Introduction:
I am delighted to have the opportunity to share my activities and perspectives with many students and young people from Japanese and foreign countries today. I would like to thank United Nation University, Miyagi University of Education and other universities for the collaboration to hold this session.
Kesennuma City Board of Education (BOE) and Omose Elementary School have aimed to design the program of Education for Sustainable Development (ESD) for the purpose of educating students who can contribute to build the sustainable society in the future. Omose Elementary School researched and developed an international collaborative environmental education program jointly with elementary schools in the U.S. in order to foster perceptual awareness and intelligence for developing sustainable future, linking with local and global institutions such as Miyagi University of Education and United Nation University to draw on expertise from environmental, cultural and educational specialists.
Today, I will focus on and discuss the significance of these linkages, the steps in forming our network, and talk about how we developed and carried out our ESD project thanks to these human recourses.

1. Schools need to promote ESD linking with outside organizations.
There is an on-going reform in school education in Japan. In keeping up with a changing society, the government has recognized the need to train students to be rich in heart and become able to contribute to sustainable society, acquire the basic skills for educating themselves, and cultivate their "zest for living." The New Course of Study, in effect April 2011, still requires schools to set aside time for integrated studies and promote ESD through subjects and integrated studies at each school level.
In order for schools to realize and reap the benefits of these reforms, it is essential that teachers go beyond the school walls, establish links with community and professional organizations and institutions, and promote educational activities with the support of a broader partnership framework. In particular, with ESD programs such as environmental education and international understanding education, schools devise and implement their own original learning programs, creating and realizing distinct, unique educational activities. By involving universities and other professional organizations in this process, teachers can apply the latest expert knowledge, techniques, data, information, and research findings to their teaching and curriculum in pursuit of more in-depth and comprehensive learning programs of ESD.
When all parties form linkages, collaborate to create and implement learning programs, and cultivate these relationships, we realize learning programs tailored to the individual learning styles and educational needs of each child, expanding possibilities and opening doors for our students and education. Building this new education networks meets the needs of their future.

2. Strategy for promoting ESD in formal education
<Strategy 1> Systematic Inquiry-Based ESD Program by Region
Utilizing rich nature and considering problems in region, we foster students’ perceptual awareness and interests, based on hands-on experience, and we develop and implement systematic inquiry-based ESD program according to grade level.

<Strategy 2> Global Collaboration with Schools Abroad
For promoting ESD based on region and community, we make the linkage with outside institution such as university, museum, nature center, nonprofit organization, industry, as well as local government, and we develop ESD reaping the benefits of their expertise.
<Strategy 3> Linkage and Collaboration with Knowledgebase
We progress ESD collaboration with schools abroad and communities, and we promote mutual understanding of culture and environment on global perspectives through sharing their activities and results of learning.

<Strategy 4> Total Physical Presence utilizing ICT
We realize the real-time exchange learning with peers on the other side of the globe beyond the national borders, time differences and long distances by making the best use of ICT, such as video conferencing. It is called “Total Physical Presence”.

<Strategy 5> International Understanding through Global Communications
In addition to normal English activities, we develop special English activities linking with the joint project such as video conferencing, so that we promote the global study to foster their motivation to communicate and develop international awareness through the collaboration.

3. Development and Implementation of ESD in Formal Education
   - Developing ESD Project at Omose Elementary School -
   (1) Theme: “Water Environments and Human Life: The Interactions and Effect”
Omose Elementary School (OES) has developed and implemented what it calls a “global inquiry-based environmental education program” across the entire school grades (1st through 6th grade) since 2002. Also in 2002, Omose Elementary School participated in the Fulbright Memorial Fund Master Teacher Program (MTP) and carried out ESD based on environmental education projects.
At Omose Elementary, we centered our Integrated Studies Period on the development and implementation of our MTP projects. We expanded the curriculum and the MTP project to incorporate environmental education, previous international understanding and information education curricula. We aim to build a comprehensive Global Inquiry Environmental Education program, which embraces the environmental education project, international understanding activities and information education. It is our approach to create ESD curricula.
Omose Elementary School formed a partnership with Lincoln Elementary School in Madison, WI, from 2002 to 2004, and with Callisburg Elementary school in Texas from 2005 to 2006. Under the Master Teacher Program of the Japan Fulbright Memorial Fund, Japan-U.S. Educational Commission, and Omose and American schools engaged in joint environmental projects. We based our collaboration on U.S. and Japan (Kesennuma) water environments and their effect on human life. Each grade level decided on a theme for their project, created a pair project, interacted via the Internet and engaged in joint learning activities.
Omose is the perfect place to learn about nature and the environment. Kesennuma City, Omose Elementary’s home, is situated on a rias or saw-toothed coastline area within the National Park. Rivers flow from the green Mountains through the city to Bay. We are surrounded by forests, rivers and ocean, all interconnected by water.
Thus, we agreed with partner schools in the United States to center our environmental learning on water. Through interactions based on our learning, we compare the similarities and differences between our two environments. Our pair project is based on our common characteristics.

