

The Design of a General Education Curriculum with an Environmental and Sustainability

Framework

Susana R. Alvarado Tricoche

Thesis Mentor:

E. Christian Wells, Ph.D.

Director, Office of Sustainability

Deputy Director, Patel School of Global Sustainability

Associate Professor, Department of Anthropology

University of South Florida

Thesis Committee Member:

Connie A. Mizak, Ph.D.

Instructor, Department of Geography, Environment, & Planning

University of South Florida

Introduction

On April 22, 1970, 20 million Americans celebrated the first Earth Day (Wright, 2008). This national day was created in response to the environmental movement of the 1960s. In the midst of the Vietnam War, more people became concerned about the quality of the air and water and demanded a staunch federal response. Rachel Carson's bestselling book "Silent Spring", which investigated the impacts of pesticides in the natural world, bolstered the evolution of a collective environmental conscience because it provided the public a link between the Earth's health and human health (Wright, 2008). The concerns that arose after this prodigious movement still remain in the minds of the 21st century society. Therefore, it is imperative that this generation acquire a general understanding of the environment and the issues that affect them, so that like the young men and women of the 1960s, they are able to create change for the prosperity of their communities, and ultimately, the world.

The intent of this thesis was to highlight some of those past, but mainly present and future, key environmental issues that the United States has had to face over the last sixty years with the purpose of evoking a sense of responsibility and more importantly, to create a need for action in the current generation. To bolster the need for environmental and sustainability focused curricula at the university level, and specifically for the University of South Florida, I created and administered a survey to assess the level of environmental literacy in undergraduate and graduate students at the university. The survey contained components drawn from the draft framework created by the North American Association for Environmental Education, which was proposed on August 28, 2011, to be added as an optional component in the Programme for International Student Assessment 2015 (NAEE, 2011). In addition, I analyzed the University of South Florida's current general education curriculum. This analysis ultimately aided in determining the areas that need improvement and possible changes. Furthermore, Learning Gate's Environmental Education and Sustainable development curriculum model was

presented, analyzed and used in combination with Northland College's general education curriculum and the environmental literacy model to help recreate an ideal general education curriculum for the University of South Florida.

The Issues We Face

Perceptions of the natural environment have been widely shaped over the years by humans. Lynn White, a professor of history at the University of California at Los Angeles, describes these perceptions in his article "The Historical Roots of our Ecological Crisis," contending that our current ecological crisis was primarily due to the orthodox Christian arrogance towards nature (Pojman and Pojman, 2008). Others attributed these perceptions to a complex web of forces such as democracy, technology, urbanization, and an aggressive attitude towards nature (Pojman and Pojman, 2008). Regardless of what perceptions shaped humans' attitude of their environment, it is quite evident that the results of these forces have led to major environmental crises, which have occurred throughout the history of the United States. Human health effects are at the forefront of these issues.

Ecological science defines the environment as a complex system of living things and natural processes, with human species as just one player in this web. This perspective often leads people to view humans at the center and the environment as surrounding them (Maxwell, 2009). Nevertheless, because humans do play a major role in the complex system and natural processes of the environment, they can cause major disruptions and as a result, become a threat to the health of the environment and consequently, of themselves. The field of environmental health is one that recognizes that human species have created hazards that have become a threat to human health as well as the health of the ecosystems surrounding them (Maxwell, 2009). However, it is imperative to note that since environmental health is a branch of public health, the focus remains on human health and how hazards can be managed to ensure that the risk related to humans' exposure to hazards are minimized. In fact, the environmental movement

of the 1960s and 1970s was successful in promoting the creation of environmental legislature because environmental hazards such as the dumping of hazardous waste in the Love Canal, near Niagara Falls, New York, that resulted in numerous reports of serious health problems such as birth defects and miscarriages, were visible to the American people (Wright, 2008).

It is apparent that environmental health concerns of many Americans that arose in the 1960s prompted a memorable and lasting revolution that still remains strong today. However, looking further back into the history of the U.S., one can see that concerns for the environment arose as far back as the 1800s, when groups of outdoor enthusiasts and preservationists expressed their concerns for the health of the environment after having witnessed the destruction of natural resources. Timber and water was being exploited for years beginning with the colonization by the first English settlers, to the final commoditization of nature for its vast resources (National Atlas of the U.S., 2011). Nevertheless, many changes have been made over the years that have improved the health of the environment and its species. Grassroots organizations were among the first forerunners that worked actively towards improving and mitigating environmental degradation. The Audubon Society, the Sierra Club, the Izaak Walton League, and the Wilderness Society all had specific goals to protect and restore the environment (National Atlas of the U.S., 2011) Over the years, most notably after WWII, an increase in the public's interest for further studying and mitigating environmental issues came about after a peak in the number of people enrolling in college, coupled by the advancement in the scientific knowledge of areas of studies such as ecology (National Atlas of the U.S., 2011). These major events led to a period of major environmental policy reformation.

