superintendent of the O’Shaughnessy Dam and has worked there for over thirty years.

Position. The dam is a good system and should not be removed. Beliefs. Rickson believes the Hetch Hetchy water system is a pristine system and that it cannot get any better environmentally. He also believes that it would take hundreds of years to restore the valley if the dam was removed. Values. Based on his position of employment, Rickson obviously has economic reasons to support the presence of the dam. He also expresses aesthetic value concerning how long restoration would take place and what the valley would look like in the meantime.

Player #4: The San Francisco Public Utilities Commission and its general manager, Susan Leal, are key players in the Hetch Hetchy debate.

Position. The San Francisco Public Utilities Commission wants to ensure the city has adequate power and water. The Commission favors keeping the dam. Beliefs. Leal believes that the dam is an important part of the power and water system, providing a clean source of power (hydropower). Leal believes removing the dam would be the wrong action to take in a state that is in an energy crisis and needs the steady water supply provided by Hetch Hetchy. Water is a valuable commodity in the semi-arid state. Values. Clearly, the Commission and Leal have assigned economic value to the dam. The dam does provide water and electricity to a large number of people. The concern is for what is in the public’s best interest (maintaining the water and power supply). This is directed toward maintaining the lifestyles in the area and thus could be considered having a cultural value as well.

Player #5: Environmental Defense and two University of California, Davis scientists (Sarah Null and Jay Lund) who conducted a report on the Hetch Hetchy situation commissioned by the organization are key players in the current controversy.

Position. Environmental Defense commissioned a study that found there are other, more efficient options to the O’Shaughnessy Dam. The report supports the removal.
Beliefs. Environmental Defense and the above mentioned scientists believe that the dam could be removed without much disruption in the water system.

Values. In terms of maintaining the water supply, the group shows an awareness of the cultural value of the water supply created by the dam. In the support of removing the dam in order to restore the Hetch Hetchy Valley, Environmental Defense shows Ecological and Aesthetic values as well.

Assessment: Analysis grids will be collected for the activity. Students will also be asked to read an article and fill out the issue analysis grid independently. Two articles about the recent debate over removing the O'Shaughnessy Dam, “Is This Worth A Dam?” and “The Hundred Year War” are attached and may be used for this purpose or for further practice.

Standards Addressed:

WI Social Studies Standards

A.12.4 Analyze the short-term and long-term effects that major changes in population in various parts of the world have had or might have on the environment

A.12.9 Identify and analyze cultural factors, such as human needs, values, ideals, and public policies, that influence the design of places, such as an urban center, an industrial park, a public project, or a planned neighborhood

B.12.1 Explain different points of view on the same historical event, using data gathered from various sources, such as letters, journals, diaries, newspapers, government documents, and speeches

B.12.2 Analyze primary and secondary sources related to a historical question to evaluate their relevance, make comparisons, integrate new information with prior knowledge, and come to a reasoned conclusion

B.12.4 Assess the validity of different interpretations of significant historical events

B.12.8 Recall, select, and explain the significance of important people, their work, and their ideas in the areas of political and intellectual leadership, inventions, discoveries, and the arts, within each major era of Wisconsin, United States, and world history

C.12.9 Identify and evaluate the means through which advocates influence public policy
B.12.10 Identify and evaluate multiple uses of natural resources* and how society* is influenced by the availability of these resources

B.12.11 Assess how changes in the availability and use of natural resources* (especially water and energy* sources) will affect society and human activities; such as, transportation, agricultural systems, manufacturing

B.12.12 Evaluate the environmental and societal costs and benefits of allocating resources in various ways and identify management strategies to maintain economic and environmental sustainability

B.12.22 Research individuals who have made important contributions to the field of resource management

C.12.2 Explain the factors that contribute to the development of individual and societal values* (see SS The Behavioral Sciences: Individuals, Institutions, and Society)

C.12.3 Maintain a historical perspective when researching environmental issues;* include past, present, and future considerations
For the Teacher: 
Background Information 

The Hetch Hetchy Controversy began as the City of San Francisco’s search for a reliable water supply. That search, however, quickly turned into the nation’s first great battle for wilderness. On one side of the debate were San Francisco and Gifford Pinchot, the nation’s Chief Forester. On the other side were John Muir and the Sierra Club. The battle was over San Francisco’s request to dam the Tuolumne River, turning Hetch Hetchy Valley into reservoir to serve San Francisco’s water needs. The debate was not over whether or not a dam was needed, but was about the location of the dam. The Hetch Hetchy Valley is located in the northwest corner of Yosemite National Park. Supporters said the dam and reservoir would be using public lands for the greatest good for the greatest number of people. Opponents said that a dam and reservoir had no place in a National Park and that such construction would open the door for other projects in the other National Parks. 