<table>
<thead>
<tr>
<th>Pair Project Omose &amp; Lincoln Elementary School</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omose elementary School</td>
</tr>
<tr>
<td>Nature and Festival (1st Grade)</td>
</tr>
<tr>
<td>Vegetables Cultivation (2nd Grade)</td>
</tr>
<tr>
<td>BUGS Map (3rd Grade)</td>
</tr>
<tr>
<td>Omose Sanctuary (4th Grade)</td>
</tr>
<tr>
<td>Sea Museum (5th Grade)</td>
</tr>
<tr>
<td>Water Front Future City (6th Grade)</td>
</tr>
</tbody>
</table>

(2) Goal
This hands-on, experience-based inquiry learning is an eye-opening experience for students who hunger for
knowledge and discovery. Through web-based interactions, students develop a mutual understanding about each other's environments. This in turn develops their understanding of the earth's systems and opens up their eyes to the global world.

(3) Outline and Support of Grade Level Projects
Our pair project is an all school effort, incorporated at all grade levels. In developing our projects for each level, we carefully consider students’ developmental stages and circumstances and targeted abilities and perspectives. We select level-appropriate topics for each grade and develop and implement projects with the help of professional institutions.

(4) Summary of Our Main Project Design

① BUGS Map Project, 3rd Grade
Students observe and study insects around Omose River such as dragonfly, butterfly and so on. And they are going to share and compare information via the Internet by creating cyber maps based on their research.

② Omose Sanctuary Center Project, 4th Grade
Through gathering, observing, and cultivating Omose River aquatic life, students learned the connections between living things and understood the conditions necessary to preserve an abundant environment. Students created "Miniature Aquarium" and "Sanctuary Center".

③ Sea and Lake Museum Project, 5th Grade
Through observing and experiencing shoreline marine life, students learned the connections between living things and the ecosystem. From then on, they compared their observations with Lincoln Elementary School students' observations of a pothole, freshwater life. Also, they considered the connections between human life and the ocean environment and planned to make "Sea Museum".

④ Waterfront Future City Project, 6th Grade
Students thought about how Kesennuma's city, forest, river, and ocean can best co-exist with nature and planned a future Kesennuma City. The sixth grade students applied what they learned in previous years and contributed their individual ideas to planning a waterfront city of the future. The students made a diorama of their waterfront future city.

(5) Children Global Environmental Forum – Internet Video Conferencing beyond Border and Time
Omose and Lincoln connected via an online video conferencing system. U.S. and Japanese elementary students held an online forum on the global environment to exchange their activities and results of their learning and they are expected to broaden their perspectives and share environmental & cultural awareness. Through this communication, students of both sides could not only recognize the differences and similarities between their region and country abroad, but also progress mutual understanding beyond national boundaries.

4. Linkages with Knowledge Base:
(1) Omose Elementary School Project
Partnerships Promotion Committee
To realize our ESD program, Omose Elementary School established linkages with specialists in environmental issues and education, beginning with Miyagi University of Education, to seek support for our new program. Starting this project, Kesennuma City Board of Education and Miyagi University of Education

Linkage of Omose Knowledge Base
formally promote the development and growth of the linkage between Miyagi University of Education’s (MUE) Environmental Education Center (EEC) and Omose Elementary School.

In order to launch this project, we had instructors from the Miyagi University of Education Environmental Education Center, Sendai City Science Museum, and Shizugawa Nature Center participate in each project. We also had many volunteers from the municipal governments, industrial companies, nature schools, and volunteer organizations in the community cooperated in our project. They offered advice and support from their respective fields of expertise. They supported us in all aspects of our projects, providing us information and technological support and granted us access to a wide range of resources, information, and materials. Their resources, as a result, helped Omose Elementary engage in sophisticated and effective research and learning in our Inquiry Based Global Environmental Education Project.

Along with other institutions with specialized knowledge, local governments, and local industry organizations, MUE provided guidance on the development of the ESD programs at OES, assisted the implementation of the program, and delegated guest teachers to OES. Since the ESD program of OES has been developed by forging dynamic partnerships with local civil society, learning processes of individual students at Omose Elementary School are closely linked to regional development processes.

(2) Building RCE in Kesennuma Area — Kesennuma ESD/RCE Promotion Committee

In 2005, when Decade of Education for Sustainable Development (DESD) was launched by United Nation, United Nation University designated Greater Sendai as a Regional Center of Expertise (RCE) to promote ESD at world level. Then, Sendai RCE became one of seven RCEs in the world and that consisted of Sendai City, Kesennuma City and Tjiri-town (Ohsaki City).

