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Leadership development for pro-environmental behavior Utilizing peer to peer communication and learning: An academic pilot project

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Utilizing peer to peer communication and learning:
An academic pilot project

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Dedication

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Per Aspera ad Astra!

Mark W. Carrera

Abstract

There is a cultural perception that the onus of responsibility for shark conservation falls on the shoulders of environmental and scientific communities' leaders. Given the diminutive size of these two communities when compared to the vastness of American society, responsibilities should be shared by leaders of educational organizations who can communicate with greater populations. The general public must be encouraged to act pro-environmentally for effective shark conservation to ever take place in the world. While the scientist or activist comprehend the current environmental travesty of shark decimation, many Americans are seemingly unaware or disconnected to the authenticity of shark-threat-to-humans as it is portrayed through media biases (O'Bryhim, 2009). Americans' perceptions of sharks have been infused with fear and mystique over many centuries of human interactions with oceans. Without an abrupt shift in the public's perceptions of sharks, conservation leaders can lose the fight to save a species that will in turn have unprecedented consequences for all inhabitants of the earth. Ocean stability issues of all levels are a great concern to many scientific organization as many predator populations are shifting; Apex predators such as the giant and Humboldt squid are showing alarming increases in populations in the Gulf of Mexico and Eastern North Pacific due to the absence of sharks (Zeidberg & Robinson, 2007). Environmental leadership created through new approaches to education and peer to peer learning can undergird pro-environmental behaviors and successful conservation of nearly any endangered species, especially those influenced by fears or low-cultural values such as sharks. Currently, there is an increased awareness propagated through positive media and celebrities regarding shark conservation and ocean stewardship. The hardest question for 21st century leadership, "Are we too late?" concerns timing, and the priorities of the next generation. Peer to peer transfer of learning can develop pro-environmental behaviors and inspire leadership for critical and challenging conservation issues before it is no longer relevant.

> "Public diplomacy and public education, together with sound policy, give us a model for success. Using Facebook, Twitter, public service advertisements, the media, celebrity interviews, videos and classroom teaching, we can martial the forces to convince consumers that buying products that come from slaughtered elephants or harpooned sharks is simply wrong and dangerous." Tara D. Sonenshine, CNN 7/15/2013

Table of Contents

Introduction

Currently, the global decimation of pelagic species is clearly a threat to the sustainability of the earth's oceans and the survival of the human species (Stewart, 2010). Prominent researchers from ocean-environmental organizations such as NOAA, Scripps Research Institute, Green Peace, and Woods Hole Oceanographic Institute support these observations through their current research findings (Cunningham-Day, 2001). There is a cultural perception that the onus of responsibility for shark conservation falls on the shoulders of environmental and scientific communities' leaders. Given the diminutive size of these two communities when compared to the vastness of American society, responsibilities must be shared by leaders of educational organizations who can communicate with greater populations. The general public must act pro-environmentally for effective shark conservation to ever take place. While the scientist or activist understands the travesty inherent to the current environmental state of sharks, many Americans are seemingly unconnected or misinformed through the media (O'Bryhim, 2009). One way to invite change is through innovative educational programs that will deliver a new message to the public. Another way is to stimulate positive attitude among Americans through peer to peer transfer of learning in which participants relay accurate shark data to others, cultivating pro-environmental behaviors. Without developing inspired leaders and dedicated exemplars of pro-environmental behaviors, most shark species may cease to exist (Stewart, 2010). This thesis project focuses on creating environmental behavioral change and leadership through peer to peer transfer learning. Its core theme is shark conservation and dispelling the paradigm of fear (of sharks) to stimulate pro-environmental behaviors and acceptance of innovative learning for problematic conservation issues. Through a ripple effect, a subordinate theme is to establish

community awareness of environmental issues directly related to sustainability of ocean resources and human survival.

Project Overview

The goal of this project is to explore and exploit peer to peer transfer of learning as a mode to create grassroots leadership and encourage pro-environmental behaviors for the conservation of endangered species. The project theme and focus is to develop an innovative, creative, and alternative educational model for energizing the general public into endangered species activism which is currently difficult to support due to inaccurate perceptions or social and cultural issues. To narrow the activism for environmental challenge theme, this project will focus on current shark conservation issues. Due to the sharks' notorious and mythical presence in American culture, effecting a pro-species public behavioral change will be extremely challenging. Therefore, if the educational model is successful, nearly any endangered species, but particularly unpopular ones, may be used in place of the shark. A learning focus of the educational model will be the development of peer to peer transfer of learning as it relates to challenging environmental issues such as shark conservation.

The Problem

While many Americans love saving cute or inspiring species such as pandas and bald eagles, the same compassion and empathy does not, typically, extend to so-called unfriendly species such as poisonous spiders, pit vipers, or lampreys (Stewart, 2006). This lack of compassion appears to come from a negative perception of certain species as well as stereotyping, especially through media influence, of specific creatures such as sharks. The problem undermines efficacy in environmental conservation leadership and the development of

pro-environmental behavior (O'Bryon, 2009: Kollmuss & Agyeman, 2012). One contributing factor in American society is an apparent disjunction of prevailing scientific viewpoints with those of the average citizen. Promotion of pro-environmental behavior in society begins with scientific proof and spurning public action by special interest groups such as Green Peace or the Sierra Club. While the scientific and activist communities understand conservation issues from their respective areas of expertise, the larger part of American society (civilians) holds the most power for change; convincing the masses should be the focus for stimulating leadership in pro-environmental behaviors (Kollmuss & Agyeman, 2002).

Delimiters

1) This project focuses on sharks and the conservation challenges they represent. It is assumed that the methods will be adaptable to other species and to other groups working on increasing activism.
2) It does not focus on scientific discoveries or hold any scientific significance outside of some minor phenomenological observations regarding the human perceptions of endangered species and how these might be changed.
3) The pilot project is not intended to be used beyond The University of Southern Maine's Lewiston Auburn College (USM-LAC) and its findings will be used to determine relevancy and practical performance of the design only.
4) The results of the pilot could be used to design a more robust and effective learning module for deployment elsewhere.
5) The target age range encompasses young adults (17-19 & 19-25) who are either high school seniors or students which have just entered their first year of college (19-25).

Assumptions

1) Regarding the public perceptions of sharks which the educational model will need to address to be successful, some of these are:
    a. Media influence over society and the long history of what will be referred to as the *Jaw's conundrum/syndrome* for this paper.
    b. A lack of baseline education regarding sharks and conservation in the general public, especially those in the age range targeted for the learning module, presents a serious problem in American society regarding sharks and other threatened species.
    c. Very little is being done in the general educational system to counter the *Jaws Conundrum* outside of special interest, scientific, or activist organizations.
    d. The macro part of society is subject to manipulation through the media regarding sharks and the persistent negative tone or underpinning messages played out in the news or depicted in storylines and themes.
    e. The Y and Echo-generations will be extremely challenging to influence because of their conditioned behavior towards learning environments, their short attention spans, and their fixation on entertainment, specifically in the United States.
    f. Young adults, the next generation of leaders, are the most important players in society to champion any short term and long term conservation efforts.
    g. There appears to be many people in American society who are educated about environmental issues but who fail to act on or support conservation efforts by getting involved; pro-environmental behaviors among young adults appears limited.

Guiding Questions:

1) How does an educational model captivate generations that appear fixated on entertainment? How to address the Y-generations propensity for indifferent behavior towards environmental learning unless it has entertainment value?
2) How can a training or educational module motivate people into caring conservation action even though they have a negative orientation regarding the conservation topic?
3) Are there specific age groups that have concrete education in environmental issues but who fail to support change or do not join organizations that foster pro-environmental behavior?
4) Is the young adult (17-25) the most important age group to focus the learning module on? Should it concentrate on adults who are already in positions to create change in public policy for shark conservation through change and action? Or should the module focus on children and adolescents who will step into leadership roles in the near future?
5) Has time run out for creating pro-environmental behavior for shark conservation? Are shark populations past the critical apex for recovery, or have humans populations surpassed the earths sustainability apex?

Pilot Project:

The pilot project was developed using basic training and development program tactics such as engagement techniques, lecture, presentation materials to achieve the highest impact, and as much peer to peer engagement processes as possible. Development of the pilot included the following basics in design using Mel Silberman's *Active Training 3rd Edition* (2006) as a guideline for innovative training modules as well as information provided by educational

professionals such as the Director of Education for the New England Aquarium and Director of Education for Earth Echo International. The development process addressed some of the basic questions about design as stated by Silbernan (p.158-159):

1) Does the design achieve the activities objective?
2) What knowledge or skill level does the design require of the participants?
3) How much time will it take?
4) Is the design loose-paced or fast-paced?
5) Is it suited to the size of the group?
6) What skills are required to conduct the design?