Prior to the changes in environmental legislature that came about during this time of major environmental activism, however, some people believed that we did not need to enact environmental protection laws because tort law would protect the environment (Kubasek and Silverman, 2010). Under

tort law, a nuisance case, or an unreasonable interference with the use and enjoyment of another's land, can be used to control pollution by stating that a person or industry's action was affecting the public's ability to use their land and or property (Kubasek and Silverman, 2010). However, there were major problems with this form of pollution control because essentially, pollution was still extensive and ultimately, the adoption of separate and distinct environmental regulations was necessary. This shift was further bolstered by analogies such as the story told by Garret Hardin in "The Tragedy of the Commons" which explained how the dearth of land use regulation led farmers to overuse the land, ultimately destroying it. After much activism for a major revolution in the way cases of environmental issues were treated, President Nixon signed the National Environmental Policy Act in 1970, which began the federalization of environmental policy (Kubasek and Silverman, 2010). Other major environmental policies that emerged in the 1970s included the Clean Air Act of 1970 and the Clean Water Act of 1972. In total, between the years of 1969 and 1979, 27 laws were passed designed to protect the environment and hundreds of administrative regulations came into force (Kubasek and Silverman, 2010). However, although these decades saw the passage of major environmental policies, many environmental issues continue to be unresolved; energy, water, and food resource scarcity are among the most critical issues in the world. Unsustainable demands for fossil fuel based energy is one of the most pressing concerns for the global environment and solutions are needed. Therefore, today's society requires young minds to find alternative solutions that will allow earth to continue to flourish and provide resources that can be replenished for generations to come; this is a challenge that cannot be taken lightly. In the next section, the University of South Florida's curriculum will be discussed in detail, as well as the environmental literacy assessment that was created to determine the curriculum's effectiveness in teaching the discipline of environmental science and policy.

Analysis of the University of South Florida's Curriculum- USF's General Education Curriculum

Development

The University of South Florida's General Education Curriculum last went through a major change in the fall of 2009, when the curriculum was changed from the General Education and Exit Course Program to the Foundations of Knowledge and Learning (FKL) Core Curriculum. This curriculum was implemented with the following vision, as prescribed by the General Education Improvement Committee (GEIC):

“The Foundations of Knowledge and Learning Core Curriculum is a program of general education courses designed to provide students with a diversity of ideas, concepts, and ways of knowing and acquiring new knowledge. It emphasizes inquiry as the means of developing complex intellectual skills that enable you to become a critical thinker, concerned citizen, and successful professional. If you have not yet chosen a major discipline, the Core will provide you with the opportunity to explore a variety of vital areas of study, making you more aware and engaged in understanding the challenges that our global realities require.” (USF, 2011)

The curriculum consists of fourteen dimensions and focuses on two main areas, critical thinking and inquiry; the following are the complete list of dimensions of this curriculum, each with a description of what they cover (USF, 2011):

1. Critical Thinking: is the ability to engage in analytical, reflective, and critical thought -- that is, to go beyond verbatim learning of factual information.
2. Inquiry: inquiry-based learning is based upon a philosophy of education that promotes the development of a questioning, critical, socially-engaged intelligence.
3. Scientific Processes: must emphasize scientific methodology and habits of mind.

-
4. Creative and Interpretive Processes and Experiences: include study of the historical and cultural contexts of works drawn from the visual, performing, and literary arts.
 5. Global Context: focuses on the process referred to as globalization. That is, the process through which the magnitude and rate of the movement of people, production processes, capital, goods, services, ideas, and information across national boundaries are being intensified.
 6. Historical Context and Process: focus on the context (physical, temporal, intellectual) in which the events of human history have taken place.
 7. Environmental Perspectives: allows students to consider the changing nature of the earth and its constituent elements, as well as the relationship between the physical, biological, and human worlds.
 8. Human and Cultural Diversity: The goal of courses in human and cultural diversity should be to treat the phenomenon as an inherent part of the human condition, and not merely as a contemporary social or political anomaly.
 9. Ethical Perspectives: enable students to explore how values inform the behavior of individuals and societies and govern the way humans relate to each other on a daily basis.
 10. Inter-relationships among Disciplines: students will understand what disciplines have to offer (the types of problems they deal with, their approaches to problem solving, and their tools) and learn to make connections among and between disciplines.
 11. Written Language Skills: Courses with a focus on writing.
 12. Oral Language Skills: support the development of oral communication skills.
 13. Information Literacy: How information is created, organized, and used, with specific reference to scholarly communication.