To promote ESD/RCE in Kesennuma, under the leadership of Kesennuma Board of Education, Kesennuma City is now organizing “Kesennuma ESD/RCE Promotion Committee” by forging dynamic partnership with MUE, other local specialized knowledge institutions local government, and local industry organizations. This should allow the schools and activists of ESD to benefit from distinctive local resources and the expertise offered by these partner institutions.

Members of Kesennuma ESD/RCE Promotion Committee (25organizations)

<table>
<thead>
<tr>
<th>Specialized Knowledge Institutes</th>
<th>Local Government (Public Sector)</th>
<th>Local Industry Organizations</th>
<th>NPO and Volunteer</th>
<th>Educational Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Miyagi University of Education</td>
<td>• Miyagi Prefectural Kesennuma Civil Engineering Office</td>
<td>• Kesennuma UNESCO Association</td>
<td>• Kesennuma Omose Elementary School</td>
<td></td>
</tr>
<tr>
<td>• Kesennuma Miyagi Prefectural Fisheries Experimental Station</td>
<td>• Environmental and Health Division, Kesennuma City</td>
<td>• “Slow Food Kesennuma” Association</td>
<td>• Kesennuma Omose Junior High School</td>
<td></td>
</tr>
<tr>
<td>• Shizugawa Nature Center</td>
<td>• Planning and Policy Division, Kesennuma City</td>
<td>• Kesennuma Nature School</td>
<td>• Kesennuma High School</td>
<td></td>
</tr>
<tr>
<td>• Rias Ark Museum of Art</td>
<td>• Kesennuma City Board of Education</td>
<td>• NPO’I Love Oshima</td>
<td>• Other schools</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• ShiShiori River Preservation Committee</td>
<td>• Oshima Experience Station</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Conclusion; Possibilities and Directions for ESD Program

(1) ESD project make effective communication possible.
First of all, our ESD project brought Omose Elementary and American Elementary students and teachers together to collaborate face-to-face projects. Despite being in different countries, we worked close together to learn about the global environment and international understanding. Although interactions were international, they were still personal, helping students realize that national boundaries and distance do not limit learning or collaboration.
Secondly, this project provided very real environmental & cultural learning opportunities. It introduced the U.S.’s progressive methods of teaching about the environment to Omose Elementary. Our learning program required teachers and students to utilize live and local subjects, information technology, and hands-on experiences in the learning process. This helped us make our ESD more realistic.
Thirdly, our new challenge opened students' eyes to the world, allowing for connections with diverse people and environments in the rests of the world. This enabled students to develop the ability to think about matters from a variety of perspectives and to make decisions from many angles. Namely, they will acquire the true capacity to become global citizens and the strengths to discover the future directions for our environment.
Lastly, our new ESD project helped Omose to collaborate internationally on our environmental learning program and global network building. We brought this network to life by using it in the classroom and ESD based on environmental education, and for sharing knowledge and resources from all over the world with our students. This international linkage and collaboration opened doors for amazing possibilities in ESD.

(3) We emphasize shared experience on global scale through ESD
I often have an opportunity to talk with domestic and international teachers in advanced countries about the problems which schools and teachers face today. Teachers brought up same problems students encounter such as the increase in apathy or interest for learning and jobs, class disruption and selfish crimes committed. Students in these countries tend also to lack respects for others and what they have in life.
I suggested that these problems all resulted from "a lack of real experience." In these countries, students live in a virtual world. I would venture to call this situation “The Greatest Experiment in Human History”.
They are engrossed in video games, cartoon animations, and the Internet. Students are not in touch with the “real” outside world. Years go by while they do not gain the natural and social experiences crucial in their growth and development. Without the chance to explore nature using all five human senses and to experience the real relationship with others, they would not develop inquiring minds or keen senses and abilities of communication. Without meaningful interactions in the home, students do not learn love and/or discipline.
Without personal friendships and interactions in society, students would not develop social skills. As a result, we see children grow as young adults without having acquired basic life skills.
Our children determine our future. By raising children who do not understand their natural and social environment, the world risks the danger of further damage to the environment, society and humanity. As a matter of course, our future would be not sustainable society.
To avoid this, we must give students experience that fosters inquiring minds and respect for life through ESD. Omose's Inquiry Based Global Environmental Learning Program plays a significant role in this. The pair project with schools abroad and our learning programs required students to learn about their local environment firsthand and then use information technology to share what they have learned with peers in the U.S. This puts students in touch with the mysteries of nature and takes them outside to observe nature. In sharing their experiences, students exercise both their minds and souls through meaningful personal and intellectual interactions. They developed a mutual understanding with students in the U.S.
We boast our ESD projects for having realized the slogan “Think globally, Act locally". Our project centered learning on experience in students' local environment and then has students synthesize and express what their new knowledge on a global scale.
As Rachael Carson once said, this process fosters a "Sense of Wonder" in each individual child. Students in Japan and in the world shared their "Sense of Wonder" and came to understand each other across the national boundaries – I imagine, what a "wonder-full" opportunity!