Literature Review

Research over the past three decades indicates that the world's oceans are rapidly approaching total collapse because of acidification, species depletion, and loss of ecosystem balance. At the center of the collapse is the decline of predator sharks that provide a critical balance in all ocean eco systems, and they are feared and misunderstood by many Americans (Cousteau, 2013; Stewart, 2010). Adaptive learning using innovative education models could stimulate environmental conservation leadership and create a ripple effect of truth overcoming fictional beliefs about sharks. Humans are negatively impacting the oceans at a rate unprecedented in recorded human history according to many expert research organizations such as the Ocean Conservancy, Woods Hole Oceanographic Institution, Green Peace, and the Gulf of Maine Research Institute. Improving the understanding of ocean conservation issues by average citizens, and especially policy makers, is one of the main areas in need of educational leadership. It is their efforts which will make a difference in changing the current negative trajectory of humans' impact on ocean ecosystems. "There's a real lack of public and political awareness of

these issues" which requires developing innovative educational approaches to counter the old rationales toward ocean resources (O'Bryhim, 2009, p.36). It is apparent that current generations lack the knowledge that certain species such as sharks are necessary for human survival (O'Bryhim, 2009; Stewart, 2010). Four areas are examined in this literature review in the support of innovative educational leadership in environmental issues: public perception of sharks, best practices for the transfer of learning, pro-environmentalism behavior and common values.

Public Attitude and Perception of Sharks & Conservation

Public perception is a powerful tool in stimulating grassroots activism leadership for social, cultural, and behavioral changes. Strong public activism and individual leadership has stopped wars (Vietnam), toppled leaderships (Nixon or Marcos) altering the course of history. Recent changes in public perceptions of environmental issues have improved the preservation of the habitats and lives of seals and whales, yet negative perceptions of the critically important shark-human relationship persists. There are notable differences between languages of the scientific community, the activist, and the general public; the scientist and activist languages consists of complicated dialog necessary for them to conduct their research or work within their oranizations and with their peers. An average person does not need to understand complicated dialect to find passion for environmental issues and accept the challenge of participation. The general public represents the third group which, in history, has been greatly affected by both science and the activist communities (Stevenson & Byerly, 2000). A common language should be incorporated in the research of environmental issues so that the average person can understand the information and take interest which results in direct action and community leadership.

A non-scientific researcher, David Kenyon Webster[1], makes a profound comparison between men and sharks, "Few creatures are as strangely involved with man as is the shark. Commercial, emotional, physical, and sometimes even spiritual, their relationship is a psychiatrist's delight." (Webster, 1963). Webster compares the propensity for men and sharks to kill, yet men kill with consciousness, while sharks kill only for survival. The negative perception by society is reinforced when media-fueled, horrific shark stories create fear, shock, and awe. A prime example was the USS Indianapolis incident in 1945 (Finneran, 1988). This true story, used as a narrative by the character "Quint" in the book *Jaws* (1975), cemented the image of sharks as cold-blooded hunters of humans in American pop culture, and continues to be the cultural norm today. While Peter Benchley made tens of millions with *Jaws,* today he condemns the public fear he helped create in American society (Hadwick, 2002).

While the scientific community does not specifically address public perception of sharks, individuals such as Mr. Webster do through the pervasiveness of storytelling. In fact scientific texts such as Oceanography (Trujillo & Thurman, 2008) and Marine Biology (Karleskint, Turner, & Small, 2006) fail to cover any points relating to public perceptions of sharks or media related problems with conservancy. However, the *Jaws* (1975) phenomena surfaces in one scientific resource, *The Secret Life of Sharks* (Kilmley, 2003) highly regarded in the scientific field as a staple in current day shark research. It appears that American attitudes, in general, towards sharks and other conservation issues, appear to be out of balance with what is necessary for promoting effective stewardship of oceans resources, inclusive of all species (O'Bryhim, 2009). Since the media is a direct conduit to nearly all communities, media becomes a crucial

[1] David Kenyon Webster's book was published in 1962 by his estate; he vanished off the coast of California while hand-line fishing for sharks from his 11 foot open boat, the *Tusitala,* in 1961. Mr. Webster was a member of the infamous Easy Company, 2nd Battalion, 506th Parachute Infantry Regiment, in the 101st Airborne Division; he was not an oceanographer or scientist.)

channel for conservation promotion and public attitudes or perceptions. Enticing social change regarding the public perceptions of sharks through the media is the key to successful peer dialog in the 21st century. Without educational change, loss of species and loss of the oceans ecosystem balance is nearly assured (Skomal, 2008).

Public perceptions and attitudes are influenced when the media takes sides or manipulates information. Media redirection and conflict creates yet another obstacle for influencing the public perception about marine biodiversity and conservation efforts (Brailovskaya, 1998). In current delivery of shark related stories covered by national news agencies, the propensity to over dramatize shark attacks remains the status quo. News leaders such as CNN, BBC, and FOX news often translate a simple exploratory bite incident[i] into a life and death struggle! Leadership activism for shark conservation could shift to the positive through the intentional change from hyped rhetoric and use of more a more benign language by news media (O'Bryham, 2009).

An important barrier to shark conservation is the underestimated value they represent to humans. The largest species of sharks represent a critical control mechanism within the ocean web of species. As a top predator, the shark is a major player in the critical balance of other species. One of the most important functions which the ocean represents to human survival is the oceans' ability to **absorb** and **utilize carbon dioxide** (CO_2). In fact the ocean is earth's most important **filter of greenhouse gasses** (Trujillo & Thurman, 2008). This fact is not always understood in the average household, many still see forests as a provider of oxygen and absorber of CO_2. A rapid destruction of the pelagic species will create an imbalance of smaller species and their rapid increase in population presses on two micro-organisms which are the foundations of greenhouse gas absorption.

First, phytoplankton utilizes carbon dioxide molecules and transfers this into energy in the form of algae through photosynthesis processes. Secondly, zooplankton feed on the algae produced by the phytoplankton as a biomass. In turn, the zooplankton, a small shrimp like creature, are a main food source for many small fish and larger filter feeders such as whales and rays. A rapid increase in small fish populations from a lack of predator fish above them leads to an explosion of zooplankton feeders. The destruction of zooplankton will create a dramatic shift in the ocean ecosystem and its ability to scrub CO_2 from the earth's atmosphere resulting in a theoretical threat to human survival; current shark and predator decimation is actively changing the oceans' biodiversity today (O'Bryhim, 2009). Disruption of the oceans ecosystem through the destruction of apex predator populations and the balance of the food-web is beginning to show signs of stress. Researcher from the Monteray Bay Marine Research Institute (MBARI) are documenting increased numbers of giant squids reaching surface levels, far beyond their typical 1000 foot ceiling in the water column (MBARI, 2007). Additionally, the Humboldt squid numbers are begging to astound scientists studying them which is an indication of developmental population issues (Zeidberg & Robinson, 2007).

The value which sharks represent to humans is largely untold and smothered by inaccurate media stories and Hollywood dramatization. It is extremely important to identify value for Americans and transmit this through the media in order to create positive changes for shark conservation and stimulate a pro-environmental behavior (Schultz and Zelezny, 1999). If emotional connections by society to the plight of sharks can be increased to the point at which the general public disenfranchises from the ancient fear connection, shark conservation and stewardship could retard the current destruction of population. However, creating societal buy-in with a population so strongly indoctrinated by fear of predatory sharks, the prospect of a rapid

change in American society is an extreme challenge. Consequently, the public perceptions and environmental behavior towards sharks is not in support of strong intervention and conservation efforts, **yet**.

Best practices for the transfer of learning

Transfer of learning (TL) is most effective when participant engagement is a focus of the learning and includes intentional practice of connecting the participant's personal experiences to educational materials. Personal influences are a persuasive vehicle which deeply connects participants to the learning focus; real life experiential learning increases the transfer processes (Tozer, Collins, & Hathaway, 2011). Instead of relying on guess work concerning the success of TL, careful planning for participant engagement throughout a program is extremely important (Thomas, 2007; Benander & Lightner, 2005). Unlike older educational programs which employ a lecture and exams structure, newer learning models using engagement techniques are gaining recognition for their efficacy in the classroom(s).

With respect to careful planning, clearly identifying how an individual learns is another critical area that increases the chances of TL. In studies of educational organizations (K-12), students who successfully identified how they learn with (through) life experiences, also identified with course-task sequencing and showed an increased success in TL through experiential learning. While setting up educational programs for greater success in TL, it is essential to understand how the individual learns, what the environmental demands are going to be, and the background of the individual (Tozer, Collins, & Hathaway, 2011; Benander & Lightner, 2005).