14. Quantitative Literacy: must instill quantitative skills sufficient for evaluating and responding critically to issues in the media and public life.

The General Education Curriculum and Exit Requirement courses must contain at least two of the dimensions discussed above (critical thinking and inquiry) to be approved by the General Education Council (GEC). As noted, the applicability of other dimensions above is dependent upon where the course falls in the core areas; however, each approved course must have at least 5 of the 14 dimensions, including critical thinking and inquiry dimensions. The dimensions and core areas are further explained in detail online at: <http://www.ugs.usf.edu/gec/fklcc.htm>.

The following are the core six areas that comprise the general education FKL curriculum (USF 2011):

- A. English Composition
- B. Fine Arts and Humanities
- C. Human and Cultural Diversity and Global Context
- D. Mathematics and Quantitative Reasoning
- E. Natural Sciences
- F. Social and Behavioral Sciences

These six core areas cover a total of 36 credit hours of the 120 minimum requirements for acquiring a bachelor's degree at this institution. An additional 6 credit hours are also required as part of the exit requirements.

These requirements and goals, as mentioned previously, are overseen by the GEC. The following excerpt describes in detail the overall duties of the GEC:

“To oversee implementation and ensure ongoing success of the Foundations of Knowledge and Learning Core Curriculum, the General Education Council (GEC) was formed as an independent

standing committee of the Faculty Senate. The GEC has direct lines of communication and coordination with the Undergraduate Council and is composed mainly of faculty, with appropriate administrative support from the areas of Undergraduate Studies, Testing and Evaluation, and Institutional Effectiveness. The GEC will review and approve courses on a three-year basis, promote and distribute assessment data from the program to the University community as formative feedback, and oversee the continuing curriculum improvement process.” (USF, 2011)

Environmental Literacy Assessment

The purpose of this research was to assess the level of environmental literacy of USF students who followed the curriculum previously outlined. The results can be used to better improve the program so that students have a higher level of environmental literacy and are able to solve the environmental issues that are faced by society today. However, to better understand this assessment, the term “environmental literacy” had to be defined.

Environmental education, although having ancient intellectual roots, is a fairly new concept, having come into prominence in the late 1960s (North American Association for Environmental Education “NAAEE”, 2011). According to the NAAEE, three main movements most cited were the Nature Study movement (ca.1890s), the Outdoor Education movement (ca.1920s), and the Conservation Education movement (ca. 1930s). These movements coincide with the environmental history of the United States which is known for its environmental philosophy battles between the preservationist and conservationist organizations and beliefs, which were thought to have revolutionized environmental education in the U.S. Other major educational movements, such as the Progressive Education Movement, influenced the educational philosophy of environmental education by bolstering the concept that a curriculum is effective when an emphasis is placed on learning by doing and education is

integrated with community life (NAAEE, 2011). The North American Association of Environmental Education has a document that outlines some of the major environmental education milestones that have shaped the foundation of environmental literacy. This document can be found at <http://www.naaee.net/sites/default/files/framework/frameworkPISA2015.pdf>. One of these major milestones was in 1972, when the United Nations (UN) held a Conference on the Human Environment in Stockholm; at this conference, they convened to develop a framework and direction for furthering environmental education internationally (NAAEE, 2011). After these milestones, and since 1990, several frameworks have been created in an attempt to assess environmental literacy as a tool to improve environmental education internationally (NAAEE, 2011). This is where the National American Association of Environmental Education began to build on an existing framework to propose a more inclusive assessment, which is to be proposed at the Programme for International Student Assessment (PISA) in 2015. This framework, created by the NAAEE, was the basis for the environmental literacy assessment survey used in this study.

The NAAEE framework was developed based on past frameworks created to assess environmental literacy. Its foundation utilizes not only the knowledge but also the abilities, dispositions, and behavior of students' ability to critically solve various environmental issues. Furthermore, environmental literacy cannot be seen as a simple "classification scheme" for determining environmental literacy, but rather as a continuum of literacy knowledge (NAAEE, 2011). This framework was developed for 15 year old students, however, for the purpose of this research the population chosen was college students because they will have an immediate impact on environmental issues more than any other age group. This research does not disregard the importance of environmental education at an earlier age which will be explained further.

