

The 2014 Toppers at Sea Climate Change Symposium as model for Shipboard Education  
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The 2014 Toppers at Sea Enrichment Voyage offered a unique opportunity to develop an innovative model for Shipboard Education, utilizing best educational practices in the areas of comparative education, international studies, thematic learning, interdisciplinary teaching and learning, inter-generational teaching and learning, and service learning during a two week voyage in the North Atlantic.

This report identifies and describes the impacts of a thematic, experiential, service learning approach to climate change education through Shipboard Education. It will be used to provide recommendations for a model for Shipboard Education that will encourage collaboration, experiential learning and teaching, and life-long learning. Additionally, it will provide the framework for a professional video that will capture the experience through participants' lenses, allowing us to share the purpose and intent of this model through a creative media.

### The History of Shipboard Education

Approximately 100 years ago New York University Psychology Professor James Edwin Lough advocated for change in traditional higher education. He felt that travel and immersive experience were a better alternative to teaching and learning than textbooks, classrooms and lectures. Lough's work in creating place-based educational experiences earned him the title of "Father of Shipboard Education". The first formal shipboard education occurred in 1926 when Lough sailed with 504 students and 63 faculty members on a voyage around the world. It would be the 1960s before shipboard education was again pursued, this time by the University of the Seven Seas, which later became World Campus Afloat. After starts and stops, World Campus Afloat became the Institute for Shipboard Education, and with University of Colorado as the academic sponsor, Semester at Sea was born. In 1981 the University of Pittsburgh became the program's academic sponsor and in 2006, the University of Virginia assumed the role and remains the academic sponsor to date.

### Fifty years of Semester at Sea

In 2009 Semester at Sea celebrated its 100<sup>th</sup> voyage. Each semester, college students participate in the Semester at Sea program and lifelong learners, many of them Semester at Sea alumni, join them on the ship to create an academic community that is intergenerational and diverse in expertise and perspective. The Institute for Shipboard Education reports that "since 1963 more than 55,000 individuals from 1700 institutions have traveled to more than 60 countries on Semester at Sea and its predecessor programs" (SAS website, 2014). Prominent Semester at Sea lecturers and guests include Archbishop Desmond Tutu (also an alumni), Fidel Castro, Mother Teresa, and Nelson Mandela.

### The Toppers at Sea Climate Change Challenge: A New Approach to Shipboard Education

The mission of the Institute for Shipboard Education (ISE) is "to educate individuals with the global understanding necessary to address the challenges of our interdependent world." The

Toppers at Sea Climate Change Challenge model embodies that mission in a multitude of ways. Using place-based, interdisciplinary, and intergenerational teaching and learning, this model is being proposed as a best educational practice, and exemplary model for shipboard education.

### *Rationale*

A best educational practice model by necessity embodies the traditional concept of scholarship: the discovery of new knowledge through scientific investigation. However this essential function is merely that: a basis upon which to build a paradigm that results in deep, meaningful learning and service. Such a paradigm must include what Earnest L. Boyer (1990) describes as the *scholarship of integration*, the *scholarship of application*, and the *scholarship of teaching*. Discovery leads to new knowledge and insights, however discovery is of little value if limited to one discipline and not integrated through interdisciplinary research or knowledge. Additionally, even integrated, interdisciplinary discovery is worth little if not applied to real-life problems to identify solutions. Such pedagogy not only lends itself to service learning, but rather it demands it, resulting in a rich educational experience that serves the student, instructor, and community at large. Though Boyer articulated these ideas in his 1990 report, “Scholarship Reconsidered: Priorities of the Professoriate”, they are not new concepts in scholarship.

A historical perspective of educational reform, and particularly progressive educational reform, reminds us that it arises from need resulting from changes in the conditions of life. New situations require new ways of learning, thinking, and approaches to problem solving. John Dewey advocated for educational reform in response to changes in American civilization; academic activities (educational approaches) were not in accordance with real-life conditions. The type of education that Dewey envisioned more than a century ago: that which would have beneficial social consequences, integrating education with society and real-life problem solving, is demonstrated in the Toppers at Sea Climate Change Challenge Symposium model. It is interdisciplinary, allowing for students to develop through discovery and integration, a broad and well-informed perspective on topics and issues. And it is experiential, allowing for knowledge to be applied to real life problems and solutions through service that benefits the greater society.