The general concept of the transfer of learning (TL) process and its connection to creating exceptional educational programs is a complex process. Therefore, the *Less is More* (LiM) concept caught the researcher's attention (Molloy, Morre, Sohoglu, and Amitay, 2012). LiM centers on keeping the learning module concept simple, defined, and understandable for the cognitive level of the participant. Programs which are heavily task loaded or overdeveloped can greatly diminish the returns in TL by overwhelming most participants. Other considerations are how long and how much stimulation of the participant is important to enhancement of their learning process (Molloy, Moore, Sogoglu, & Amitay, 2012). TL will development is more successful when matching the learning module with the level of the participant with respect to task loading; over-tasked participants experience a loss of quality in their TL.

Another important area to recognize within the psycho-social theories of the transfer of learning process is the theory of schema: "Transfer of learning, as a subconscious process, occurs continuously; the individual is constantly reconstructing old knowledge on the basis of new experience and developing new schema" (Macaulay & Cree, 1999). The schema theory reinforced an earlier discovery regarding design and planning delineated in the literature research. Schema theory indicates that both positive and negative transfers of learning occur. Positive learning transfer indicates a success in knowledge acquisition from the programs and negative transfer indicates that old or irrelevant connections are made from past experiences by the participants. Macaulay and Cree (1999) warn, "…inappropriate applications of past models are made to new situations."

In contrast to the negative aspects of past experiences and learning transfer, the encouragement of synthesizing different areas of knowledge and experiences is supported and promoted by educators who have adopted diverse teaching tactics in the classroom. In this case,

past experience is purposefully recognized for its relevance to what is being taught; critical thinking underpins this approach to the transfer of learning. In one article regarding community change and TL in an educational setting, researchers looked at the mentoring of students to draw upon new materials or study habits from one course or program to another and apply cognitive use of past experiences (Benander & Lightner, 2005) appears to reinforce the theory that using past experiences within the learning module can enrich the transfer of learning outcome.

Successful and innovative learning modules can be influential in developing positive leadership in environmental activism. Transfer of learning from the teacher (or program) to the student depends on the enrichment level of the learning experience. Transfer of learning beyond the classroom is an important byproduct of the enrichment process. It is plausible that friends and family can assimilate information passed to them by learners of highly engaged educational programs-modules through the excitement of passionate participants. Enriched learning programs using strong engagement tactics and experiential learning foster more TL and should become the focus for developing innovative learning modules.

Pro-environmentalism behavior and common values

A broad area of the behavioral sciences encompasses the incentive for behavior change which also fits into the topic of pro-environmentalism. Enrichment of environmental activism in society can be encouraged through the actions of individuals or collective leadership. When people change their behaviors concerning environmental issues they may do so because of the influences from powerful exemplars such as professionals, scientists, or celebrities (Kolluss & Agyeman, 2002). This is an important factor within each cultural niche. For instance, Americans may sometimes adopt behavioral cues from prominent societal figures such as Oprah Winfrey,

President Obama, or a local Mayor. Winfrey, as an example, has nurtured some changes in American behavior promoting literacy, supporting feminism, and building communities in the USA and internationally (Arts & Entertainment Network, 2013); she stands among a few who have influenced moral and ethical shifts in American culture regarding some human important interests. One might then assume that a positive and behavioral shift toward shark conservation as an ethical necessity could transpire in America if Carcharodon carcharias (great white shark) could get a seat on Oprah's couch to articulate its story of extreme prejudice by humans. However, ethical social behavior (ESB) is extremely complex and dependent on many causal factors (Stern, 2000) not exclusively popular media figures and their personal influences.

Conservation of sharks is a conundrum to humans based on a **cost benefit and social values assessment**; what is not valued stands little chance of pro-environmental attention. According to Karp (1996), "Collectively, we prefer environmental protection, but few wish to pay the associated costs." First, the reversal of fear in American society is extremely challenging due to America's cultural propensity for fear (Glassner, 1999). Secondly, the return on investment (ROI) for shark protection is counter-intuitive to human survival when based on incorrect information; pro-environmentalism for something which is feared makes little cognitive sense in most cases. Shark conservation as seen through the American lens of fear creates a strong barrier to pro-environmental behaviors due to the low social value attributed to sharks. Sharks do not hold the same cultural value and understanding afforded to other creatures such as the Panda which are facing threats of extinction at the hands of humans (Stewart, 2009). Conversely, Americans are aware of extreme environmental issues such as climate change, environmental threats from oil and gas production, and global pollution. However, many people

seem unwilling to behave pro-environmentally for certain species such as sharks; in this case cultural value affects behavior (Kollmuss & Agyeman, 2002).

From the recycle bin to the regeneration of used appliances, houses, and cars, America appears to be cognitive of, and practicing, certain pro-environmental behaviors. When reviewing specific environmental areas such as shark conservation, America appears weak. This would indicate that a low or high emotional investment is essential to Americans taking action in any environmental issue (Kollmuss & Agyeman, 2002). Instilling emotional values in conservation is a key to unlocking pro-environmental behaviors for less socially valued creatures. Planned behavioral change (Lucas, et Al., 2008) might be the best chance for increasing public awareness and salvaging what remains of shark populations worldwide. Planned behavioral changes should include culling the media stereotypes which plague the area of shark conservation (O'Bryhim, 2009) and reseeding them with reliable and accurate information allowing **new environmental leadership** in socially problematic environmental areas to thrive.

Ownership of pro-environmental behaviors is extremely important to the future of human survival, especially in highly developed countries such as America which represent global leadership examples. However, rapidly changing the environmental behaviors of America's masses is a grandiose proposal on any level. Then again, through non-formal and formal education in schools and universities Americans have experienced major social changes throughout history such civil rights awareness, gender equality development, and increased use of media technologies. Just as important is the promotion of responsible citizenship for ocean stewardship practices which has (nearly) always been an agenda of most educational communities (Hungerford & Volk, 1990).

Responsible citizenship for pro-environmental behavior through education indicates that via awareness comes action of the individual. However, in some areas of environmental conservation, this process appears broken because environmental awareness does not equate to activism on a macro scale in the U.S.A. While the scientific and environmental groups represent a micro portion of society, the macro community representing the balance of the population appears inactive for environmental issues which are not of high value; while one species gains support another species goes unnoticed. Moral behaviors do influence environmental awareness when **v**alue **b**elief **n**orms (VBN)[2] are increased in society; when the intrinsic value of a species becomes embedded in a culture (Turaga, Howarth, & Borsuk, 2010). Educators often assume that by simply teaching a behavior a positive change will follow which is not always the case. Peer to peer transfer of learning and a ripple effect of information can be very effective in stimulating public action or activism for environmental issues. By increasing VBNs in pro-environmental behaviors, successful conservation is far more likely. It is apparent from the current literature review that changing the educational process is needed if ownership of environmental issues is to result in increased environmental activism. Or, as Hungerford & Volk (1990) point out, "This means we must look to a new model of instruction if behavior [change] is important." (p.267). Moreover, the stimulation of Environmentally Significant Behavior (ESB) through peer to peer transfer of learning could be paramount to sustaining environmental activism.

Another thread in the web of activism for pro-environmental behavior is stimulation of non-activists: people disassociated from the educational, scientific, literary, or activist

[2] Value Belief Norms (Stern, 2000), "The VBN theory links value theory to norm-activation theory by generalizing the latter. It postulates that the consequences that matter in activating personal norms are adverse consequences to whatever the individual values (AC). Thus, people who value other species highly will be concerned about environmental conditions that threaten those valued objects, just as altruists who care about other people will be concerned about environmental conditions that threaten other peoples; health and well-being." (p.413)

communities. According to Stern (2000) the importance of cultivating non-activist participants for sustainability encourages effective public policies leading to increased security for both humans and sharks. This effort would result from transparent awareness buy-in for activism at both grass root and official levels. Examples of the persuasiveness of stimulating the non-activist(s) through educational channels and their effect on public policies are the Vietnam War and the actions of Mrs. Rosa Parks. In each example, the crux of change fell upon the attention paid to the social-cause as created by the media. The non-activist(s) became activist through their passion followed by the public demand for change in policy through a shared value (Lipsky, 2010, pp.13-25). In the current time, America continues to face adversity and divisions regarding a plethora of highly sensitive social issues. Barriers of all types plague social progress and hinder reciprocity across different cultures, genders, and diplomacies. When American society is called upon to act pro-environmentally, a tremendous amount of power for change lies in social and cultural influences, resulting from the creation of common values among people (Kollmuss & Agyeman, 2002).