The proposed framework by the NAAEE covers the following areas:

A proposed framework for assessing environmental literacy – PISA 2015

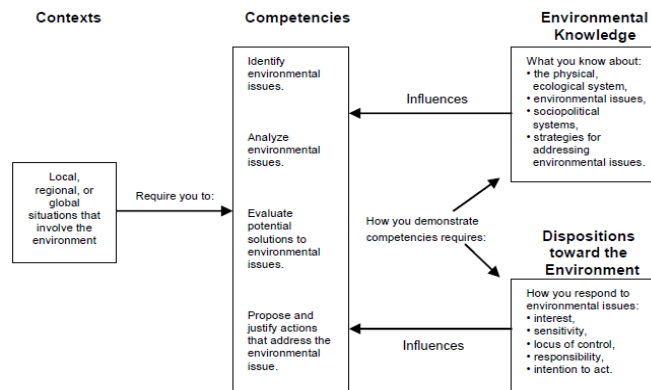


Figure 1 NAAEE’s Framework to be proposed at the PISA

- A. knowledge of environmental concepts and issues;
- B. attitudinal dispositions, motivation, cognitive abilities, and skills; and
- C. confidence and appropriate behaviors.

The degrees of knowledge of these areas, according to the NAAEE, are essential in determining how an individual student will make effective decisions in a range of environmental contexts (NAAEE, 2011). These areas are further explained in the NAAEE document which can be found at <http://www.naace.net/sites/default/files/framework/frameworkPISA2015.pdf>. The framework (see Figure 1) assesses how students in their community (context) identify, analyze, and evaluate environmental issues in order to propose solutions for them (competencies) and how this is influenced by their environmental knowledge and their dispositions towards their environment.

Methods of Creating the Environmental Literacy Assessment

The environmental literacy assessment was created in the form of a survey in two parts. First, the environmental knowledge portion was created using questions from sources such as the Environmental Protection Agency, the National Geographic Society, the Wall Street Journal, and the National

Environmental Education Association. The second portion of the assessment was created by gauging students' dispositions towards the environment using a series of environmentally friendly activities such

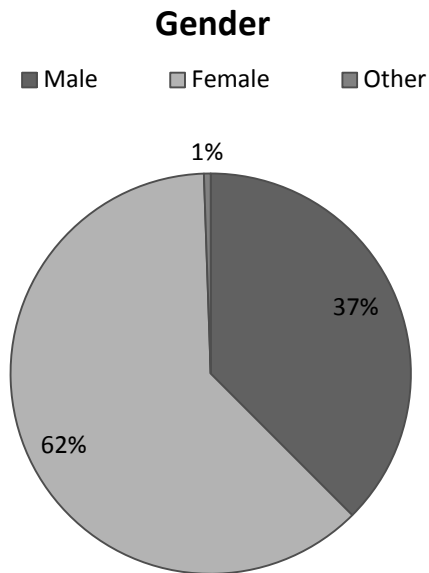


Figure 2. Distribution of male, female, and other gender in the student population of 184 participants.

Class (Year in College)

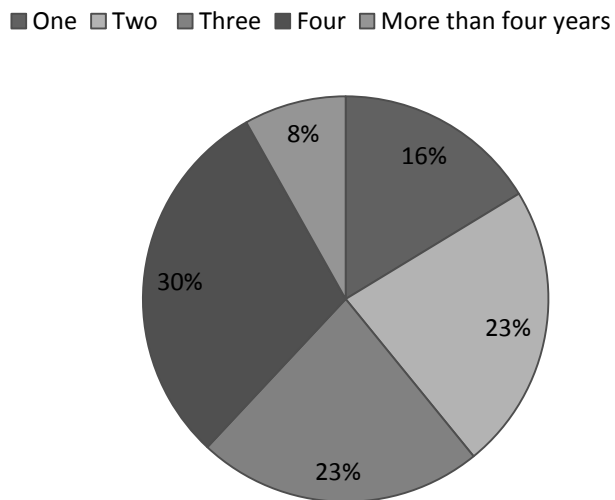


Figure 3. Distribution of class (year in college) in the student population of 184 participants.

as recycling and lobbying for environmental policies (these are just a few of the many examples). Additionally, some demographic data was also collected such as gender as well as year in school and major (see Figure 2). These questions were all created in a low-cost surveying site called “Stellar Surveys” which provided excel downloads of the results.