### *The Model*

The 2014 Semester at Sea voyage took place during the Semester at Sea Enrichment Voyage, taking advantage of the abbreviated time frame and location in the North Atlantic that supported a theme of climate change. In fact, the short-term nature of the voyage and opportunity for such a theme were two of the most important elements of this model. The other essential elements included interdisciplinary instruction and learning, a service learning component and capstone experience, experiential learning, international comparative education, incorporation of subject matter specialists, intergenerational teaching and learning, development of a youth program, engagement and support of Student Life staff, participation of life-long learners, pre-departure training, and exploratory field excursions. These elements are described in more detail below. While these components of our model are all based on the theme of climate change, we believe that they are both essential and adaptable, and can be applied to any educational theme.

## *Elements of the Program*

### *Thematic Approach*

The thematic approach to teaching and learning utilizes a theme to connect curriculum of various disciplines around a common topic. A theme may be studied from various disciplinary perspectives and such an approach encourages system thinking, critical thinking, and creative problem solving. The voyage around the North Atlantic and particularly port stops in Iceland, Denmark, Sweden, and Shetland Islands, and Northern Ireland offered special opportunity to study climate change and related issues, adaptations, and challenges. As a global problem that can only be addressed from an interdisciplinary approach, climate change served as the academic theme for the voyage. Each course focused on a disciplinary perspective of climate change and each port offered field experiences for real-life examples of challenges and adaptations. All students met together each morning at sea for The \$100 Solution™ course and were exposed to the theme of climate change from different disciplinary perspectives through lectures from faculty and subject matter experts. All activities culminated with a service-learning component at the University of Akureyri.

### *Interdisciplinary Instruction and Learning*

The thematic nature of the Toppers at Sea instructional model allowed for an interdisciplinary curriculum. Integrative curriculum design, a holistic approach to teaching and learning, utilizes various disciplines to examine a common topic from various lenses. A comprehensive and broad understanding of climate change requires at least a basic understanding of the topic as related to the scientific concepts, public policy and economics, historic and future cultural trends, and education. In this model, faculty members from education, economics, future trends, and geosciences, each offered independent 3 credit hour courses on the ship, focusing on climate change in respect to their disciplines and allowing for students from a diversity of programs of study to enroll in a credit bearing course. These disciplines intersected through a 1 credit hour The \$100 Solution™ symposium, which all students were required to attend.

### *Service Learning Through The \$100 Solution™ and the Capstone Experience*

Knowledge and experiences were synthesized and applied in a common symposium for all students: The \$100 Solution™ 1 credit hour course. This is where the disciplines intersected and students were engaged in active service learning to develop solutions and take action, based on what they learned through various course and field experiences. Each day at sea, students met together for this course, where they learned the basic tenets of The \$100 Solution™, and developed group or individual projects that further investigated and addressed climate change issues. They were prepared to do this through interdisciplinary lectures presented during this time by each participating faculty member and other subject matter experts. In this way, all students were exposed to the topic of climate change through the various lenses of science, economics, future trends, and education, among other disciplinary perspectives.

The \$100 Solution™ course challenged students to do two things: First, they developed discipline-based presentations for stakeholders at the University of Akureyri, Iceland regarding what they learned and potential solutions for change. Second, they completed what is called an “A Project”, which could be completed independently or as teams. Completion of an A Project allowed students to more deeply explore topics or issues that were of particular interest to them,

developing and refining desired skills. A Projects included: a student interview with Captain Rick Fehst, Alaskan Commercial Fisherman featured on the Discovery Channel's *Deadliest Catch*, regarding how his trade has been affected by climate change; presentations for lifelong learners aboard the ship; a comparison of climate change related media between Northern European countries and the United States; creation of a voyage blog; and other creative projects.