Methodology

Theoretical framework

This project focused on pro-environmental behavior and learning stimulated through peer to peer communication and relationships. The goal is to first educate and inspire participants and then to create a transfer of ideas using peer to peer communication. A benchmark of the successful result of the learning module **is the willingness of the participant to carry forward key concepts and themes beyond the classroom experience**. A short post-learning module online survey discovers the participants' willingness to communicate to their peers. The project is structured using an exploratory approach to innovative and creativeness in learning module

development. While parts of the project are clearly identified as qualitative research, other parts are conceptual and focus on new approaches to formal educational systems for adolescents and young adults. The theme, for contextual relevance, is ocean conservation and pro-environmental behavioral issues.

Design overview

1) Library research was conducted to develop a literature review using three specific sections: Public perception of sharks, best practices for the transfer of learning, and best practices in educational model development.
2) Peer reviews as well as an official 2nd reader were used at important junctures in the writing process as well as the conceptual process for the pilot project. This is a continuous and organic approach to developing the best possible learning module and in keeping with the high standards for writing at USM-LAC.
3) A pilot module was developed, deployed, and tested with a small group at the USM-LAC. The results of the pilot's success are distilled into a final learning module for the partial requirement of the MLS Thesis.
4) Independent interviews were conducted with current professionals in several related areas such as educational directors, ocean scientists, activists, and faculty at USM-LAC. The information collected **was used for conceptual development purposes only** and does not constitute human research studies or data collection for the project. No IRB clearance was needed since no personal details, demographic, or individual information was collected.

Role of the developer/researcher

The researcher provided two functions for this project. Principal research to substantiate theories and claims regarding the main topics of learning module development and education for shark conservation and drafted and deployed a pilot program using the data collected. The researcher used both data sets to create a summary of results determined the feasibility of the learning module for future uses. The roles of the researcher were both project developer and evaluator.

Selection of pilot participants

Participants were recruited from the students of the USM-LAC through media such as the weekly campus email and direct email. The selection process included the invitation to participate using a free lunch as an incentive to attending. No restrictions other than the participant must be the USM-LAC student and alumni populations. A possible extension to recruiting the wider USM student body was also considered. Space for the pilot project was limited to fifteen participants for the pilot project which represented a good number of individuals selected from the diverse student body. Taking into consideration the student(s) age-sex-ethnicity-demographics at USM-LAC.

Data analysis and evaluation of pilot

The data collected during the pilot project was analyzed using three basic areas of interest. The level of understanding the participant had regarding the core topics and themes, observational data collected as he or she moved through the pilot project and a personal survey regarding his or her experiences during the project was used to assess the projects outcomes. Using a Likert type scale, the responses were quantified into a final assessment of the feasibility of the learning modules strengths and weaknesses. Upon completion, the results assisted in a final module design and a proposal for its use in real world situations.

Feasibility of learning module

The learning module proved to be a successful and viable tool for creating peer to peer dialog and experiential sharing of new concepts leading to activism interests. Participants' feedback indicated a positive response to all sections of the module and encouraged further development. The module's core themes and conceptual pieces tailored well with the target age range (adolescent to young adult), which was also reinforced by positive responses provided in the general feedback section of the online survey (see Appendix 3). Minimal adjustments to the learning module may be incorporated to encompass a wider age range, either by delimiting information to reach a much younger audience or expanding on information to reach older and adult learners.

Stepping forward: where to take the module

Due to the overwhelming recommendations for further development (see appendix 2 and feedback results from participants) and the overall effectiveness of the learning module, a second and third cohort should be deployed to supplement current findings. Two age groups should be prospected for continued module development. First, adolescents to young adults age range; the deployment for the current findings in this research document was with an older group of people; mean age of 35. The second age group should be middle school age children to allow for a comparison of their reactions to both the adolescent and adult age feedback.

Should the results of the two additionally proposed cohorts prove positive, it is suggested that the learning module and the research data should be submitted to academic organizations or schools that promote biodiversity in ocean related areas, as well as schools not directly connected to coastal regions; mid and central areas of the United States. Additionally, the learning module should be undertaken by main stream

environmental and educational organizations for peer review such as Ocean Conservancy and Earth Echo. Their valuable feedback would be pivotal to continued development strategies. It is also proposed that external grant funding for module development should be investigated and a grant proposal developed for further research.

Appendix 1 Quiz

A 15 question informal (ungraded) quiz was used at the beginning of the learning module to compliment the warm up process of the participants, qualify the participants' general knowledge regarding shark conservation issues, stimulate peer to peer transfer of learning, and provide an opportunity for the facilitators to observe the participants' level of interest in the core theme of shark conservation. No prior information regarding shark conservation was provided for the participants. Participants were instructed to complete the 15 questions using their best guess if they did not know the answer, were instructed that question #8 was not a math skills test but that the response to question # 8would be used later in the learning module. Consequently, the use of calculators, or any other technology, was allowed.

The participants were informed that a target age range of 17-25 years old (high school to first year college student age range) was used in the development of the learning module. The participants were instructed to keep this context in mind when reviewing the learning module's different sections. In order to retain this focus, the age specificity of the learning module was interjected by the facilitator throughout the module. Following completion of the learning module participants took a break for lunch and were then asked to complete an online survey in which they could anonymously respond to several questions using what they learned and experienced and provide overall feedback.

1) **General Knowledge observation**

   Overall, participants' general knowledge regarding shark conservation issues was strong. Each indicated a basic understanding of shark conservation issues currently being of concern to scientific and environmental communities, although one participant continually responded negatively in comparison to the rest of the group. The combined

responses to the quiz indicated realistic knowledge in areas such as: sharks importance to human survival, an unbalanced public perception/view of shark and human interaction, personal fears of the ocean, shark-biological knowledge, and cultural references to the movie *Jaws*. **It is important to note** that the quiz quantified two specific areas of importance to the projects goals. First, the current estimates for sharks killed from finning **was largely an unknown fact to the group,** giving these participants a chance to learn real material. And second, learning that sharks are valued for their place in the world and to human survival **by individuals who are not currently environmental activists or ocean scientists**. Peer to peer transfer of knowledge to inspire action is a specific design element of the learning module. Finding participants who did not have either a marine science or an activist background(s) was essential to specific areas of the research. The quiz results confirmed both of these suspicions (minimal understanding of shark conservation issues and that the participant(s) did not have prior marine biology or activist experience.

Functioning as a session warm-up contribution evaluation

The quiz was designed to orient the participants to the topic of shark conservation and function as part of the warm up process for the group. The facilitator introduced this core theme **to the participants for the first time at the workshop;** the group was unaware of the core theme prior to arriving to the workshop. There were no advertisements or invitations indicated what the main topic would be, just that it was an opportunity to assist in graduate research and enjoy a lunch provided by the researcher. This random group was as new to the core topic as possible and their basic knowledge was not influenced by an opportunity to discover shark topics prior to the pilot project.

The contribution to the warm up process was significant because of the high emotional reactions which sharks can elicit from nearly any audience (the significance of *Jaws* and other media issues became relevant throughout the post-quiz discussion). Guiding the group to qualify their shark-knowledge increased the level of personal interest in the topic and the learning module (see observations section 3).

2) **Peer to peer transfer of learning qualification**

One of the underpinning purposes of the learning module is to increases pro-environmental behavior and basic leadership for environmental issues at the community level through peer to peer learning. This concept was realized during the discussion which was held after the quiz. The facilitator encouraged participants to share their experiences and knowledge with their peers while everyone analyzed their quiz responses. Nearly all participants shared experiences and led the discussion at some point, significant since they had not been instructed to lead topic discussion, only to share their responses. It was evident through peer to peer sharing that the level of engagement and participation increased during the peer to peer exchanges; their experiences increased their levels of participation. In contrast, during the brief lecture presented approximately midway through the exercise participants' interest appeared to diminish. The phenomenon of experiential learning (EL) juxtaposed against lecture oriented learning is not unusual and educational modules which incorporate more EL is a key tactic, many training and development models use EL extensively as a tool valuable personal engagement tool (Silberman, 2006).

3) **Observations**

One of the most interesting observations made during the post quiz conversation was the increased level of interest by each participant. Once the participants understood that their learning was dependent on peer to peer interaction and information-knowledge transfer, overall involvement increased. One participant disclosed that she was genuinely afraid of sharks and the ocean and would never swim or recreate in it. **This statement**, illuminated by the calculations done for question #8 (the statistical likelihood of a shark attack), generated a strong exchange of sentiment and concern for her by the other participants. Akin to coaching, the group engaged in a meaningful conversation with the fearful participant in order to discover why she felt fearful of sharks. *Jaws* was stated as the main source of her fear and this specificity created another important branch of discussion regarding influential media. Due to time constraints, the facilitator had to redirect from this tangent and promised to return to the *Jaws*/media topic later in the module (done in place of an experiential section near the end of the module).