The survey link was distributed via email to undergraduate students and graduate students (graduate students were required to have taken their undergraduate general

education courses at USF to be able to take the survey) using Blackboard© tools such as email communication,

which allowed mass emails to be sent to group of individuals in the same campus organization or course, as well as

through the use of social networks such as Facebook©. In

addition, the survey link was sent to university professors to distribute to students in their classes via email.

Environmental Literacy Results and Analysis

The results of the environmental literacy survey were based on the participation of 184 students ranging from

freshman status all the way to graduate students who

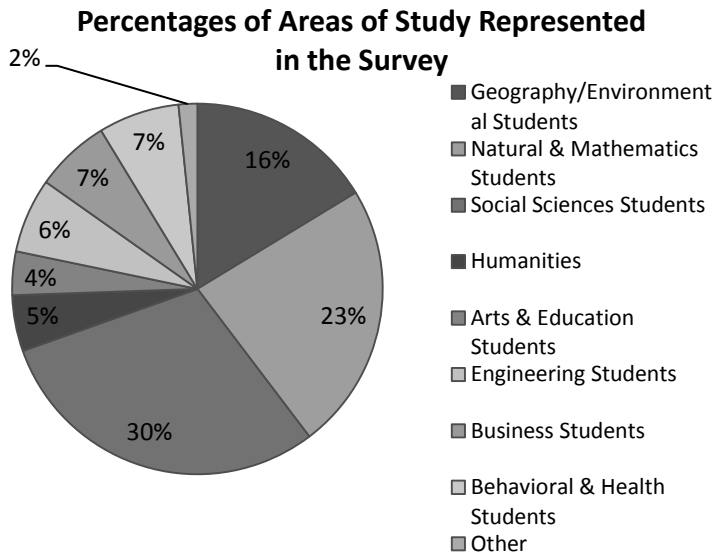


Figure 4. Distribution of areas of study represented in the student population of 184 participants.

Environmental Knowledge Results By Pass or Fail*

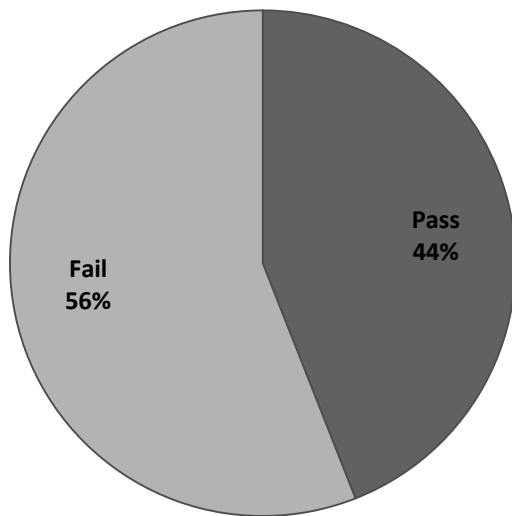
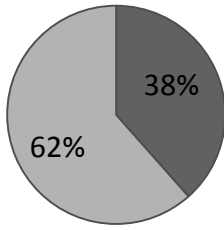


Figure 5. Pass and fail distribution among the 184 student participants. Pass was defined as a percentage of correct answers of 70% or higher; fail was defined as any percentage of correct answers below 69.9%

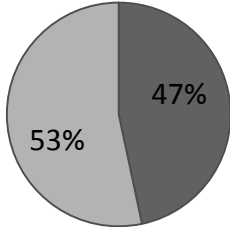
completed at least half of their undergraduate degree at the University of South Florida (although this was not explicitly specified in the survey, therefore, a number is not available to indicate how many of the participants were transfer students, and therefore it became a limitation to the study). The specific breakdown of the class “year” of the student population surveyed is depicted in Figure 3. Additionally, demographic data was also collected for the purpose of understanding how environmental literacy varies by gender.

A high percentage of the student population that participated in the assessment was non environmental/geography students (see Figure 4); the percentage of students was 84%. The percentage of science (natural and physical) and math students was 23%. The area of study highly represented was the social sciences major, with a total of 30%. This detailed breakdown was necessary in determining how high and low environmental literacy was distributed among areas of studies.