The culminating capstone experience, in which students researched, prepared and presented reports of what they had learned on the voyage and their ideas for positive change, was a significant success by any measure. Presenting to important stakeholders and leaders in higher education at the University of Akureyri was an exciting but stressful experience for students and they put in hours of hard work making sure their presentations and their \$100 Solutions were of the highest academic quality and reflective of their commitment to addressing climate change. The morning spent at the University of Akureyri was considered by all a beginning of a meaningful partnership between the two Universities. Students wrote about the experience in their reflections and expressed how anxiety about their presentations turned to pride in a job so well done as to potentially change lives.

#### The \$100 Solutions:

Education students spent the voyage developing a complete educational unit on climate change, based on the SKyTeach model and in alignment with the recently adopted Next Generation Science Standards. The \$100 will be utilized to create a complete online educational package that any educator can access and utilize to conduct the educational unit from any location.

Future students presented their \$100 to the Rector at University of Akureyri for purchase of a tree to be planted on that campus. The tree represents a space where people can meet to discuss climate change, associated challenges, and solutions. The idea was based on a tree the class visited in Stockholm where decision-makers historically gathered to discuss and solve problems. The tree was immediately procured and planted during our visit to the University. Interestingly, the tree is an apple tree – historically not grown in Iceland but possible now due to climate change.

Geosciences students used their \$100 to do two things: first, they adopted a glacier on behalf of the University of Akureyri to represent their commitment to continued work to address climate change. The glacier, located in Colorado, will be visited by the Colorado State University student who attended the Toppers at Sea climate change challenge (enrolled in the GEO course). Second, they donated \$50 to the Extreme Ice Survey, to encourage education and the continued discussion of the science of glacier melting.

Economics students used their \$100 to purchase a “Carbon Destruction Certificate”, cancelling the permits worth 9 tons of carbon emissions, “taking them out of the hands of would-be polluters” and “calling on Europe’s politicians to reduce the supply of permits by millions more” (Sandbag Climate Campaign). These EUA permits were taken out of the EU Emissions Trading Scheme, and are meant to symbolize a commitment by the Economics students to reduce their own carbon footprints.

### *Experiential learning*

Experiential learning can be best defined as learning by immersion, what Boyer articulates as the *scholarship of application*. Investigation of climate change in real-world applications, such as field research in various ports of call which act as living laboratories for topic exploration, allowed students to experience cultures, interact with local citizens and subject matter experts, and see first-hand how various communities are responding to climate change. Guided reflections on these experiences encouraged students to be intentional about observing their surroundings and interacting in a deep and meaningful way during their field experiences.

### *International Comparative Education*

Perhaps one of the most important elements of this model is the opportunity for international comparative education. During the two-week voyage, learners were able to gain a global perspective, making observations about the impacts of, and solutions to, climate change in different geographic locations. Additionally, they were able to gain insight into cultural, behavioral, and political attitudes and values related to the theme, resulting in a deep and rich learning experience. Reactions to these immersive experiences were recorded in their daily reflections, and it was clear that they shifted from a self-centric perspective to one of global citizen. They began to see themselves and their life experiences in a new light, questioning previously held beliefs and biases. Such an experience takes learners beyond education to personal growth, and would not be possible if not for the Toppers at Sea shipboard education model. Exposure to different places and people is essential in developing perspective as a global citizen.

### *Incorporation of Subject Matter Specialists*

During the Toppers at Sea voyage, learners were able to interact with a variety of subject matter specialists that provided “deep dives” into various elements of climate change. In some instances, these experts were aboard the ship, traveling with the group, in other instances experts were part of the field excursions at ports of call. Traveling with the group from port to port was a professional fisherman, an arctic law student from the University of Akureyri, two physicians from Alaska, and a glaciologist from Iceland. Field excursions included visits to an ice core curator, education professionals, the President of a University Centre, and other subject matter specialists. In both cases, these specialists conducted seminars on relevant subjects and acted as resources for our learners. This opportunity for personal engagement with experts in the field of climate change enhanced the learning experience, allowing for a diversity of interdisciplinary and professional perspectives on the subject of climate change. A complete list of subject matter specialists that partnered with the Toppers at Sea voyage is below.