The effectiveness of peer to peer learning was stimulated using a simple fifteen question quiz with minimal direction by the facilitator and resulted in a dynamic exchange by the participants. Each participant was genuinely engaged in the topic, and each contributed to the overall conversation. Some participants took strong leads in the discussion through the sharing of their personal experiences or knowledge. The facilitator did not have to urge the participants, in fact a cut-off time needed to be introduced in order to move the session forward.

Quiz with Participants' Responses

1) Do you have any fear of the ocean, if so what are they?
   71% Yes
   29% No
   Drowning, Currents, jellyfish, sharks, the unknown, poison from human waste, weather, getting lost, modern day pirates, and sea life
2) Was the last shark related story you saw/heard in the news/media a positive story?
   85% Yes
   15% No
3) Have you ever had a personal interaction/encounter with a shark in the open ocean?
   100% No

4) On a scale of 1-10, ten being most valuable, how valuable are sharks to human survival? (Circle your response)
   1-2-3-4-5-6-7-8-9-10

   71% rated this above a 9

   29 % rated this below a 9

5) "But they [sharks] eat people, don't they"? Do Sharks eat people by choice?
   85% Yes
   15% No

6) Are you a fan of *Shark Week* on the Discovery Channel?
   56.8% Yes
   42.6% No

7) Is/was Peter Benchley regretful for creating the movie *Jaws* and its resultant impact on American society?
   56.8% Yes
   42.6% No
8) Please calculate these numbers using whatever means you have:
   120 divided by 83,900,000 (yes: eighty three point nine million) hold this number for later- (it's not a test of your math skills☺)
   ***Save Your Answer on paper provided!
   42.6% Correct
   56.8% Wrong

9) Sharks are like any other fish, they reproduce rapidly and have millions of offspring?
   100% No

10) What is shark finning?
    71% Correct
    29% Wrong

11) Would the loss of sharks threaten ocean stability on a global scale, and directly impact humans?
    85% Yes
    15% No

12) Have you ever eaten or been offered shark fin soup?
    100% No

13) Are you or is your family involved in commercial or sport (big game) fishing?
    100% No

14) Does major news coverage provide a balanced view of shark stories?

100% No

15) The current yearly estimates for sharks killed by the practice of finning for profit is?
    a. 250,000 (two hundred and fifty thousand)
    b. 100,000,000 (one hundred million)
    c. 10,000,000 (ten million)

42.6 Correct
56.8 Wrong

Calculation Key: 100% = all 7 participants, or 14.2% per individual response

Appendix 2 Learning Module Pilot Outline & Discussion

The learning module is comprised of fifteen (15) quick moving sections which attempt to engage and focus participants using experiential, lecture, and peer to peer learning. The module was designed to run approximately 2.5 hours depending on the depth of peer to peer interaction. Each section was designed to generate interest regarding the core theme of shark conservation. Moreover, each section was designed to produce peer to peer learning through communications of personal experiences. Whether or not the participant had any direct relationship to the core theme of the module, the participant was able to contribute to the group learning through the sharing of perceptions or experiences. The overall design of the learning module was based on basic training and development themes attributable to two specific authors: Raymond A. Noe's (2010) Employee Training and Development, 5th Edition, and Mel Silberman's (2006) Active Training. It is important to recognize that using these two references to design a learning module incorporates EL and innovations into the module focused on younger learners. Two additional areas in the learning module that challenge traditional learning programs were: a mindfulness exercise and team research exercise designed to captivate and motivate active participation. While the sections are not unusual, the combination and fast pace of the learning module was unique. The combination of activity and topic immersion learning was designed to address the problems of a less focused culture of rapid-switching-lowered-attention span youth in the 21st century. During the pilot module, the necessity to switch from task to lecture topic back to task is a more student centric method of teaching which worked well with the group; engagement issues were minimal.

Module Sections:

1) **Introduction of core theme**

   A short introduction was used to orient participants to the focus and outline of the learning module and its core theme of shark conservation. The themes of peer to peer learning experiences and the transfer of knowledge was not identified by the facilitator.

2) **A paper tearing exercise**

   This section focused on how people perceive and following simple directions with very different outcomes as a result of their varied perceptions of the instructions. Observationally speaking, the group responded well to this exercise due to its direct connection to media themes. The exercise called for each participant to take an 8.5 x 11 sheet of paper, close their eyes and follow the facilitator's directions to fold-tear-fold the paper several times. Due to the inability to see, each paper was very different from the others. The correlation was made to how the media treats a story and how individuals interpret the story. As with the paper tearing exercise, each member heard the same directions from the facilitator, however each interpreted the directions differently; the torn papers were the evidence of this. The facilitator connected two areas of the media to this exercise. First, how news media and stories can be delivered using different techniques given that most news stories are very short, and most people hear/see only a headline or paragraph and how then each person is left to interpreting the story for themselves. Secondly, that

documentaries are sources of grounded information and an emphasis on reliable productions from National Geographic and Discovery Channel was used. In contrast, main stream news offers only a minimal amount of information while a good fact-based documentary provides a robust knowledge on which one can more likely rely.

The concept of how minimal or low-information media contrasted against high-information media was connected to the current issues in shark conservation and media attention. Currently, the news media continues to treat shark attacks as dramatic headliners, stories generated to increase or hold onto their viewership. This low-information approach connects the larger non-scientific or activist population (of the USA) with unreliable and inaccurate information regarding shark species. In contrast to this, and unlike the paper tearing exercise results, the viewing of documentaries provides a higher standard of information which is grounded on statistical information. Had the participants been able to tear their papers with eyes open, the accuracy and connectedness to each other's papers would have been visually informed, as if they were receiving documentary type information as opposed to the low-information instructions during the eyes-closed tearing approach.

The exercise and its comparisons to two types of media and current issues with shark conservation was very successful, the participants' feedback during the resultant discussion regarding their experiences with the exercise qualified this result. One participant acknowledged that she "only watched HLN" (a CNN news station) ironically "Headline News"; it offers only headlines of the day's news with

nothing substantial regarding content. She commented that through this exercise, she would widen her perspective by viewing a better source of news. Additionally, she was the participant who later indicated that her fear of the ocean and sharks stemmed from her experiences with the movie *Jaws* in early life, significantly this has influenced her into her mid-30s (in current time).

3) Opening Quiz

See Appendix 1 for discussion on the quiz and participants' reactions.

4) Quiz discussion

Directly following the quiz a five minute discussion turned into a ten minute peer to peer dialog on participants' responses to the quiz. Most notably was the one person's admission to being "deathly afraid" of sharks and the ocean, to the point she would not recreate in it nor let her children swim in any ocean. Her peers attempted to persuade her, based on their developing understanding of sharks generated through the short opening quiz. All of her peers provided excellent, positive arguments regarding the topic of fear and sharks, and especially potent was their comprehension of the problems within American news agencies and the limited scope (fear-based/sensationalist) in reporting shark information to the general public. Overall, the exchange of information was observed to be positive and accurate; the facilitator made only a few interjections regarding accuracy and mostly only observed the exchange.

5) Team research exercise

Upon arrival, each participant was given a small card with the letters A or B. The letters represented which work group each participant would belong to. Upon forming the groups, each team was provided with a short list of topics for which online or literature research would be conducted over a specified period of time. The approach to this segment of the module was to connect the participant to the importance of sharks in the ecosystem, provide them with some basic ocean science data, and to stimulate peer to peer interaction. Each team was given different ocean related research topics and 15 minutes for working on them. The topics were:

Team A: Positive Vs. Negative Shark stories in the news and the Cownose ray of Chesapeake Bay scallop industry.

Team B: Phytoplankton and zooplankton relationships with CO_2, and sharks place and importance in the food-web in oceans.

Upon completion of their research, each team reported their findings to the opposite team, in effect, they taught the opposite team what they discovered. Moreover, the facilitator established important connections amongst all four topics to help the participants form a better understanding of how some of the oceans systems work, and the crucial roles that sharks and pelagic species play in ocean ecosystems. The participants reacted with enthusiasm regarding their discoveries in ocean sciences and managed to link the importance of shark conservation to both ocean and human sustainability issues; both pivotal topics in 21st century environmental sciences.