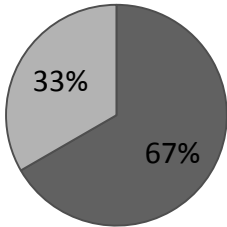
Behavioral and Health Students



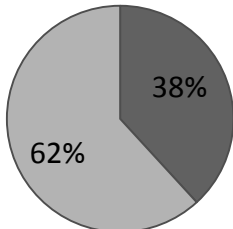
Geography/Environmental Students



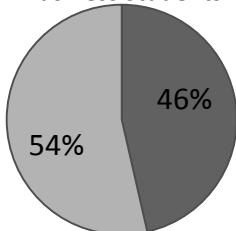
Engineering Students



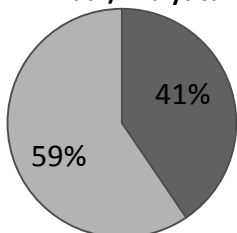
Social Sciences Students



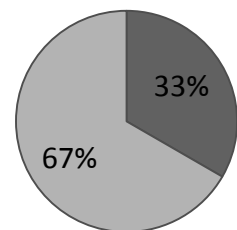
Humanities, Arts, Education & Business Students



Natural/Physical Sciences & Math/Analytical



Other (Majors) Students



■ Pass ■ Fail

The assessment indicated that overall, the level of environmental knowledge of student participants at the University of South Florida was relatively even with 56% scoring below a “passing” grade (see Figure 5). Figure 6 breaks down the results by areas of study grouped together for the analysis of the results. There were trends found in the environmental knowledge for all areas of study except for the engineering students, who had a higher passing rate than all other majors; the majors were grouped together based on the similarity of the coursework.

The next part of the assessment focused on the dispositions towards the environment. First, the students were asked if they recycled (recycling could have been anything from plastics to clothes; this was clarified in the survey); the results for this question are depicted in Figure 7. The overall response was yes, which indicated that USF students have good dispositions towards the environment. The next question further assessed students’ dispositions by “ranking” multiple activities from very important to

Figure 6. Pass and fail percentage distribution by areas of study (Geography/Environmental students comprised a total of 30, Natural/Physical Sciences and Math/Analytical students comprised a total of 6, and Social Sciences comprised a total of 55, Humanities, Arts, Education & Business Students comprised a total of 28; Engineering students comprised a total of 12, Behavioral and Health students comprised a total of 13; Other majors comprised a total of 3) based on total student population of a total of 184 participants.

Do you Recycle?¹

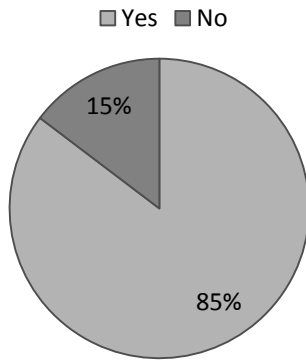


Figure 7. Dispositions towards the environment question number one. ¹Yes indicates recycling items such as papers, plastic, carpet, clothes, etc.

the students, to not as important to the student. The results are shown in Figure 8. From the assessment results for this specific question, it was concluded that the dispositions towards the environment for USF students is very favorable with improving our transportation system being the highest ranked at 8.304 and composting being the least important at 6.239 (but above the indifferent ranking 5>).

The conclusions of the overall assessment were unexpected in the environmental knowledge portion of the assessment, with the environmental/geography students having a relatively low score compared to other majors; however, there was an overall trend for all majors of higher failing grade than passing. The results for the dispositions towards the environment portion of the assessment were to be expected,

