

**Infusing EE into Recreational and Outdoor Skill
Activities: Developing a Resource Guide for Conserve
School**

A Project Report

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ABSTRACT

The purpose of this study is to create a tool that will make it easier to infuse environmental education into recreational and skill-based activities at residential environmental education programs, but specifically for Conserve School. Conserve School is a semester school and has a limited amount of time with the students. By infusing environmental education into these common-place activities, Conserve School will be able to make the most of their time with the students. On a larger scale, this paper will show the environmental education community how to teach environmental education in a fun and engaging way. Initial literature reviews show that environmental education can be enhanced by incorporating elements of recreation, and that recreation during childhood enhances connections with nature and in turn increases environmentally conscious behavior. Data was collected using semi-structured interviews and was then qualitatively analyzed. Several themes emerged, and they were incorporated along with recommendations from the NAAEE into an evaluation rubric. The rubric was combined with other resources into a resource guide to help the staff at Conserve School with infusing the overarching principles of environmental education into the already present recreational activities.

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CHAPTER ONE: INTRODUCTION OF THE PROBLEM

I. Statement of Problem

The purpose of this study is to create a tool that will make it easier to infuse environmental education into recreational and skill-based activities at a residential environmental education facility, with a specific focus on Conserve School.

II. Statement of Sub-Problems

Sub-Problem 1: The first sub-problem is to research the best practices for creating activities to ensure they qualify as having an environmental education component and are good recreational and/or skill-based activities.

Sub-Problem 2: The second sub-problem is to create a rubric for determining how well an activity follows the guidelines of environmental education and the best practices for recreational and skill-based activities

Sub-Problem 3: The third sub-problem is to create a resource guide of activities that follows the rubric that I have created which will work specifically for a residential environmental education facility, and help them be more intentional about environmental education.

III. The Importance of the Study

The goals of this study are to (1) research the best practices for creating activities to ensure they qualify as having an environmental education component and are

good recreational or skill-based activities, (2) create a rubric to determine which activities fit this model, and (3) to create a resource guide that would enable a residential environmental education facility, and specifically Conserve School to be more intentional about including environmental education into all of their activities. Incorporating environmental education into the recreational and skill based activities will allow residential environmental education facilities to maximize the amount of time spent educating their students in order to reach their goals of creating environmentally literate citizens, and enable them to present the material in a fun and interesting way.

IV. Limitations

- | | |
|---------------|--|
| Limitation #1 | The study will be limited to activities that would be most likely to occur at a residential environmental education facility |
| Limitation #2 | The study will not predict or determine how well the students will enjoy the activities in the resource guide. |
| Limitation #3 | The resource guide will only be a small but representative sample of activities that have passed the evaluation rubric. |

V. Definitions

Environmental Education: Environmental education is education aimed at “providing students with an awareness of the environment and its associated problems and the Knowledge, skills and ability to work collectively towards solutions of current problems and the prevention of new ones.”

Recreational Activities: activities that amuse or excite the participant and are refreshing to one's mind or body.

Skill-Based Activities: activities that involve the learning of an applicable skill.
(Ex – survival skills).

Residential Environmental Education Facility: any program where students both live, and are instructed using environmental education methods

Best Practices: Practices that have consistently shown the best result. Often used in the education and business world.

Rubric: A rubric is an assessment tool used to evaluate the quality of an assignment, performance or in the case of this study, an activity.

VI. Abbreviations

EE – Environmental Education

NAAEE – North American Association of Environmental Education

VII. Assumptions

- Assumption #1 That there is a desire of the facility to be more intentional about including an environmental education component in their recreational and skill based activities.
- Assumption #2 Instructors will use the rubric to evaluate if, and to what extent their activities incorporate environmental education into their recreational and skill-based activities
- Assumption #3 The resource guide will be useful for instructors who want to plan activities.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

I. Introduction

This chapter is a review of literature that has already been published by Professionals in the field of Environmental Education (EE) that is pertinent to this project. The literature will support (1) the goals and outcomes of EE, (2) the importance of recreational and skill based activities, specifically with regards to residential EE, (3) the Importance of recreational and skill based activities, specifically in regard to residential EE, and (4) the best practices for evaluating EE.

II. The goals and outcomes of EE

Environmental education has been around for quite some time, with its roots going back to nature study, and famous names like Darwin, Henry David Thoreau, and Aldo Leopold. But since those days, environmental education has evolved and changed many times in many ways to meet the specific needs of the times. Because of this changing nature of environmental education, there came a point where people in the field of environmental education felt the need to define what they were doing. The most current definition of environmental education had its start in the late 1970's when a group of environmental educators came from around the world came together to define the goals of environmental education so that they could make strides toward reaching those goals as educators. This gathering produced what is now known as the Tbilisi Declaration, which includes the goals and outcomes that we still view as the basic framework for environmental education today.

When the group of international environmental educators came together to produce the Tbilisi Objectives, they came up with 3 goals that they wanted environmental education to accomplish. The three goals were to:

“(1) to foster clear awareness of, and concern about, economic, social, political, and ecological interdependence in urban and rural areas; (2) to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment; and (3) to create new patterns of behavior of individuals, groups, and society as a whole towards the environment” (UNESCO, 1978).