While this was not a quantifiable research project using statistical measurement of the participants' achievements, success for the module was qualified through the facilitators' observation of the team and individual's efforts. Consequently, the exercise proved worthy in stimulating critical thinking, peer to peer communication, and fostered teamwork; all of these were foundational goals of the learning module.

6) Mindfulness exercise

Participants were asked to clear their thoughts through a short exercise using mindfulness techniques developed by the facilitator/researcher. The participants were instructed to close their eyes, roll out their ears tips using their fingers, and hold the front and back of their heads while whale songs played softly in the background. The facilitator verbally instructed the participants to imagine their best ocean or beach experience, to create a mental picture of the event or place and hold it while listening to the whale songs (about 2.5 minutes). Upon completion, the participants were asked about their journeys and report how they felt about the location or event. Every member shared a positive experience, and some shared inspirational stories about their experiences. The goal of the exercise was to create a sense of personal connection to oceans. Responses (collected through an online survey, see appendix 2) indicated that most felt the exercise helped them connect. Another goal was to create a short break in the module to provide some inner reflection space for participants. Regardless of the facilitator's instructions, the soothing sounds and soft narration created a unique atmosphere; a nice shift from the fast pace of the program.

7) Short Lecture

Upon completion of the mindfulness exercise, several ocean items were uncovered and given to the participants. A short description about each of the items was provided by the facilitator. These items provided a tactile component in order to give the participant a firsthand experience with ocean articles. Some of the participants had not seen giant shells before. For these individuals, the opportunity to hold such items provided a deeper connection to the core theme of the learning module. However, in their comments it was noted by several of the participants during feedback (online survey, appendix 2) that facilitating the learning module on or near the ocean would have been even more effective.

In conjunction with the tactile portion of the module, a short lecture was given by the facilitator. Core topics of the lecture included: sharks as a control mechanism in the food web, the importance of accuracy in the news about sharks, probability of ocean ecosystem failure and its importance to human survivability.

8) Open discussion

An open discussion held as part of the lecture continued to generate communication between peers. One student took the lead on the discussion and pulled out different opinions regarding the material; especially the topic of reaching out to community members who are not directly connected to scientific, environmentalist, or activist communities. This participant interjected terminology such as stewardship, humanism, futurists. Although a little tangential, this individual established himself as a (short term) leader among his peers by taking on the challenge of

communicating ideas which held the attention of other. More importantly, his connection to the core them was relevant and creative.

9) **Refocus section & video**

After a short break, a video clip was played to refocus the group on the core theme. "21 Fast Facts About Conservation, Sharks, and Global Threats" by the PEW Research Center. The clip, in conjunction with the lecture, gave participants a stronger foundation for the argument in support of shark conservation. The successfulness of this section of the learning module was qualified through feedback received in the post module survey (see Appendix 2). The clip from Pew negotiated/navigated some of the broader topics of ocean conservation issues using congenial terminology targeted to a non-scientific audience. This clip is especially effective with younger audiences and people who are not educated in ocean science topics. It is an entry level video.

10) **Open discussion on video topic**

During this section, the fear of sharks was revisited and generated a level of conversation which created a strong sense of community among the participants. So much so, that a planned section of the module, "The Hot Seat," was skipped in favor of allowing participants to more deeply explore what had been learned throughout the module and to reestablish their communications regarding the one participant's fear of ocean and sharks. This conversation included attempts by participants to argue their points regarding the low level of shark-risk to humans, including the overall absurdity of the fear of sharks, as well as the tenacious media connections to

societal problems associated with vague interpretations and a resolve regarding better understanding of sharks in general.

11) Short presentation on taking action for conservation

In this section the participants were asked what actions might be effective in changing the public perception of sharks, as well as how to create a general understanding regarding shark issues at the street level. These brain-stormed discussion points focused on subjects such as: EATING SUSTAINABLE CATCH, APPROACHING LOCAL MERCHANTS ABOUT THEIR SHARK PRODUCTS, EDUCATING FAMILY and FRIENDS, TAKING PROACTIVE STANCES AGAINST MEDIA PORTRAYING SHARKS INNACURATELY, and BEHAVING PRO-ENVIRONMENTALLY.

12) Closing video and comments: Shark & Human interaction: Nina Selerosa clip

Following the question and answer session and approaching the closure of the module, the facilitator provided supportive feedback regarding the pilot's main topics by summarizing key topics using a short Prezi slide presentation. The facilitator also addressed topics that had been generated through the participants' peer to peer interactions and communications.

In an additional attempt to solicit an empathetic response from the group, a special video clip was shown. Professional SCUBA diver and shark handler, Cristina Zenato is featured in an epic video during which she expertly hand

feeds sharks. In the closing sequence, she coaxes a shark into tonic immobility[ii] by gently rubbing its snout. This dynamic video clip was well received by the participants and through observation by the facilitator, a shift in understanding and empathy was detected. Moreover, participants' comments centered on how uniquely beautiful the exchange was between diver and sharks.

It was the intent of the facilitator to solicit an emotional response using the clip in to persuade participants that sharks are clearly reasonable creatures, not dissimilar to other "dangerous" animals with which humans inevitably interact, such as lions, gators, or elephants. The facilitator used the opportunity to compare how the general public perceives sharks and the injustices and inaccuracies of the general media's coverage of shark attacks. Included in the statement regarding news stories, the facilitator supplied a list of research websites which the participants could access to verify statistical evidence regarding shark incidents and attack statistics as well as current estimates on shark finning and bi-catch issues.

13) Last words from facilitator and participants

The module was closed with encouragement to share the experiences of the module with family and friends as well as a reminder to communicate with media outlets that unfairly portray sharks in news stories. Additionally, the facilitator explained background details regarding the five years of exploratory research that had been achieved prior to building the learning module. Participants were provided with this contextual information in order to understand that the core theme was a verifiable topic and a current issue in environmental conservation; not a subjective fiction

embellished by the researcher. A short list of references was provided on-screen for the closing of the learning module.

Although many diverse definitions of leadership are relevant to the study of leadership, a common thread among leadership scholars for a true definition is based on the concept that leaders influence of others to take a positive path; to take the higher ground while meeting with difficulties or challenges. The closing of the module included a direct reference to this description and how it pertained to peer to peer interaction, communication, and influence regarding shark conservation issues as well as behaving pro-environmentally. Through an educational process, as was built into the learning module, peers learned that their influences of others can stimulate a positive change through communication. This leadership message, although subtle in some sections of the learning module, became the underpinning message regarding pro-environmental behaviors.

The closing remarks by the facilitator refreshed the ideology that one need not be a specialist in marine science, a conservationist, or an environmentalist to create change or become part of solutions. Leadership at the grassroots level reaches into the masses of any population, especially when an emotional connection to the cause is created. The facilitator encouraged the participants to look closer to home to make changes, for example, through family and friends to help develop a carry-it-forward model to increase public awareness for any conservation issue; sharks being an important cause. Leadership at the community level is a most powerful tool in

social change and development. Leadership is not exclusive to the upper echelons of society, it is part of the everyday human lives.

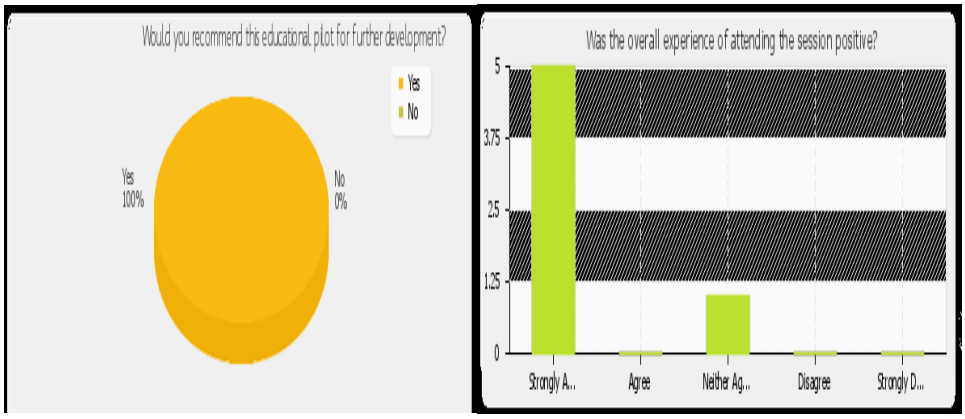
14) Lunch served & open discussion (observations by researcher)

The opportunity to observe participants as they relaxed and enjoyed lunch provided an opportunity to qualify a few important points. One of the first observations was that the conversation did not shift away from the topic of ocean, humans, and sustainability. The participants continued to engage in these core module topics throughout lunch. Another exchange centered on ocean industries and sustainable products which was not covered very deeply in the learning module. Several participants offered arguments for following sustainable practices and committed to investigating areas which they did not fully understand, such as which species are sustainable in current times. Another subject introduced by a member of the group questioned the mentality and psychology behind Maine's shark fishing derbies. This new topic generated much interest by the other participants (peers) because no one else knew about the derbies. This sharing increased the collective knowledge of the group and embellished their learning through peer to peer communication; both intended outcomes designed into the learning module.