Dispositions Towards the Environment

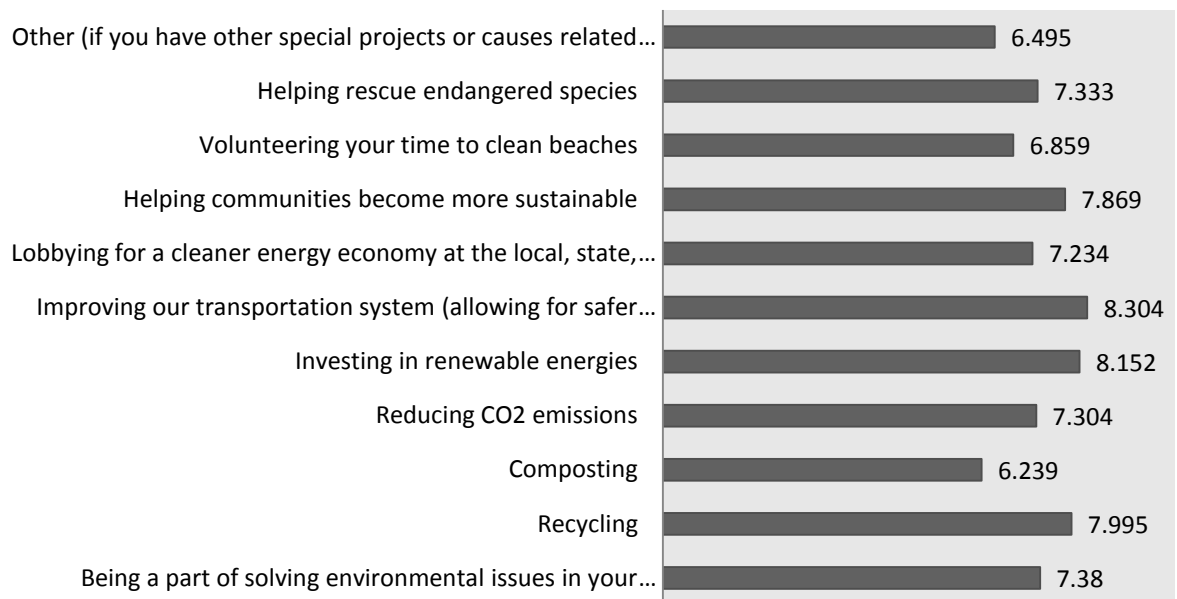


Figure 8. Dispositions towards the environment through assessing the interest in various environmental activities, 1 being not being important to 10 being very important to the student.

indicating that students at the university have positive behaviors and do want to make a positive impact on their communities (this can be attributed to the high level of sustainability projects and practices at the university). In conclusion, the overall environmental literacy for USF students seemed to be split, with students' literacy being in the middle range.

There are some limits to this study that must be recognized. First, there was no way to indicate whether the students that were assessed did complete most of their general education requirements at USF (this was verified for graduate students surveyed, but not for transfer students) because the assessment was not explicit in this. Additionally, the number of students surveyed within each discipline was not significant when compared to each other as well as the fact that the assessment was completed online. Ideally, the assessment would have to be done in a controlled setting, preferably a classroom, and a random pool of students would be selected that meet the following criteria:

- A. Students must have completed at least 75% of their general education curriculum requirements at USF.
- B. Graduate students can only participate if at least 75% their undergraduate general education requirements were met at USF.

With these modifications, the assessment would reveal a much more accurate representation of the environmental literacy at USF. However, this preliminary assessment was a good start.

Recommendations: A Look at Learning Gate's and Northland College Sustainability Curriculum Model

Two institutions were researched and their curriculum was analyzed to determine the best methods to increase the degree of environmental literacy at the university. Learning Gate Community School is an institution that teaches students in levels kindergarten through tenth grade. Their

curriculum, Seed to Soup®, focuses on teaching students about the importance of taking care of their environment through all subject areas, including biology, health, science, math, history, geography, language arts, social sciences, and fine arts. As part of the research conducted for this thesis, students at the Learning Gate Community School were observed for 2-3 weeks while they were being taught tree species and wetland conservation. Through observations, it was evident that students were being taught to think critically about the ecological processes happening all around them. The environmental teacher spent an hour each week with the different grades and taught the various environmental topics, which differ from grade to grade. More information on Learning Gate’s curriculum can be found at <http://www.learninggate.org/curriculum.html>.

Founded in 1971, Northland College is a small private university in Ashland, Wisconsin, whose curriculum is based on an environmental liberal arts framework. Their general education curriculum is comprised of three connections (their descriptions are verbatim from the college’s information site at <http://www.northland.edu/academics-curriculum.htm>):

1. Natural Connections: students enroll in integrate, multi-disciplinary pairs of courses organized around common themes or questions. Faculty teams dedicated to Natural Connections provide a variety of disciplinary perspectives on these questions or themes, and students develop a sophisticated understanding of the complexities inherent in each
2. Growing Connections: a nine-course sequence of courses that focuses on the history, theories, and practices of sustainable agriculture. The expertise of faculty teaching in this program range from biology, geology, and psychology to environmental history, Asian religions, and sustainable systems. Student participants in Growing Connections work closely with faculty mentors and regional farmers in classrooms, labs, and fields to develop a comprehensive understanding of the role that agriculture plays in the lives of individuals and their communities.