At the turn of the Twentieth Century, “wilderness” was a craze, especially for America’s wealthiest citizens. The 1890 Census had declared it was no longer possible to recognize a frontier line. Three years later, Frederick Jackson Turner said the nation had to start to consider what the end of the frontier meant for the country. The country’s reaction was a sense that the “real” America was found in the wilderness (Hott, 1989). 

Two of the most prominent figures in conservation at the time were Gifford Pinchot and John Muir. Both men wanted to save the American Forests from destruction. Their beliefs about what that conservation should look like were quite different. Pinchot believed that the forests should be managed as “man’s preserve” and the resources used wisely to the benefit of man. Muir believed wilderness to be “God’s preserve” and a sacred place (Hott, 1989). These two viewpoints would clash in the battle over Hetch Hetchy Valley. 

During the late nineteenth century, San Francisco made its first request to dam Hetch Hetchy Valley, but the request met resistance. In 1901, San Francisco Mayor James D. Phelan again took steps toward damming Hetch Hetchy. Mayor Phelan wanted the Hetch Hetchy project in order to free the city from the high rates and poor service of the Spring Valley Water Company. In that year, with Phelan’s urging, Congress passed a bill to allow water conduits through National Parks. In 1903 and 1905, with one hurdle overcome, San Francisco applied to the Interior Department for the rights to Hetch Hetchy. The Secretary of the Interior, Ethan Hitchcock, denied those requests. Hitchcock’s policy was to keep the National Parks free of utilitarian projects (Fox, 1981). As long as Secretary Hitchcock was in office, it appeared that San Francisco could not get approval. 

After the devastating fire that followed the San Francisco Earthquake of 1906, Mayor Phelan made securing a reliable water source for the city a priority. He set his sites on Hetch Hetchy (Hott, 1989). Enter Gifford Pinchot, a long-time adversary of Hitchcock and the nation’s Chief Forester. Recognizing Hitchcock’s commitment to prevent the Hetch Hetchy Project, Pinchot suggested that San Francisco wait until Hitchcock was replaced. Indeed, as Pinchot had forecast, in 1907, Hitchcock was replaced by James Garfield. With a new Secretary of the Interior in office, supporters of the project again petitioned for its approval. With a leader in the Interior who looked
favorably on their cause, supporters were granted a hearing. Conveniently planned to coincide with the Sierra Club’s annual outing, the hearing took place (Fox 1981).

After learning of the hearing upon his return from the Sierra Club outing, John Muir, the club’s president, appealed to President Theodore Roosevelt. Muir and Roosevelt had built a relationship based on their mutual interests in nature. Roosevelt directed his Interior Secretary, James Garfield, to explore other water sources. Muir also started a national publicity campaign, to earn the public’s support for saving the Hetch Hetchy Valley (Fox, 1981). Dam proponents started a campaign of their own, claiming that not only would the dam provide necessary water for San Francisco, but the reservoir created would also create outstanding recreational opportunities for fisherman and swimmers (Kline, 1997). The issue had become a national debate.

Roosevelt was torn on the issue. Personally, he tended to side with Muir, politically, he tended to side with Pinchot. Ultimately, Roosevelt chose to side with Pinchot (Hott, 1989). Garfield granted San Francisco a permit in 1908. The permit to build the dam, however, was subject to Congressional approval. The debate continued. In 1909, the bill narrowly made it out of committee in the House of Representatives, but failed to do so in the Senate. In that same year, William Howard Taft took office. He appointed Richard A. Ballinger as Secretary of the Interior. Taft believed the dam project was illegal. Even worse for San Francisco, Taft disliked Pinchot for criticizing his administration. Therefore, the City of San Francisco and dam proponents would have to wait until a more friendly administration took over (Fox, 1981).

That friendly administration was elected in 1912. As his Secretary of the Interior, President Woodrow Wilson appointed former San Francisco City Attorney Franklin K. Lane. Lane approved a bill to dam Hetch Hetchy (Fox, 1981). While awaiting Congress’ decision, Muir wrote his daughter that the struggle was killing him, and regardless of the outcome, at least it would be over (Hott, 1989). Congress approved the bill in 1913 (Fox, 1981). Muir died a year later (Hott, 1989). The cost of the dam, named the O’Shaughnessy Dam after its chief engineer, was $100 million. The first water arrived in San Francisco in 1934 (Fox, 1981).

The controversy over damming Hetch Hetchy Valley did not end with the construction of the dam. In 1987, the idea of restoring the valley was considered by Donald Hodel, the Secretary of the Interior under President Ronald Reagan. Congress, however, refused to allocate the funds for the report. Recently, a movement began to remove the dam and restore the valley. The movement began when a graduate student from the University of California, Davis, Sarah Null, published a masters thesis that examined the effects of removing the dam on the water system (Pottenger, 2005).