- Dr. Stefan Sigurosson, Rector of the University of Akureyri, Iceland
- Embla Eir Oddsdottir, Director of the Icelandic Arctic Cooperation Network, Iceland
- Monika M Stefansdottir, Arctic Law student, University of Akureyri, Iceland
- Thorsteinn Thorsteinsson, Glaciologist, Icelandic Meteorological Office, Iceland
- Captain Rick Fehst, Commercial Fisherman, Alaska
- Dr. Ann Nora Ehret, DO, Medical Director, Iuiliuk Family Health Services, Alaska

- Dr. Barbara Jean Doty, M.D. FAAFP, Solstice Family Care, Alaska
- Dr. Peter Weiss, Director, University Center of the Westfjords
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### *Intergenerational Teaching and Learning*

In the Toppers at Sea Climate Change Symposium model, many types of learners were engaged. All constituents, including faculty, college students, youth, and life-long learners were all students and teachers in this model. While each type of student was engaged in a program of study (college students in their various courses, youth program for young voyagers, field excursions and shipboard lectures for life-long learners), they were continuously engaging with each other, intersecting at the daily The \$100 Solution™ course, attending various lectures, field excursions and other activities, cross-collaborating on projects and programs, and simply engaging in informal conversations about their studies and activities. As an added element, life-long learners not connected to the Toppers at Sea program asked the students about what they were doing and learning, so students frequently had the opportunity to engage with Semester at Sea alumni throughout the experience.

### *Youth Program*

The Toppers at Sea Youth Program was created by a team of students and served as their A Project for The \$100 Solution™ Symposium. Leading this project was a doctoral student specializing in gifted and talented education, and the youth participating in the program all happened to be identified as gifted and talented. While this allowed for a high level of engagement and advanced outcomes for youth of this age, the youth program can be adapted for all ages and levels of education and development.

The program was intended to expose young people traveling in our group to the science and issues of climate change in a multicultural setting. Students learned basic sustainability and climate change science, and were particularly focused on how climate change is impacting the oceans. Using The TerraMar Project™ ocean stewardship program, students created a personal connection with the ocean and its inhabitants by selecting an animal and pledging to protect the ocean. The students were further involved in protecting the ocean by holding a pledge drive in which they educated the shipboard community and convinced other passengers to take the pledge to protect the oceans. In addition, students learned to be global citizens, attending numerous lectures on cultural issues, and taking part in field excursions. One particular excursion, designed just for them, exposed the students to independent, international travel. They were required to read a map and navigate a city, change money, purchase an item, and speak in another language, all while practicing the basic principles of being an informed and respectful traveler. The students were involved in the process of reflection, keeping journals in which they reflected on what they learned, what they would like to learn, and how they can apply new knowledge to their daily lives. Finally, the youth group presented at the University of Akureyri, along with the WKU students, on what they learned during the Toppers at Sea climate change challenge, and their TerraMar project.

*Full report on Youth Program attached.*

### *Student Life*

WKU Student Life staff acted as significant partners in this model, providing student support and extracurricular programming both before departure and during the voyage. Student Life staff members actively recruited students for the program in the months preceding the

voyage through various outreach and engagement programs, working closely with Study Abroad staff and faculty members. They develop informational materials on the voyage, ports of call, and climate change, which were disseminated before departure, and conducted talks in Residence Halls and at various campus events. Student Life staff planned and led Student Life field programs at each port, providing students with options for exploration and experience. Additionally, they planned shipboard activities that enhance the experience for all travelers such as an Arctic Circle crossing ceremony among other things. The presence of this staff not only added to the quality of the experience but provide 24-hour support for students for the duration of the voyage. The Student Life staff became active members of the community of scholars, attending all of the courses and engaging with other learners on projects and during various experiences.