The Tbilisi declaration also outlined 5 outcomes, which they believed were paramount in environmental education. They were – awareness, knowledge, attitudes, skills and participation. They define these objectives as follows:

“**Awareness**—to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems. **Knowledge**—to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of, the environment and its associated problems. **Attitudes**—to help social groups and individuals acquire a set of values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection. **Skills**—to help social groups and individuals acquire the skills for identifying and solving environmental problems. **Participation**—to provide social groups and individuals with an opportunity to be actively involved at all levels in working toward resolution of environmental problems” (UNESCO, 1978).

By using the framework that was set up by the Tbilisi declaration, all environmental educators ensure that they are aiming to reach the same outcomes from their education, and working towards the same ultimate goals.

In the field of environmental education, there are many different ways that educators attempt to reach the goals of environmental education. One of the ways that educators use is residential environmental education. Residential environmental education is unique in that it attempts to fully immerse its students into the learning environment, which is often times a campus with multiple acres of accessible wilderness that can be utilized as a resource for teaching students about the environment. In a study conducted by Stern, Powell, and Ardoin, they found that the residential program had positive effects on the student's commitment to environmental stewardship, and increased their knowledge and awareness. They also found that the longer programs that were lead had greater effects on the long term outcomes (Stern, Powell, & Ardoin, 2008).

III. Importance of Recreational and Skill based activities, specifically with regards to residential EE

Typical residential environmental education programs have a large portion of outdoor skills, and outdoor recreation activities embedded in their curriculum. In a study of the New Jersey School of Conservation (NJSOC), the authors found that recreation wasn't very important relative to other categories such as the safety and social aspects, but it was generally accepted that when the students enjoy themselves more, they are more willing to learn (Smith-Sebasto & Walker, 2005). In the paper, the authors did state that, "Recreation activities were also shown not to contribute any significant knowledge related to the environment that would correspond to the NJSOC mission statement"

(Smith-Sebasto & Walker, 2005). This concept is exactly the impetus behind the research that follows in this paper. It is widely accepted that students who enjoy themselves are more willing to learn. Despite this, it seems that at least in this case recreational activities don't move this center towards its goals. To help remedy this I am proposing that we need to find a way to fill this gap with more deliberate, intentional programming that can be fun and engaging to students; doing this will move the residential environmental education programs further towards their stated mission and goals.

In studies conducted about outdoor recreation and the link to environmental behaviors, it has been found that outdoor recreationists are more likely to participate in environmentally conscious behaviors. In a study conducted by Thapa, the results show that there is a connection between outdoor recreation and environmental attitudes and behaviors in the small that was taken but only when the participants were involved in appreciation activities (such as hiking or bird watching) or motorized activities such as 4-wheeling and snowmobiling (Thapa, 2010).

IV. Best practices for evaluating EE

Environmental education can be evaluated in many different ways. Some common guidelines that can be used to evaluate environmental education include the Tbilisi objectives and goals, national standards, and also state and organizational standards.

The Tbilisi objectives are the oldest set of goals for the EE field, but they still apply to today's EE. Evaluating your lessons and activities against the 5 objectives is a quick and easy way to check how well the lesson is reaching the goals of environmental education.

In the United States, one of the national standard guidelines available is put together by the NAAEE (North American Association for Environmental Education) which is called *Excellence in EE: Guidelines for Learning (K-12)*. In this manual, there are extensive guidelines for evaluating environmental education curriculum. They describe their guidelines as setting “A standard for high quality environmental education across the country, based on what an environmentally literate person should know and be able to do. They draw on the best thinking in the field to outline the core ingredients for environmental education” (North American Association for Environmental Education, 2010). By using these guidelines, educators are able to evaluate their EE curriculum to assess how well they meet these national standards. Unfortunately, even their executive summary is long, and their self-evaluation rubric is 4 pages long for each of 3 age brackets (North American Association for Environmental Education, 2010). They also have a publication that is a bit easier to digest, called *Environmental Education Materials: Guidelines for Excellence*. This publication is solely dedicated to evaluating EE education materials. As a part of this project, I will make an easier and more user friendly rubric based off of my research and the wisdom of the NAAEE for educators at Conserve School or other residential environmental education centers to evaluate recreational and skill-based activities that have been combined with environmental education elements.

CHAPTER THREE: METHODOLOGY

Data for this project will come from 4 interviews with experienced environmental educators that have worked at residential environmental education facility, gathering knowledge and insight into the idea of infusing environmental education into recreational and skill based activities.

Research Methodology

- a. Population– 4 professionals from semester schools with an environmental focus
- b. Data – Data will be collected using a semi-structured interview format.
- c. Procedures - The interviews will be transcribed, and qualitatively coded looking for recommendations on how to best incorporate EE into recreational and skill-based activities.