There are many arguments made in favor of restoration. One argument is that the valley should be returned to the American people. As it currently exists, there is limited public access to the Hetch Hetchy Valley and no access to the reservoir (to avoid polluting the water) (Michels, 2005). Another argument is that the San Francisco Public Utilities Commission could shift the water storage to the Don Pedro Reservoir which is located further down the Tuolumne River (Nash, 2005). Yet another proposal is to replace the existing Calaveras Dam located above San Francisco’s East Bay with a larger dam and divert water to that reservoir (Pottenger, 2005). There are many proposals and cost estimates. Of course, there are many players that want the O’Shaughnessy Dam to remain, including the San Francisco Public Utilities Commission. The reservoir provides
water to 2.4 million people and power to the city as well (including to the schools and the international airport). The debate continues.

**Terminology**

**Conservationists** - Group of people who believed in regulated use of natural resources (Kline, 1997).

**Department of the Interior** – Executive department in charge of running the National Parks.

**Secretary of the Interior** – Person appointed by the President to run the Department of the Interior.

**Hetch Hetchy Valley** – Located in Yosemite National Park, just north of Yosemite Valley, Hetch Hetchy was described as being smaller, but very similar to the more well known Yosemite Valley. The name supposedly comes from a Native American reference to the Valley’s grassy meadows (Fox, 1981).

**O’Shaughnessy Dam** – The name of the Hetch Hetchy Valley Dam. Named after San Francisco’s Chief Engineer, Michael O’Shaughnessy, who led construction of the dam (Michels, 2005).

**Preservationists** – Group of people who argued for the protection of nature (Kline, 1997).

**Sierra Club** - Organization formed in 1892 to promote the exploration and preservation of the natural features of the Sierra Nevada Mountains (Cohen, 1988).

**Tuolumne River** – The river that flowed through the Hetch Hetchy Valley and was dammed by the O’Shaughnessy Dam (Michels, 2005).

**Scientific, social, and economic background.**

While much of the scientific, social, and economic background of the Hetch Hetchy Controversy was discussed previously in the History and Background section, a review of these issues as they pertain to the historic issue and current debate is worth closer consideration. In the original debate over whether or not to dam Hetch Hetchy Valley, social and economic factors where key among the arguments of both proponents and opponents. Economically, supporters of the dam project deemed it necessary to free the City of San Francisco from the monopoly of the Spring Valley Water Company. The dam would mean lower costs and more reliable service (Fox, 1981). The water provided by the dam would enable the growing city to continue to grow as would the hydropower it would provide (Hott, 1989). Socially, as this project did need Congressional approval, the supporters had to convince people from around the country of its necessity. The fire following the 1906 San Francisco Earthquake and the claim that low water pressure resulted in difficulty fighting the fire, helped convince the rest of the country of the necessity of using this public land for the use of one area (Michels, 2005). There were also the supposed recreational opportunities that the public could enjoy that would be created by the reservoir (Kline, 1997). Social factors also weighed heavily in the decision of some to oppose the dam. At the heart of the opposition was the idea that the National Parks were created to preserve for the nation areas of wilderness. Wilderness at the turn of the twentieth century was very much part of the national identity. The “real” America was to be found in the wilderness (Hott, 1989).
The present debate over whether or not to remove the O’Shaughnessy Dam is perhaps more complicated than the original controversy due to the increased number of people directly reliant upon the dam as well as the science and costs involved. Economically, San Francisco and its surrounding communities have developed, in part, due to the water and power that the dam provides. It is not surprising that many in the area want the dam to remain. San Francisco gets 20 percent of its power from Hetch Hetchy. The San Francisco Public Utilities Commission says to remove that power source in an area that is in an energy crisis is not wise. Also, California is a semi-arid state and the people and the agricultural interests rely upon that water for their livelihoods. The cost of reconfiguring the system (if the dam were to be removed) is estimated at $1 billion to $10 billion (Michels, 2005). There are concerns over who will be expected to pay that bill.

Scientific factors obviously play a role in the current debate as well. The Hetch Hetchy water system is gravity based. There are no pumps or filters. Some argue that for a dam, that is pretty environmentally friendly. Then there are the scientific studies. One study conducted by Environmental Defense and a professor from the University of California, Davis, used computer modeling and determined that the dam could be removed without having much effect on the water or power supplies. Socially and politically, this debate also rages. There is a movement across the country to remove dams. From 1999 to 2005, 175 dams were eliminated (Michels, 2005). Among the arguments for the removal of dams is the argument that their removal will help restore the natural processes and species to the affected area (Bearden, 1996). In response to the calls to remove the O’Shaughnessy Dam, California Governor Arnold Schwarzenegger ordered a report on the issue. Convincing a region that relies on the water and power provided by the system that they can survive without it is also a large social challenge. Proponents of removal argue that the value of the valley is as high or higher than the cost will be to restore it (Michels, 2005). Eventually, the scientific and economic factors will be weighed and the people and their politicians will have to make a decision.
References (Hetch Hetchy Lesson and Background Information)


APPENDIX B

PRE-SUPPLEMENT INFUSION
SURVEY OF ATTITUDES TOWARD ENVIRONMENTAL EDUCATION IN SOCIAL STUDIES
Pre-Supplement Infusion
Survey of Attitudes Toward Environmental Education in Social Studies

1. Have you ever taken an Environmental Education (EE) course? If yes, briefly describe what you learned or remember from the course.