### *Lifelong Learners*

While the Toppers at Sea enhancement voyage was fundamentally designed to provide college students with a rich study abroad experience, elements of the program were focused on provision of engagement opportunities for lifelong learners that were not part of the traditional student population. Faculty, support staff, and faculty and staff partners were encouraged to participate in class meetings, shipboard educational activities, and field excursions. The effort to engage life-long learners extended beyond the Toppers at Sea group. There was a population of people on the ship that sought self-development and continued learning. They chose this particular type of travel experience because it allowed for an academic experience far beyond conventional tourism. For this reason, class meetings were open to all persons on the ship, and students were encouraged to engage in discussion with fellow travelers about their educational experiences and gained knowledge. Several students conducted shipboard presentations to share with others the knowledge they gained regarding climate change. The development and delivery of these presentations served as A Projects. Ultimately, we sought to encompass the population of lifelong learners in our community of scholars, and the response from our traveling companions was enthusiastic and positive: they were interested in our studies and sought to learn from our students, faculty, and staff.

### *Faculty Pre-departure Training*

A significant element of the Toppers at Sea model was pre-departure training for faculty. Because the voyage required courses to be instructed in a condensed and collaborative setting, pre-departure training and preparation was essential. Other significant elements of the program called for the need for pre-departure preparation as well. Interdisciplinary pedagogy, education around a central theme (in this case, climate change), and service learning were approaches not entirely familiar to our faculty members. Additionally, faculty members were challenged to use place-based education, integrating the ship, sea, and places we visited as teaching tools. This model was different in many ways from traditional classroom instructional methods, and required a large degree of planning, coordination, and creative adaptation. Regular faculty and support staff meetings were conducted in the months prior to the voyage to ensure communication and clarity on shared goals and expectations. Similarly, monthly meetings for all voyagers were conducted so that students, faculty, and support staff understood program processes and expectations. In addition to information on voyage logistics and travel details, the meetings included educational discussions on climate change and the places we planned to visit. Initiating discussion on the theme of climate change before ever leaving our campus primed our

community of scholars for the experience, leading to increased engagement, pre-departure independent investigation of the topic, and clearer expectations for the voyage.

### *Field Excursions*

Field excursions offer opportunity to explore and discover in real-life settings, enriching the experience dramatically. In each port of call, planned field excursions were offered for all learners. In some instances field excursions were discipline-specific, attended by particular classes, but most of the excursions included our entire group, offering additional opportunities for interdisciplinary learning. These experiences allowed for “deep dives” into various areas of the subject of climate change. For example, learners were able to view ice core samples in Copenhagen, visit a geothermal plant and climate observatory in Reykjavik, kayak the fjord in Isafjordur, and participate in other such meaningful field experiences. This exploratory and experiential learning offered learners rich discovery related to the subject of climate change. Below is a list of the field excursions by port.

#### Copenhagen, Denmark

GEO - University of Copenhagen Centre for Ice and Climate

ECON - Sustainable Urban Development Tour

EDU – University of Copenhagen, meeting with Dr. Jens Dolin, Professor of Science Education

#### Lerwick, Shetland Islands

All - Viking Energy Wind Farm, existing and proposed sight for expansion

#### Reykjavik, Iceland

GEO - Icelandic Meteorological Lab, Perlan and Thingvellir National Park

ECON & HONORS – Hellisheidi Geothermal Plant and Thingvellir National Park

Student Life Cultural – Free walking tour of Reykjavik

#### Isafjordur, Iceland

All – University Center of the Westfjords – community presentation including history, climate change perspective, economic development, and education

EDU – Calm Fjord Kayaking

#### Akureyri, Iceland

Class and Youth presentations at University of Akureyri

Community lunches with local experts

ECON – The Universities Department of Fisheries

GEO – The Arctic Cooperation Network

EDU – Faculty from the Science Education unit from University of Akureyri

All – City Center and University visit, Thermo swimming pool

#### Belfast, Northern Ireland

Unstructured exploration

### *The Courses*



The interdisciplinary nature of the Toppers at Sea climate change challenge allowed students from a variety of programs of study to participate. Students could enroll in any of the following courses, along with mandatory enrollment in the 1 credit hour ICSR The \$100 Solution™ course.

#### GEOG 475/GEOS 510: We've Climate Changed: Interpreting Climate Change Science

This course was designed to explore the science of climate change, including geographical, physical, and environmental drivers causing major changes, such as the modern warming trend. Additionally, this course explored how the communication of climate change science influences the public perception and the direction of scientific research. Special emphasis was placed on reflective thinking and writing, science interpretation and communication, service learning, and practical application of scientific findings.