Sub-Problem 1: The first sub-problem was to interview 4 experienced environmental educators from residential environmental education programs, regarding the best practices for evaluating activities to ensure they qualify as having an environmental education component, and how to infuse environmental education into recreational and skill based activities. This was done using semi-structured interviews. I first generated a list of schools that were similar to conserve school in its setting and curriculum by researching programs online and asking colleagues if they knew of people who might participate in my research. I then contacted these schools and asked if they would be willing to let me interview them for my research. I was limited to the people who responded to my inquiries for interviewees. I developed a set of 15 questions to ask the respondents how they incorporate EE into their recreational and skill based activities and a little bit of their and their program's backgrounds (see appendix 1 for the questions). During the interviews, 3 of which were phone, and one an in-person interview, I recorded the conversations using a digital recorder. 3 Respondents were male, one female, and had a range of experience in

the environmental education field from 3 to 13 years of experience. After interviewing the respondents I transcribed the interviews, and then began the qualitative coding process. The coding can be seen in appendix 2 and will be discussed in the results section.

Sub-Problem 2: The second sub-problem is to create a rubric for determining if an activity follows the guidelines of environmental education. I used the findings from my interviews to create a rubric that would emphasize what the respondents found most valuable for fusing EE and recreational and skill based activities, as well as information from the *Environmental Education Materials: Guidelines for Excellence* publication from the NAAEE. From my previous knowledge, the results of my interviews, and information from other sources, I developed a rubric that could be used as a tool to evaluate whether the activity has the components that are important to have when infusing environmental education into a recreational or skill-based activity. The rubric can be seen in appendix 3, and was used to guide my selection and creation of lesson plans for the resource guide.

Sub-Problem 3: The third sub-problem is to create a resource guide of activities that follows the rubric that I have created that will work for a residential environmental education facility, with Conserve School specifically in mind. This rubric will enable these institutions to be more intentional about environmental education and to create lessons or ideas for ways to infuse EE into their recreational and skill based activities. The resource guide will be created by compiling the rubric that I created, lesson plans, and other resources that will be helpful for educators to have while infusing EE into their recreational activities.

CHAPTER FOUR: RESULTS

Subproblem 1 –

In the qualitative analysis of the interviews that were conducted I collected information from my sources, including information about the respondents' backgrounds, their programs, and also about their views on incorporating EE into recreational and skill based activities. I took this information and broke it down into themes and categories, which can be seen in appendix 2. The themes that emerged were:

- Creating a sense of place
- Allowing the students to experience the outdoors firsthand
- Making sure that the activity relates to the mission and goals of the institution
- Giving student control of their activities
- Utilizing available resources
- Ensuring the safety of the activity
- Ensuring that the activity is inclusive
- Building a healthy Community

Creating a sense of place was a theme that showed up in all of my interviews. This quote from one of my interviews sums it up well:

“The mission of the school is to get kids out in the out of doors on our place in particular, to have them fall in love with our land.”

Each respondent mentioned that they wanted their students to be able to go out and experience the unique landscape that was present at their campus, and getting out there and recreating or learning a new outdoor skill is one way of creating a bond between the students and the land that they are experiencing. Another category that fell into this theme was having students learn more about and interact with the local people of the area as well, creating a holistic view of the land which they are developing an attachment to. One respondent said that they even went as far as to have the

students spend a day with a local family, so that they can see the point of view of the people who permanently live in the area near the school.

Another theme that emerged was that the recreational or skill-based activity that occurred needed to relate to the mission and goals of that specific institution. This could mean that the activity is directly related to the mission or vision, that the student is learning a skill that they will need for another portion of the program, or that the activity fits or complements the school's curriculum. For any type of institution, it is important to work towards achieving the mission, but I feel that it is even more important when considering educating our youth. When selecting what activities to provide for the students, one respondent replied, "We take activities that help us accomplish that mission (referring to the school's mission)". Some skill-based activities were chosen simply because the students needed to learn certain skills to be successful in other portions of the program, such as camping skills.

Allowing students to experience the outdoors firsthand was another theme that was shown through the qualitative analysis. One of the respondents saw recreational and skill based activities as a way to get the students outside so that they can experience the environment, the respondent stated: "If you don't have skill based activities, or the recreational activities as a foundation, they may not be able to get out of the door." I think that this shows that professionals in this field really believe that getting the students outside is important to fulfilling their mission and goals, and that recreational and skill-based activities can be the pathway to reaching those goals

Another theme that was brought up quite frequently was letting the students drive their choices and have ownership in the selection of their recreational choices. In my experience, giving students, and particularly high school students, the control over their activities greatly increases the likelihood that they will enjoy and continue to enjoy an activity. Many of the schools I talked to allowed their students to guide the creation and selection of recreational and skill-based

activities, and even have control of arranging the logistics of the activities. This allows the students to gain more competence, and helps the staff out as well. This also allows for the individual differences between students about their personal definition of recreation to get sorted out, and really allow creativity and personalization into the process.