2. Please indicate your response to the following statement by circling an answer. EE has a place in the high school social studies curriculum

   Strongly Agree  
   Moderately Agree  
   Agree  
   Disagree  
   Moderately Disagree  
   Strongly Disagree

3. Please indicate your response to the following statement by circling an answer. EE has a place in an American History curriculum.

   Strongly Agree  
   Moderately Agree  
   Agree  
   Disagree  
   Moderately Disagree  
   Strongly Disagree

4. Please indicate your response to the following statement by circling an answer. I feel that my students are aware of the role of the environment in American History.

   Strongly Agree  
   Moderately Agree  
   Agree  
   Disagree  
   Moderately Disagree  
   Strongly Disagree

5. Please indicate your response to the following statement by circling an answer. I feel that my students are knowledgeable regarding the role of the environment in American History.

   Strongly Agree  
   Moderately Agree  
   Agree  
   Disagree  
   Moderately Disagree  
   Strongly Disagree

6. To what extent do you currently integrate EE into your social studies courses?

   Always  
   Often  
   Sometimes  
   Rarely  
   Never

7. If you do integrate EE into your courses, briefly describe how you do so (topics, activities, etc).
8. If you do not integrate EE into your courses, what are your reasons for not doing so?

9. Would you be willing to integrate EE into your American History course if you were provided lesson plans and materials that fit into the existing course sequence and structure?

10. What else would you need to feel comfortable implementing EE into your course?

11. Did you know that there are environment related standards in Wisconsin Social Studies Standards?

12. Did you know that the Wisconsin Department of Public Instruction has model academic standards for Environmental Education?

13. Did you know that many of the Wisconsin EE standards correspond to the social studies?
APPENDIX C

POST-SUPPLEMENT INFUSION
SURVEY OF ATTITUDES TOWARD ENVIRONMENTAL EDUCATION IN
SOCIAL STUDIES
WITH INTERVIEW QUESTIONS
Post-Supplement Infusion
Survey of Attitudes Toward Environmental Education in Social Studies
With Interview Questions

1. Have you ever taken an Environmental Education (EE) course? If yes, briefly describe what you learned or remember from the course.

2. Please indicate your response to the following statement by circling an answer.
   EE has a place in the high school social studies curriculum

   | Strongly Agree | Moderately Agree | Agree | Disagree | Moderately Disagree | Strongly Disagree
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3. Please indicate your response to the following statement by circling an answer.
   EE has a place in an American History curriculum.

   | Strongly Agree | Moderately Agree | Agree | Disagree | Moderately Disagree | Strongly Disagree
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4. Please indicate your response to the following statement by circling an answer.
   I feel that my students are aware of the role of the environment in American History.

   | Strongly Agree | Moderately Agree | Agree | Disagree | Moderately Disagree | Strongly Disagree
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5. Please indicate your response to the following statement by circling an answer.
   I feel that my students are knowledgeable regarding the role of the environment in American History.

   | Strongly Agree | Moderately Agree | Agree | Disagree | Moderately Disagree | Strongly Disagree
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6. To what extent do you currently integrate EE into your social studies courses?

   Always    Often    Sometimes    Rarely    Never

7. If you do integrate EE into your courses, briefly describe how you do so (topics, activities, etc).
8. If you do not integrate EE into your courses, what are your reasons for not doing so?

9. Would you be willing to integrate EE into your American History course if you were provided lesson plans and materials that fit into the existing course sequence and structure?

10. What else would you need to feel comfortable implementing EE into your course?

11. Did you know that there are environment related standards in Wisconsin Social Studies Standards?

12. Did you know that the Wisconsin Department of Public Instruction has model academic standards for Environmental Education?

13. Did you know that many of the Wisconsin EE standards correspond to the social studies?

**Interview Questions**

1. Did you use any of the supplement plans in your American History II course? If yes, which ones? Why did you choose those lessons?

2. Did you modify the lessons in any way? If yes, how?

3. Which lessons did you choose not to use? Why?

4. What would make you more likely to implement the lessons you chose not to implement?

5. What suggestions would you make for improving the supplement?

6. What did you like about the supplement?