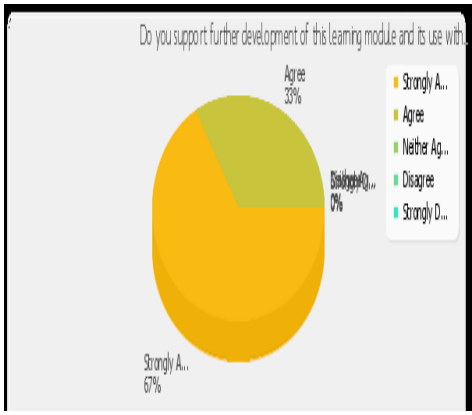
Appendix 3 Survey Results and Analysis

An online, post module, survey was provided to the participants after the learning module's completed deployment. The survey consisted of thirty questions. The responses to twenty of the questions were based on a Likert type scale, and the remaining ten questions were open ended or mixed questions. All questions were accessed and completed online using TooFast Survey.com and remained private, accessible only to the researcher and participants. See section A of Appendix 3 for a complete list of questions. None of the questions asked collected personal data, other than question one which asked for age and gender. Home town data was only collected during the opening quiz section of the learning module. These three qualifiers were used to identify participants in general, and to capture if she or he came from coastal communities. Coastal habitation was important to the researcher because of the tendency for coastal dwellers to possess above average familiarity with ocean related issues and conservation topics in general. It was preferable to have non-coastal people partake in the learning module, but no exclusion was included if any coastal dweller participated. Moreover, if a larger percentage of coastal dwellers were identified through the pre-module quiz (see appendix 1), an adjustment to the post-module survey would have been done to mitigate any issues regarding questions on the survey which might have been more intuitive to a person living in close proximity to the ocean or a fishing community. The goal of the researcher and the target audience for the learning module is persons with a minimal amount of connections to ocean related science or general topics, people who are not coastal dwellers; Joe-Jane Kansas equal the perfect candidates.

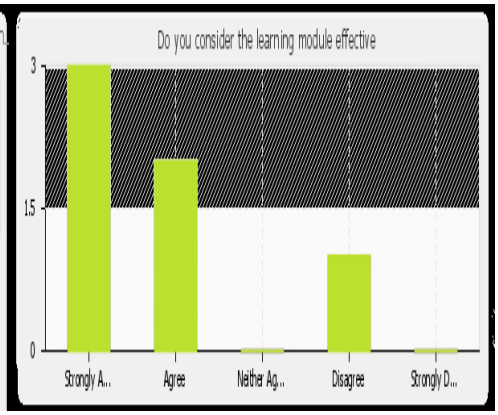
Overall, the responses to the learning module represented through feedback from the blind survey are positive with minimal negative reports. When asked particular questions regarding their experiences, such as a recommendation to further develop the learning module (Q # 2), a 100% positive response was received. Responses to question #7, "Was the overall experience of attending the learning module positive?" 6/7 participants agreed. Consequently, when asked about the viability of targeting the age range for which the learning module was designed (Q#8), 67% strongly agreed and 33% agreed, indicating that recommendations for further module development was 100% positive. Question #20 reflected that 6 out of 7 participants considered the learning module effective and one individual disagreed, feeling that it was not effective. However, throughout the survey this person countered the negative response to effective learning from the module with a positive response to the question of further development recommendation. It is unclear how someone could recommend continuance and development if they felt that the module was ineffective. This negative response was limited to a single participant who appeared to be contrary to nearly all of her peers (observed by the facilitator as well as represented in the open feedback section).



Question #2 Questions #7

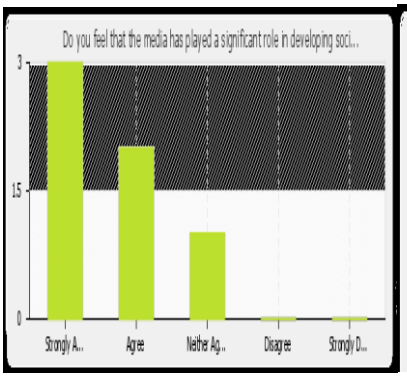


Question #8

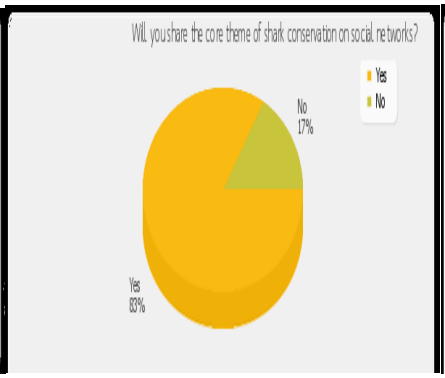


Question #20

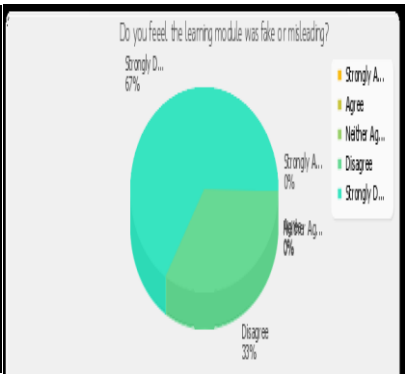
On questions relating to media and the core them of shark conservation, strong positive responses were also registered through the survey. In response to the question of validity of the learning module itself, 100% agreed that the module was honest. Question #14 correlated to the section regarding how the media, especially major news networks, perpetuate wildly, embellished stories to hold or increase their ratings. It asked participants to openly object to any content, context, or messages throughout the learning module.



Question #9



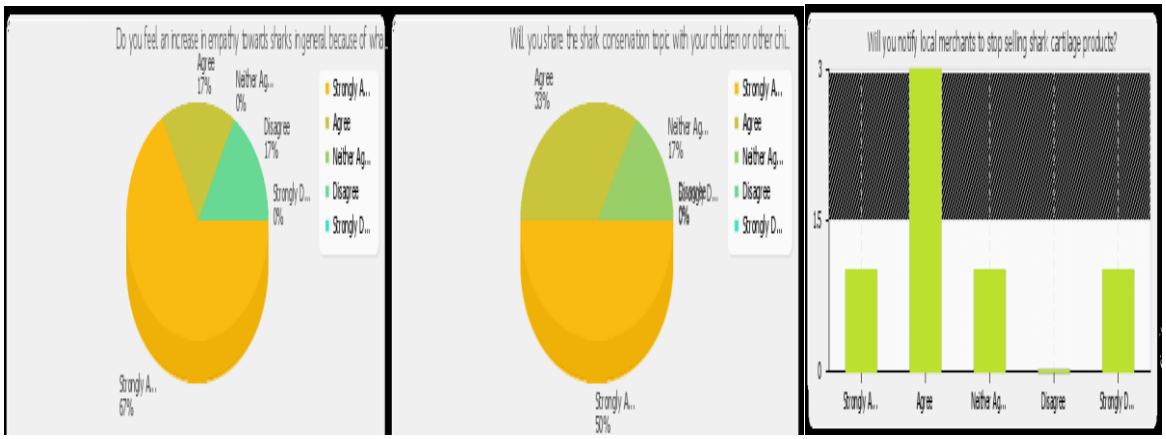
Question #10



Question #14

Questions 12, 15, and 18 covered emotional connections to the theme of shark conservation. Only one participant disagreed with feeling an increase in empathy towards

sharks, but also admitted to being selachophobic. Since the group was small, this participant was easily identified throughout the blind survey. Inspiring peer to peer activism requires some sort of emotional investment or attachment for an ecosystem or its creatures. In the responses to questions regarding sharing knowledge with others and taking action with local merchants (Q15 & Q18), a strong sense of emotional connectedness to the problems of shark conservation can be identified. If after participating in the learning module, people are willing to make changes as well as share their new knowledge; this indicates a desired shift in their emotional connection to the topic or cause.