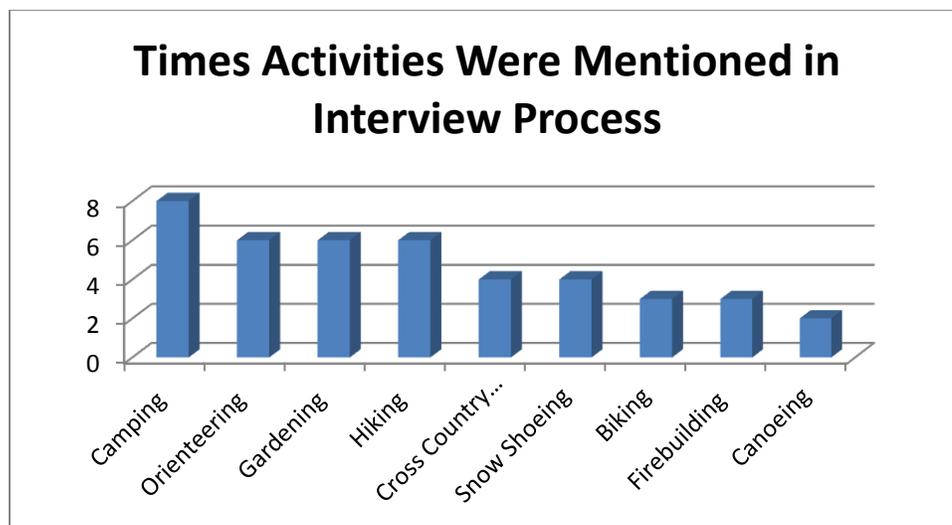
Using the resources that are available at the particular location was another theme that emerged. This included resources like equipment, staff knowledge, books, websites and technology, and also funding that is available. Two of the respondents mentioned that their staff members were responsible for much of the recreational and skill-based activity planning and that they looked to resources and adapted them to the specific requirements of their institution. To quote one respondent, "I think that most of our resources are being created on site or being adapted from other work". Respondents also mentioned books, and technology as being important resources when planning recreational and skill based activities.

When planning recreational and skill based activities, respondents also stressed that ensuring the activity was safe is a top priority, along with ensuring that the activity is inclusive of all of the students. These concepts are not necessarily new ideas, but they are important to remember when planning any activity for students. I think that this respondent summarizes it best when they say, "First and foremost, when we set up the skills we look at safety and how to teach it in a way that is as safe as possible." Inclusion can be accomplished simply by making sure that all of the students are included in an activity, but sometimes gear or equipment is a limiting factor in a recreational or skill based activity. In that case, to equal the playing field, it would be ideal if the recreational equipment was provided, or the student was able to acquire this equipment at an affordable rate.

The last theme that appeared in the interviews was that respondents would look for activities that would support a healthy community. This meant that if an activity was fun, such as gardening,

they would support that activity, because not only were the students enjoying themselves, but the work that was done also benefitted the community. One respondent said “We want to help them reach beyond themselves and work for the common good”. When asked how their school chooses their recreational activities for the students, they said “I think that a lot of it is things that have a value to the community.” Both of these respondents show a great dedication to the community at their residential schools, and are hoping to instill this in their students as well.

In addition to discussing how they chose and created their recreational and skill-based activity plans, the respondents gave many example of what recreational activities happened at their institutions. In chart 1 below, you can see the number of times each activity was mentioned across all of the interviews.



Through this process I gained a lot of insight into how schools that are similar to Conserve School choose and adapt their recreational and skill based activities, and this helped me greatly when developing my rubric for Conserve School.

Subproblem 2 -

My rubric design began shortly after I finished coding the data from the interview process. I decided that I would take all of the elements that emerged as themes: Creating a sense of place, Allowing the students to experience the outdoors firsthand, making sure that the activity relates to the mission and goals of the institution, giving student control of their activities, utilizing available resources, ensuring the safety of the activity, ensuring that the activity is inclusive, and building a healthy community and make them categories for the rubric. I also added the 6 key characteristics of excellent EE materials according to the NAAEE (North American Association for Environmental Education, 2004). The finished rubric can be seen in appendix 3.

Subproblem 3 –

The Resource guide was developed by compiling resources developed in the course of my research for creating lesson plans for recreational and skill-based activities. In the resource guide I included the rubric that I created (see appendix 3), several lesson plans that follow the rubric, a list of suggestions of recreational and skill based activities that could be combined with EE elements, and additional resources. This resource guide can be seen in appendix 4.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

Subproblem 1 –

My interviews were awash with useful information, but I got the impression that none of the schools that I talked to really had an organized way of deciding what types of recreational activities would be offered. Some schools let the students decide or choose what they wanted to do, and other schools would just offer a similar set of activities every semester, dependent on weather of course. I do know what the group of respondents valued in recreational and skill-based activities. These topics, which emerged as themes in the coding of my interviews were the following points:

- Creating a sense of place
- Allowing the students to experience the outdoors firsthand
- Making sure that the activity relates to the mission and goals of the institution
- Giving student control of their activities
- Utilizing available resources
- Ensuring the safety of the activity
- Ensuring that the activity is inclusive
- Building a healthy Community

These themes were used, in combination with some of the principals from the NAAEE to create a rubric that evaluates both the recreational and skill-based portions of the lesson, as well as the effectiveness of the EE portion.

Subproblem 2 –

My recommendations for the use of the rubric that I developed is to use it as a sort of pre-screening for activities that are being planned, and also as a way to evaluate activities that are already made . This rubric, along with the resource guide should be made available not only to the Graduate Fellows at Conserve School, but the students as well. Allowing the students to have

an active hand in planning these combination-type activities allows them to have a greater sense of connection to the lesson, and will increase the likelihood of enjoyment.