#### ECON 430, 430G: Environmental and Resource Economics

This course provided an introduction into the principles of environmental and sustainability economics, with a focus on policy applications and climate concerns. Environmental resources differ from other goods that economists study in that there are usually limited markets for them. Thus, government policies are sometimes needed to maintain and improve environmental quality. Economic sustainability seeks to maintain economic activity and its outputs, accounting for the cost of environmental depletion and degradation. The course began by examining how economic incentives lead to environmental problems and by discussing various options for dealing with these problems. Because economic analysis requires information on both costs and benefits, they next discussed methods for valuing the benefits and costs of environmental amenities. The course continued with applications to various policy issues, including the environment in Northern Europe, international issues, energy, and climate change. The course concluded with a discussion how the various parts of the world and regions may adapt to rising temperatures over time.

#### EDU 401/401G: Special Topics in Teacher Education: Semester at Sea

EDU 401 was designed to help students develop a working knowledge of instructional planning, implementation of instruction, assessment, and the implications of instructional decisions in light of the needs of diverse learners. Students explored educational theory, current practice, and future trends in p-12 teaching. Students learned more about curriculum theory and design and evaluated the outcomes of curricular design features and instruction on the basis of data collected through actual teaching experiences. These ideas and skills were explored in the context of Global Climate Change on the campus of WKU, aboard the MV Explorer, and in six different countries during the Toppers at Sea 2014 Climate Change Challenge. The Toppers at Sea experience allowed students to explore these ideas in an authentic context, as both the science of global climate change as well as the educational course goals were addressed in countries that are experiencing the effects of a warming planet in direct and observable ways.

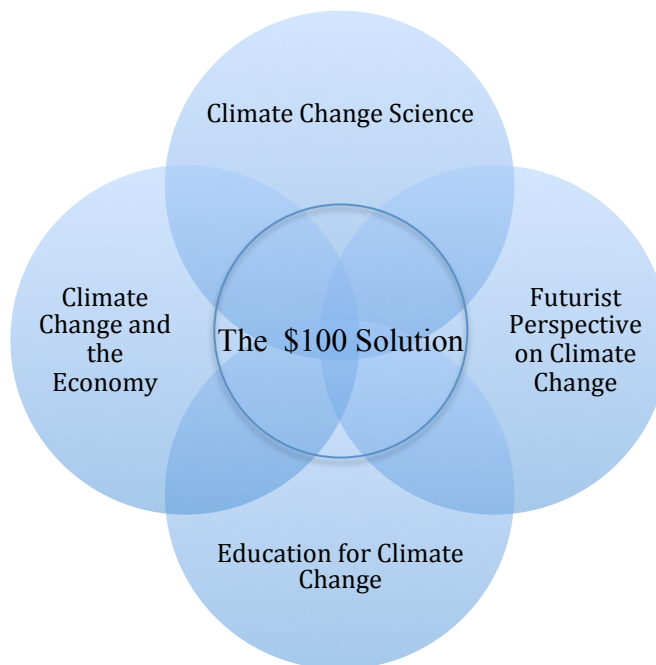
#### HON 380: Trends Shaping Our Future: Local and Global Perspectives

This course was an interdisciplinary examination of significant environmental, demographic, political, technological, and economic trends that will shape the world over the next several decades. Issues were examined on both a local and global scale through two specific lenses: the geographical regions visited during the voyage and the influence that climate change may have

in shaping these trends over the next several decades.

### ICSR 301: Addressing the Climate Change Challenge through the use of The \$100 Dollar Solution™

The purpose of this course was to develop students who understand and can articulate the effects of climate change on the North Atlantic countries from a geophysical, economic, educational, and futuristic points of view. Utilizing The \$100 Solution™ service learning model, the students developed and delivered an oral presentation describing lessons learned on the Toppers at Sea Climate Change Challenge and offered strategies for developing international cooperation between WKU and the University of Akureyri. The cooperative program, presently in development, will include educational, research, and exchange programs.