Question #12 Question #15 Question #18

Open ended questions revealed a positive tone throughout the responses. Feedback was centered on a few key issues such as how certain sections of the learning module might be better received by younger participants. The mindfulness section received especially good feedback. One participant commented:

"...Kids that age have a hard time to find their inner peace even if it is screaming at them. Different visualization techniques would be helpful but an 'epic story' while their eyes are closed might get them there…"

Another participant commented on a leadership message threaded throughout the learning module:

"…that we can all take an interest/stand in an interest/subject [environmental issue] that we care deeply about without having prior credentials—we can be heard!"

On the question of empathy development in question #21, most responded that their overall feelings for sharks has shifted toward the positive but one person held onto her beliefs that sharks represent a personal threat while swimming in the ocean, the participant indicated that:

"I was scared to death of them when I got here, and that did not change. [but] I have never advocated for the senseless slaughter of any animal, even those I am terrified of."

And another participant commented that:

"I care more about sharks, I always knew about the myths that some cultures have associated with eating sharks (or predators for that matter). I am glad this module was well rounded in scope."

It appears from the open ended questions that the comments generally offset one another; meaning one positive for a negative. Overall, the open ended questions provided substantial feedback and objective criticism. Consequently, the researcher can use the feedback to change portions of the learning module to achieve a greater result when/if the module will be deployed in the future.

Section A:

1) Ages: 45, 34, 33, 56, 35, 51, and 25 (Opening Quiz asked home town and gender, see appendix 1)

Likert measured questions:

2) Would you recommend this educational pilot for further development?
3) Was the topic and goal(s) of the module clearly communicated, outlined, and easily followed?

4) Did you learn more than you already knew about current shark conservation issues?
5) Do you find the topic of environmental issues irritating, or cliché?
6) Is the core theme of shark conservation and ocean stewardship more important to you now, than before attending the educational pilot?
7) Was the overall experience of attending the session positive?
8) Do you support further development of this learning module and its use with adolescents and young (college age) adults?
9) Do you feel that the media has played a significant role in developing societal regarding sharks?
10) Will you share the core theme of shark conservation on social networks?
11) Are you motivated to seek more information regarding the core topic of the learning module: shark conservation?
12) Do you feel an increase in empathy towards sharks in general because of what you learned today?
13) Have you developed a stronger sense of urgency to act pro-environmentally because of your experience with this educational pilot?
14) Do you feel the learning module was fake or misleading?
15) Will you share the shark conservation topic with your children or other children you know?
16) Are you willing to change your eating habits by eating seafood products identified as sustainable?
17) Will you send notifications to news stations when they use fear messages about sharks or shark incidents they are reporting on?
18) Will you notify local merchants to stop selling shark cartilage products?
19) Do you feel that leadership development at grassroots level can be effective in creating action for addressing environmental issues?
20) Do you consider the learning module effective?

Open Questions: Short Answer

21) What is your overall feeling about the learning module and its core topic?
22) What leadership message(s) did you discover while participating in the session?
23) Has your empathy for shark conservation increased or decreased, and what from the module inspired you to feel this way?
24) Did the learning module motivate you to personally take action regarding shark conservation, if so, what are your plans to act?
25) The learning experience would be better if...?
26) The core theme would be better represented if...?
27) Macro changes to social behavior are incredibly complex and daunting, what could be done to change the public perception that sharks are not enemies of humans?
28) Who will/might you tell about your experiences in this session today? Please list in general, no specific names: Example-sibling, children, neighbors
29) Provide specific feedback if you think this educational pilot will or will not be effective inspiring others to act pro-environmentally for shark conservation.
30) Open Feedback section: (keep it short and to the point, please)

Conclusion

Leadership is defined by many professionals and scholars as the ability to influence others to achieve a higher purpose, to bring light and understanding, and creating community through shared visions while forging onward through challenges. When looking into environmental issues, a division of community continues to hold steadfast because of politics and social value differences, especially for the United States. Consequently, leadership for environmental conservation issues is a social challenge which needs to be addressed using innovations in education at the street level. This approach will serve to create tenacious leaders with resolve, passion and commitment to change the status quo. The research and learning module outcomes indicates that peer to peer communication is an effective tool to challenge the myopic opinions regarding ocean ecosystems of the 21st century. Sharks represent only one challenge among many ocean environmental issues needing reforms promoting more pro-environmental behaviors by American's.

One of the most effective ways in which Americans challenge societal issues has been through peer to peer learning and communication; effective leaders have been fostered at grassroots levels and have effectively changed America's traditional social and behavioral schemes. Peer to peer relationships and action in both have developed strong followership, created leadership, and forged social changes. Without the leaderships such as was demonstrated by Rosa Parks, southern societies might still be imprisoned by the archaic Jim Crowe laws. Without the selfless actions of Moore, Stowe, Hunter, et al., Green Peace would not exist today. The common thread of these examples is peer to peer communication, developing a vision, leading by example, and sharing alternative thinking and opinions with communities. Educating societies successfully nearly always begins with someone's small test of a social circumstance or a single idea transformed into an action.

The goals of this research and subsequent learning module were three-fold: to provide participants with the environmental evidence of the importance of sharks to the ecosystem; to engage the participants enough so pro-environmental behaviors for sharks' value begins a ripple effect of communication in the community; and to inspire leadership career choices towards environmental and conservation fields in present day adolescents and young adults. The intended overall effect of the learning module was to stimulate pro-environmental behavioral changes for shark conservation or other culturally challenging environmental concerns. Ownership and advancement of pro-environmental behaviors is extremely important to the future of human survival, especially in highly developed countries such as the United States since the overall ripple effect could be considerably effective, due to U.S.'s position as a global leader.

Many shark species decimation is reaching crisis mode and time is running short for action. The literature review illustrates some approaches to improving pro-environmental leadership behaviors in order to benefit shark conservation, yet much more research into the development of common values for environmental, and/or endangered species, through peer to peer communication is needed. The motivator for continued research should be the sustainability of endangered species that directly affect the balance of any ecosystem which threatens the survival of humans, animal, or plants.

New approaches using innovative learning modules could increase awareness and stimulate a significant behavioral change towards sharks and their conservation. While America is getting greener by the day, not all conservation issues hold the same common environmental value in society. It is critical to the macro-balance of ocean sustainability that more Americans become aware and involved in activism championing shark conservation by switching off the culturally embedded fear factors and switching on their pro-environmental behaviors toward

sharks. Both of these goals can be accomplished through peer to peer learning engineered through innovative educational models. The research and discussion resulting in the construction of a learning module which addresses key issues in pro-environmental behaviors development through peer to peer communication met the assumption that peer learning works with peers who are not members of the scientific, activist, or any environmentalist communities; these are the 'You & I's' which represent the majority of the world's populations. Leadership development at the community and grassroots levels can definitely be fostered through public awareness and peer to peer transfer of learning and especially when the general public receives the correct information to take action. Scientific discovery and environmental activism are functioning in America as tools to understand and to create action; these are well developed communities. Underdeveloped communities are those that have been left out of the loop through exclusive languages, biased messages, and/or have not had the benefit of accurate information. It is this last group, comprising the majority of the U.S population, who can make a considerable difference toward the cultivation of pro-environmental behaviors. This learning module has provided a window into the success of reaching larger populations through peer to peer communication and social learning, however, additional tests should be conducted to improve accuracy, execute effective learning development and ensure positive results.

THE UNIVERSITY OF SOUTHERN MAINE

MASTER'S DEGREE IN LEADERSHIP STUDIES

August 22, 2013

We hereby recommend that the thesis of Mark W. Carrera entitled "Pro environmental leadership development through peer to peer transfer of learning: An educational pilot project" be accepted in partial fulfillment of the requirements for the Degree of Masters of Arts.

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Dr. Betty Robinson, Advisor/First Reader (signature)

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Dr. Blake Whitaker, Second Reader (signature)

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Dr. Elizabeth Fisher-Turesky, Program Chair (signature)

Accepted

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Dr. Joyce T. Gibson, Dean, Lewiston-Auburn College (signature)

Resources

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[i] **Sharks bite** as a way to determine if the object is a suitable food source. Most shark attacks on humans are a result of exploring what they encounter in their environment; humans are not a natural source of sustenance and sharks typically release their bite and move on. Nearly all deaths in shark attack incidents are from bleeding as a result of the exploratory bite (Skomal, 2009).

[ii] **Tonic Immobility** (Wikipedia, 2013): "Apparent death, colloquially known as playing dead or playing possum, is a behavior observed in a wide range of animals which take on the appearance of being dead to the observer." It is a reflex action to either the appearance of threat (possums will play dead when threatened) or from an environmental change. Certain species of Sharks appear to fall asleep when they are inverted or another stimuli is applied. The diver, Cristina Zenato, caresses the sharks' snout for a short period of time (in the video) and then inverts it, it appears lifeless for some time after inversion.