Subproblem 3 –

I will use the rubric that I developed to start a resource guide, which will be a collection of activities and other resources, which can be added to in the future. It seemed that the respondents really valued the input of the students, so I would make this binder available to the students as well, so they can plan activities that they felt would meet the rubric, and/or request or use the already available plans. The resource guide will include the rubric that I created, several lesson plans that follow the rubric (which can be added to), a list of suggestions of recreational and skill based activities that could be combined with EE elements, and additional resources. This resource guide should be made available not only to the Graduate Fellows at Conserve School, but the students as well.

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APPENDICES

Appendix 1 – Interview Questions

1. Can you tell me about your background at _____(insert program name)?
2. Can you give me a general overview of what your program entails/mission?
3. What do you consider a recreational activity? Do you think that recreational activities are important to your program?
4. What types of recreational activities do participants do there? Can you give me more details about _____(Insert activity)?
5. What do you consider a skill-based activity?
6. What types of skill-based activities do participants do there? Can you give me more details about _____(Insert activity)?
7. How do you choose what activities you do?
8. What procedures, resources, guidelines, or important ideas do you follow when choosing these activities? Would you be willing to share any of these resources/procedures with me?
9. How do you define environmental education?
10. Tell me about how (or if) environmental education fits into your recreational and skill-based activities. What qualities would make an activity a perfect mix of environmental education and recreational or skill based activities?
11. At your program, what types of resources are there for planning recreational and skill based activities?
12. Have you developed your own curriculum, or do you use curriculum from somewhere else? Can you briefly describe this curriculum?
13. What resources do you find most helpful when trying to plan recreational activities?

14. What resources do you find most helpful when trying to plan skill-based activities?

15. Who would you recommend as a person who is also knowledgeable about the topic we have been discussing?

Appendix 2 – Coding Data

Theme	Category	Prop. Number	Proposition	location
Sense of place	connection to the place	1	help connect kids to this place	1-55
		2	know a place and take care of it	2-106
		3	fall in love with the land	3-36
		42	get out there	3-37
	understand the people and place	4	inspiration from the place we live	1-66
		5	understand the people and place	1-56
		6	understand the ecosystem where they live	1-64
		7	spending a day with a local family	1-58
Relates to the mission and goals of the institution	Mission based	9	lending themselves back to mission	1-60
		10	accomplish our mission	1-62, 1-63, 3-2
	Fits with curriculum	11	activities relate to our curriculum	1-61
		12	activities relate to our program	3-27,3-25
	explore through science	8	exploring through scientific research	1-57, 3-47
	to teach skills students will need for the program	38	because we use these skills in the program	3-28, 3-32
		39	We teach camping skills because we go camping	3-29
		40	because we have the equipment	3-30, 3-33, 3-34
41		learn skills	3-38	
Giving students control of their recreation	Student driven	13	give students an idea of things to do	1-65
		14	What the students want to do	2-91
		15	Choose activities that are about the students' individual learning	4-50
		16	students take ownership	2-52, 2-111
		17	students have open time to decide what they would like to do	2-66
		18	students research activity logistics	2-85
		19	weekend activities that the students design	2-43
		53	Student creativity in planning	2-108
		54	brain storm list of activities	2-109
		55	student groups have the list to consult	2-110
		56	students able to shape their recreation	2-112
	individual differences	51	different people have a different idea about our trips	4-26

	between definition of recreation	52	each student has their own interpretation of recreation	4-23, 4-25
Utilizing resources	sharing staff knowledge	20	Knowledge of teachers and staff	1-67, 4-68, 4-73
		49	curriculum developed by the teachers	3-66
		21	teachers and students get together and design activities	2-44, 2-51
	Paper resources	61	resources	3-55
		64	Books	3-64, 3-65, 4-65, 4-66, 4-67, 4-71, 3-69, 3-70
		66	Lesson plans	3-68, 4-62
		70	resources created on site or adapted	3-71, 4-70
		67	checklists	4-63
		68	menus for trips	4-64
		digital resources	69	resources online
	62		technology	3-56, 3-63
	Money	63	equipment	3-62, 3-57
		65	funding	4-61
	Guiding principles	43	ACA Guidelines	3-42
		44	Best practices	3-43
Safety	Safety	29	guarentee it's safe	2-92
		30	try to make it as safe as possible	2-94
		31	safety concerns	3-38,3-39,3-40
		32	what do we teach to make it safe	3-41
		33	supervision	2-93
Inclusion	Inclusion	34	Inclusion	2-95
		57	student doesn't need extra equipment	3-58
		58	Opens doors	3-59
		59	level the playing field	3-60
		60	if the students came with nothing they could still participate.	3-61
healthy community	community sustainability	35	Focus on food and waste	2-104
		36	where things really come from and where they go	2-105
	Benefits the	37	work for the common good	2-107

	community	50	chose activities that are of value to the community	4-49
Being outdoors exeriencing first hand	Experiential	45	They Get to Experience So Much	3-48
		46	Experiential nature of the program	3-49
	Rec and skill based activities are the vehicle to get outside	47	rec and skill based activities get the students outside	3-51,3- 53, 3-53
		48	it's a vehicle	3-54

Appendix 3 – Rubric

Rubric for infusing EE into recreational and Skill based activities.