3. Superior Connections: a sequence of nine courses integrated thematically by a focus on the Lake Superior watershed. Students who enroll in Superior Connections develop expertise in the natural and human histories of the watershed, and then use these expertises to study and engage a variety of complexly interconnected environmental and cultural issues. Superior Connections incorporates a number of field trips into its courses, including a one-month journey around Lake Superior. Students emerge from the program empowered by experiences of connectedness to make meaningful contributions to the watersheds and communities in which they will live. Students must be freshmen when they apply.

Each of these curricula has an area of specialty and students of any major offered at the college can choose from any of the three. For more information on Northland College, visit www.northland.edu.

After looking carefully at both curricula, and analyzing the final results of the assessment, the following two recommendations were made to be sent to USF’s General Education Council for consideration:

Table 1. Recommendations for USF’s General Education Council	
Option 1: A New Core Area	Option 2: Environmental Dimension Required
<ul style="list-style-type: none"> • A new core area that focuses on environmental perspectives • Students would have options on the courses to take (8 credits total) • Two out of the four courses must cover environmental systems • At least one course must address 	<ul style="list-style-type: none"> • This recommendation would follow the approach of Learning Gate. • It would require all general education courses to include the environmental perspective dimension as one of three required dimensions (two required currently are inquiry and critical thinking) for a total of five

<p>environmental issues and how to solve them</p> <ul style="list-style-type: none"> • One final course must engage students in a project that would benefit the environment in some way, shape, or form 	<p>or more dimensions</p> <ul style="list-style-type: none"> • The final capstone project must include an environmental perspective component and must require some type of field work
---	---

Final Remarks

Although some believe a comprehensive environmental literacy framework may not be practical, this research shows that environmental literacy can be assessed and tools are available for curriculum improvement. The NAAEE’s continuous research over the last 30 years shows that the U.S. as well other countries are committed to finding ways to improve the environmental literacy assessment tools to help guide institutions in the creation of environmentally focused curricula. Furthermore, the curricula at Northland College and Learning Gate Community School show the commitment of these institutions in preparing their students to become conscious of their environment and the issues that threaten to degrade it; this should be assimilated by all institutions, especially a university such as USF whose successful sustainability efforts and great impact on the Tampa Bay community promises to send a current generation of professionals that are better prepared for the major environmental issues being faced by society today.

The environmental literacy assessment results of this study showed that students’ dispositions toward the environment are good; this indicates that the necessary attitudes are present that would lead to positive changes in communities. However, the environmental knowledge assessment showed that it is necessary for USF to strengthen its environmental liberal arts education; the two proposed

recommendations would achieve this goal. The first recommendation, modeled after Learning Gate’s curriculum, would integrate environmental education into the existing curriculum by requiring an environmental perspective dimension in all approved general education courses. This approach would allow students to gain an understanding of the interdisciplinary nature of environmental studies. The second recommendation, modeled after Northland’s curriculum, adds a new environmental core area and its required courses would be taught from an interdisciplinary perspective. Both recommendations would have to be evaluated to determine which could be integrated the best into the current curriculum and yield the highest degree of environmental literacy in students. As the wise Dr. Seuss once said in his book The Lorax, “*Unless someone like you cares a whole awful lot, nothing's going to get better. It's not.*” A curriculum with an environmental and sustainable framework is necessary for inculcating care for the environment and managing its resources to ensure its viability for our future generations.

Works Cited

- Hollweg, K. S., & et al, (2000). Assessing Environmental Literacy: A Proposed Framework for the Programme for International Student Assessment (PISA) 2015. *National American Association of Environmental Education*, Retrieved from <http://www.naaee.net/sites/default/files/framework/frameworkPISA2015.pdf>.
- Kubasek, N. K., & Silverman, G. S. (2010). *Environmental Law*. Pearson College Div.
- Maxwell, N. I. (2009). *Understanding Environmental Health: How We Live in the World*. Sudbury, MA: Jones and Bartlett.
- National Atlast of the U.S. (2011, January 27). *Environment of the U.S.*. Retrieved from <http://www.nationalatlas.gov/environment.html>
- Pojman, L., & Pojman, P. (2008). *Environmental Ethics*. (5th ed.). Belmont, CA: Cengage Learning.
- General Education Improvement Committee. (2011). *University of South Florida Foundation of Knowledge and Learning Core Curriculum; General Education and Exit Course Program*. University of South Florida, Tampa, FL. Retrieved from <http://www.ugs.usf.edu/gec/fklcc.htm>.
- Wright, R. (2008). *Environmental Science*. (10 ed.). London: Pearson.