**Figure 1. All courses intersect with a service learning capstone experience in The \$100 Solution**

### *Outcomes/goals*

Perhaps first it is appropriate to review our original goals, and then discuss outcomes.

Program goals:

- Test, refine, and further develop this best shipboard education model
- Engagement of adult life-long learners (faculty and staff), cultivation of young life-long learners (students and youth)
- Collaborative interdisciplinary problem-solving
- Experiential engagement of students, youth, faculty, staff and the broader shipboard community

- Applied service projects that are meaningful, impactful, and sustainable

### *Outcomes*

The outcomes of this educational model can be measured in a variety of ways. Grades are determined through the completion of individual course outcomes and goals, but it is my conclusion that grades are perhaps the least meaningful assessment of outcomes of this model. Students have described this experience as life-changing consistently and overwhelmingly in their personal reflections. They have stated that they have learned more in the 17-day voyage than they have learned in any class they have ever participated in. All of them, without exception, have described personal development as global citizens, and a personal commitment or feeling of obligation to take their new knowledge and make positive change. Students describe the interdisciplinary nature of the model as being key in allowing them to understand a difficult and complicated topic from a variety of perspectives. The \$100 Solution™ service-learning component was a significant element as well, allowing students to meet together each day and providing structure for a culminating service project that added a meaningful and impactful experience of value beyond my capacity for description.

I believe it is important to note that in interviews for the supporting video being created for the Institute of Shipboard Education, students emphatically stated that they would strongly encourage their peers to take the opportunity to have the same study abroad experience given the opportunity. Additionally they stated that the abbreviated time frame of the Enrichment Voyage was the only way they could have participated. Visiting multiple countries in a short time frame was also a feature they described as impacting their decision to participate.

Ultimately, the alignment of all of the elements described above resulted in what Dr. Strenicky, who originally conceived of this program and oversaw its direction, calls “magic”.

### *Lessons Learned and Recommendations*

It is understood that the Semester at Sea Enrichment Voyages will no longer be offered to life-long learners, however we believe the best educational practice model described here could be implemented during Semester at Sea fall and spring voyages. In fact, this model could offer a sustainable solution to voyages that are not completely booked, utilizing excess space and resources to efficiently and effectively round out the Semester at Sea program. Such a possibility offers a win-win solution to two problems: a Semester at Sea program that is not at full capacity, and the inability of some learners to complete a full semester shipboard education experience. The remarkable success of the Toppers at Sea Climate Change Challenge Symposium suggests that this model can and should be implemented as a regular and consistent program by the Institute of Shipboard Learning. While climate change was the theme for our program, any global or regional challenge or topic could serve as the theme, such as world hunger, empowerment of women, or other broad and cross-disciplinary and cross-cultural topics. The thematic nature of the model is essential, as are other elements of this model. Those imperatives we consider to be essential to the success of this model are listed below:

- The Semester at Sea academic sponsor must allow various universities to offer academic credit from their institutions.

- This model requires significant planning. It is recommended that planning begin one year prior to voyage to allow for faculty training and other necessary preparations.
- If such a model is to be established for Shipboard Education, it is recommended the Institute for Shipboard Education establish the position of an Academic Coordinator that would work with participating institutions and assist with academic and logistics coordination.
- Establish a thematic educational program, predetermined by itinerary, location, faculty, institution, and relevance.
- Offer of interdisciplinary curriculum, allowing learners from a variety of programs of study to interact and learn from each other's perspectives.
- Select faculty based on knowledge and ability to attract students.
- Select faculty based on itinerary informed themes.
- Conduct pre-departure training for faculty, staff, and students.
- Employ both the sea and the ship as integral teaching tools.
- Development of a youth program for young voyagers that is integrated into the theme and into the experiences and activities of other learners.
- Experiential learning and teaching utilizing subject matter experts and field excursions.
- Incorporation of place-based Service Learning using *The \$100 Solution*<sup>TM</sup> or other service learning models.
- Engage lifelong learners in educational opportunities and activities, expanding the community of scholars beyond the formal university group. These individuals are both interested in learning and have experience and knowledge of their own to offer.

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