Category	Great	Okay	Poor
Flow	EE and rec or skill based activities seamlessly tie into one another	EE and rec or skill based activity tie together, but it is a stretch	EE and rec or skill based activities do not tie together, and there is no attempt to do so.
Inclusion	Everyone included		Not everyone is included.
Safety	The activity is safe, or there is risk which can be easily managed	There is some risk, and it is difficult to manage.	There is a lot of risk, and it is not possible to manage the risk to a safe level
Supervision	Supervision not needed, or supervision is provided		No supervision even though supervision would be best
Student Involvement In Planning	Students are involved in all aspects of the planning process	Students involved in some aspects of the planning	Students are not involved in the planning
Connects Students With The Natural World on Campus	Activity allows students to form a bond with the campus/ location by spending time outdoors learning and interacting with nature	Connection with the campus/location is not emphasized	Connection could possibly be made, but it is a stretch, or activity is not based on the surrounding area's ecosystem.
Mission	Activity and EE component meet many aspects of the mission of the school	Activity and EE component meet a few aspects of the mission of the school	Activity and EE component do not meet any of the aspects of the mission of the school
Activity Will Benefit the Student and/or Community	Student and community benefit	Student or community benefits	Neither benefit
Experiential	Activity is very hands on	Activity has some hands on portions	Activity is not hands on at all

Fairness and accuracy	The EE portion of the lesson is accurate, balanced, open to inquiry, and reflects diversity	The EE portion of the lesson contains 3 of the 4 components in the previous list	The EE portion of the lesson contains 2 or less of the components in the previous list
Depth	The EE portion of the lesson fosters awareness of the environment, an understanding of environmental concepts, gives the concepts context, and relates these concepts to different size and time scales	The EE portion of the lesson contains 3 of the 4 components in the previous list	The EE portion contains 2 or less of the components in the previous list
Emphasis on skill building	The EE portion of the lesson should build critical and creative thinking skills, allow students to apply skills to issues and encourage the use of action with regards to environmental issues	The EE portion of the lesson contains 2 of the 3 components in the previous list	The EE portion contains 1 or less of the components in the previous list
Action orientation	The EE portion of this lesson enables students to reflect on the consequences of their actions, That the actions of many people have a cumulative effect, and strengthen the student's ability to take action for what they believe in	The EE portion of the lesson contains 2 of the 3 components in the previous list	The EE portion contains 1 or less of the components in the previous list
Instructional soundness	The EE portion of this lesson uses sound instructional methods such as Learner centered instruction, Different ways of learning, connections to the student's life, and using more than just a classroom as your setting	The EE portion of the lesson contains 3 of the 4 components in the previous list	The EE portion of the lesson contains 2 or less of the components in the previous list
Usability	The lesson is easy to use, clear and logical, adaptable, and fits with state or national standards	The EE portion of the lesson contains 3 of the 4 components in the previous list	The EE portion of the lesson contains 2 or less of the components in the previous list

Appendix 4 – Resource Guide.

Infusing EE into Recreational and Skill-Based Activities at Conserve School: A Resource Guide

Introduction:

This resource guide is an attempt for Conserve School to be more intentional about including Environmental Education into their Recreational and Skill-Based activities. The resource guide includes a lesson plan section which can be updated and adapted as the future users see fit.

Rubric:

The following rubric was designed using research from interviews with professionals in the field and the recommendations of the NAAEE. The rubric can be used to evaluate the strength of pre-existing lessons, or to help guide the development of new lessons.

Category	Great	Okay	Poor
Flow	EE and rec or skill based activities seamlessly tie into one another	EE and rec or skill based activity tie together, but it is a stretch	EE and rec or skill based activities do not tie together, and there is no attempt to do so.
Inclusion	Everyone included	Not everyone is included.	
Safety	The activity is safe, or there is risk which can be easily managed	There is some risk, and it is difficult to manage.	There is a lot of risk, and it is not possible to manage the risk to a safe level
Supervision	Supervision not needed, or supervision is provided		No supervision even though supervision would be best
Student Involvement In Planning	Students are involved in all aspects of the planning process	Students involved in some aspects of the planning	Students are not involved in the planning

Connects Students With The Natural World on Campus	Activity allows students to form a bond with the campus/ location by spending time outdoors learning and interacting with nature	Connection with the campus/location is not emphasized	Connection could possibly be made, but it is a stretch, or activity is not based on the surrounding area's ecosystem.
Mission	Activity and EE component meet many aspects of the mission of the school	Activity and EE component meet a few aspects of the mission of the school	Activity and EE component do not meet any of the aspects of the mission of the school
Activity Will Benefit the Student and/or Community	Student and community benefit	Student or community benefits	Neither benefit
Experiential	Activity is very hands on	Activity has some hands on portions	Activity is not hands on at all
Fairness and accuracy	The EE portion of the lesson is accurate, balanced, open to inquiry, and reflects diversity	The EE portion of the lesson contains 3 of the 4 components in the previous list	The EE portion of the lesson contains 2 or less of the components in the previous list
Depth	The EE portion of the lesson fosters awareness of the environment, an understanding of environmental concepts, gives the concepts context , and relates these concepts to different size and time scales	The EE portion of the lesson contains 3 of the 4 components in the previous list	The EE portion contains 2 or less of the components in the previous list
Emphasis on skill building	The EE portion of the lesson should build critical and creative thinking skills, allow students to apply skills to issues and encourage the use of action with regards to environmental issues	The EE portion of the lesson contains 2 of the 3 components in the previous list	The EE portion contains 1 or less of the components in the previous list

Action orientation	The EE portion of this lesson enables students to reflect on the consequences of their actions, That the actions of many people have a cumulative effect, and strengthen the student's ability to take action for what they believe in	The EE portion of the lesson contains 2 of the 3 components in the previous list	The EE portion contains 1 or less of the components in the previous list
Instructional soundness	The EE portion of this lesson uses sound instructional methods such as Learner centered instruction, Different ways of learning, connections to the student's life, and using more than just a classroom as your setting	The EE portion of the lesson contains 3 of the 4 components in the previous list	The EE portion of the lesson contains 2 or less of the components in the previous list
Usability	The lesson is easy to use, clear and logical, adaptable, and fits with state or national standards	The EE portion of the lesson contains 3 of the 4 components in the previous list	The EE portion of the lesson contains 2 or less of the components in the previous list

A List of Possible Recreational and Skill-Based Activities:

- Camping
- Orienteering
- Gardening
- Hiking
- Cross Country Skiing
- Snowshoeing
- Mountain Biking
- Road Biking
- Fire building
- Canoeing
- Making Maple Syrup
- Kayaking
- Fishing
- General Exploring
- Geocaching

- Archery
- Farming
- Trail maintenance
- Birding
- Swimming
- Backpacking

Lesson Plan Template –

Lesson Topic – EE Nature Hike

Instructor(s) – Grad Fellow #1

Date – May

Age of students – 10th-12th grade

Approximate Time of lesson – 2 hours

1. How will you link the recreational or skill-based activity to the environmental education portion of the lesson? The EE portion of this activity will be to learn about the different types of plants
2. How can you make sure that everyone feels included?
3. What role did the students have in the planning and development of the activity?
4. How does this activity connect the students to the natural world in the area?
5. What part(s) of the Mission does it address?
6. How does the Activity Benefit the Student and/or the Community?
7. How does the lesson engage the students in hands on activities?

Learner outcomes – List the specific skills and/or content that the students will learn.

Activities -

Conclusion -

Lesson Plans

Canoeing and Aquatic Invasives-

Lesson Topic – Canoeing and Aquatic Invasives

Instructor(s) – Graduate Fellows

Date – September or May

Age of students – 10th-12th grade

Approximate Time of lesson – 1 hour 45 minutes

1. **How will you link the recreational or skill-based activity to the environmental education portion of the lesson?** These activities will flow together nicely, because the students can really experience these issues up close and personal.
2. **How can you make sure that everyone feels included?** This activity is limited to a maximum number of 16 students, so the activity will be offered multiple times to ensure that everyone who wants to participate can.
3. **What role did the students have in the planning and development of the activity?** Students will be able to plan the route of the paddle.
4. **How does this activity connect the students to the natural world in the area?** This activity is fun and in the outdoors, but it also allows the students to become aware of a danger that faces our lakes.
5. **What part(s) of the Mission does it address?** This attempts to immerse the students in the outdoors for fun and learning.

- 6. How does the Activity Benefit the Student and/or the Community?** This activity will benefit the student by giving them knowledge of aquatic invasives, and it will benefit the community by either discovering (or hopefully not discovering) aquatic invasives on the campus. This will be important information for the community to reduce the risk of spreading aquatic invasives.
- 7. How does the lesson engage the students in hands on activities?** Hands on identification and sampling of aquatic plants.

Learner outcomes – List the specific skills and/or content that the students will learn.

By the end of this lesson students will:

- Know what the dangers of aquatic invasives are
- Know 2 ways to prevent the spread of aquatic invasives
- Have practiced their canoeing skills
- Be able to identify aquatic plants

Activities -

Canoe Introduction – 10 minutes

- Discuss safety rules
- Grab Life Jackets and Paddles
- Go over canoeing strokes quickly as a refresher for people
- Pair up participants by confidence in their canoeing skills, one more confident and one less confident.

Practice and travel to sampling location – 20 minutes

- Get out into the lake
- Practice canoeing
- Canoe to the location where you can sample the aquatic plants.

Invasives talk – 15 Minutes

- Discuss Invasive aquatic plant species, and the harm they can cause in lake ecosystems
- Show the different resources for identifying the aquatic plants –
 - o Through the Looking Glass, a Field Guide to Aquatic Plants, by Susan Borman, Robert Korth and Jo Temte.
 - o Aquatic Plants of the Upper Midwest, By Paul K. Skawinski.
 - o Wisconsin DNR Hand out on Aquatic Invasives
- Discuss sampling techniques

Sampling – 25 minutes

- Let students find and identify aquatic plants in the lake
- Have the students keep a list of the native and invasive species that are present

Conclusion -

Prevention - 10 minutes

- Discuss what can be done to prevent the spread of these plants
- Discuss the impacts that can be had on ecosystems by the invasives

Canoe and put away gear – 15 minutes

- Canoe back, put up canoes and put away paddles and life jackets.

Biking to the Bog

Lesson Topic – bog ecosystems

Instructor(s) – Graduate Fellows

Date – Weather dependent.

Age of students – 10th -12th grade

Approximate Time of lesson – 1 hour and 45 minutes

- 1. How will you link the recreational or skill-based activity to the environmental education portion of the lesson?** The recreational activity will be the method of transportation for the activity, so it will take less time, and be more enjoyable to get to the destination.
- 2. How can you make sure that everyone feels included?** Students will be assured that even people who aren't very experienced on bikes are welcome, and the trail will be easily accessible to all.
- 3. What role did the students have in the planning and development of the activity?** Students will be asked to plan out the bike route, and what bog we will stop in to discuss the ecosystem.
- 4. How does this activity connect the students to the natural world in the area?** This activity teaches them about yet another ecosystem that is present in the area, why it is beneficial and how to protect it.
- 5. What part(s) of the Mission does it address?** This activity shows students a unique ecosystem, and attempts to inspire the students to protect this ecosystem, which fits with the mission's goal to make our students environmental stewards.
- 6. How does the Activity Benefit the Student and/or the Community?** This activity benefits the students by teaching them about an important part of our natural world, and by getting them some exercise too.
- 7. How does the lesson engage the students in hands on activities?** The student will be able to actually touch and see the parts of the ecosystem.

Learner outcomes – List the specific skills and/or content that the students will learn.

At the end of this lesson, students will –

- Know how bogs form
- Know what makes a bog different from other wetlands
- Learn how to identify bog plant species
- Be able to explain how bogs are important
- Learn 2 ways to help protect bogs

Activities -

Intro - 5 minutes

- Discuss safety when riding bikes, and dispense helmets, ensure the students have water, and set out on your journey

Biking - 25 minutes

- Allow the students to choose their route, giving them choices of the different bog sites that they can visit within a short period of time.
- Bike to location chosen

Bog – 40 minutes

- Discuss how bogs form
 - o Filling in of lakes
 - o Shallow depressions that hold water
- Discuss how bogs differ from other wetlands
 - o Water does not flow through
 - o Different plant communities because of the bog's characteristics
- Discuss the characteristics of bogs
 - o Acidic
 - o Nutrient poor (this is why there are frequently carnivorous plants in bogs)
 - o Often have Sphagnum Moss

- Hold a vast amount of carbon in the decaying plant matter
- From - <http://www.arlingtonecho.org/restoration-projects/bogs.html>
- Discuss the common plant communities in the bog
 - Show examples of commonly found bog plants –
 - Sundew
 - Pitcher plants
 - Sphagnum moss
 - Leatherleaf
 - Black spruce
 - Tamarack
 - From- <http://www.nhdfi.org/about-forests-and-lands/bureaus/natural-heritage-bureau/photo-index/leatherleaf-blackspruce-bog.aspx>

Conclusion – 30 Minutes

Talk about the importance of bogs-

How we can keep bogs safe – protect wetlands from being developed

Bike back

Composting in the Garden

Lesson Topic – Composting in the Garden

Instructor(s) – Grad Fellows

Date – September

Age of students – 10th to 12th Grade

Approximate Time of lesson – 2 hours

- 1. How will you link the recreational or skill-based activity to the environmental education portion of the lesson?** The recreational portion is very closely linked with the EE portion, which has to do with increasing your local food use.
- 2. How can you make sure that everyone feels included?** Invite everyone, and make it an option multiple times.
- 3. What role did the students have in the planning and development of the activity?** Students were involved with the planning and maintaining of the garden.
- 4. How does this activity connect the students to the natural world in the area?** This activity isn't located in the "wilderness" per se, but it is a way to introduce the idea that any green space is better than no green space, and making good use of the land that you have.
- 5. What part(s) of the Mission does it address?** This activity fits under the category of environmental stewardship and outdoor activities, so this activity aligns well with the mission.
- 6. How does the Activity Benefit the Student and/or the Community?** This activity will benefit the community because it will be helping to maintain the gardens which produce some of the school's produce, and it will benefit the student because knowing how to compost and garden is a useful life skill to have, especially if your goal is to live more sustainably.

7. **How does the lesson engage the students in hands on activities?** This lesson will be almost exclusively hands-on, with lots of work for the students to actually participate in.

Learner outcomes – List the specific skills and/or content that the students will learn.

Activities -

Introduction – 5 minutes

- What we will be doing in the garden today
 - o Building a compost bin closer to the garden
 - o Trimming all of the plants that are done producing for the year, and harvesting any that are still producing.

Helping construct compost bin – 1 hour

- Discuss the benefits to composting – Good source for info - <http://epa.gov/recycle/composting.html>
- Students receive plans, materials and tools – plans and types of bins - <http://www.stopwaste.org/home/?page=445>
- Students construct the bin

Gardening – 30 minutes

- Students harvest anything that needs harvesting
- Remove plants that are done for the season

Composting – 10 minutes

- Bring the clippings and any other garden waste (spoiled or diseased produce) to the new compost bin and start your new garden compost!