



# Asia Good ESD Practice Project

Promoting ESD through Kesennuma  
Elementary Schools

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# Japan

# Promoting ESD through Kesennuma Elementary Schools

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## A) Project Content

### 1. Summary

Kesennuma City is developing Education for Sustainable Development (ESD) emphasizing environmental education rooted in collaboration with elementary schools and the community. These activities have tied in with ESD activities throughout Kesennuma and are bringing about profound change to ESD activities focused around the Greater Sendai Regional Center of Expertise (RCE), to which Kesennuma City is affiliated.

In 2002 Kesennuma City's Orose Elementary School (OES) began a global environmental education program that revolves around education for international understanding and environmental education in collaboration with Miyagi University of Education's Environmental Education Center (MUE-EEC). Through these activities, yearlong lesson plans were developed with theme-based projects for each grade level.

For example, the first grade project is "Nature and Festivals." Pupils learn about traditional festivals from their grandparents and enjoy festivals such as Halloween and Philippine Festivals with local foreign residents. Then pupils feel a common sense of gratitude and awe towards nature in festivals through cultural exchange with friends in the United States. The fifth grade project is "Sea Museum." Pupils experience "linkages amongst forests, rivers and oceans" by observing shoreline marine life and beech forests, and by going stream climbing. Through field trips to learn about local key industries such as deep-sea tuna fishing and oyster farming, pupils experience "linkages between nature and human livelihood." These types of lessons are made possible with the collaboration and cooperation of diverse community stakeholders and the expertise and hands-on instruction provided through the cooperation of higher learning institutions, primarily universities.

Each year of the projects the web of support extended itself and under the distinguished leadership of the board of education it spread horizontally to other elementary schools and eventually created a vertical alignment of elementary, middle and high schools that went beyond the boundary of school type.

In February 2004 the UNESCO/JAPAN Asia Pacific Environmental Education Research Seminar was hosted by Miyagi University of Education in Kesennuma City. It was then that the key note speaker and United Nations University Rector Hans van Ginkel learned about the region. Based on its accomplishments, Kesennuma City, Sendai City and the Town of Tajiri (currently Tajiri area, Osaki City) joined together as the Greater Sendai Regional Center of Expertise (RCE), which was designated as an advanced local foothold to promote education for sustainable development in June 2005\*. This sparked development of ESD through environmental education and education for international understanding, and in March 2006 the Kesennuma City Board of Education and the Miyagi University of Education (MUE) negotiated a collaboration and cooperation memorandum of understanding which broadened the fields that MUE supported to include: education for international understanding, English education, special needs education, and mathematics education. Through this process, many citizen level ESD activities were initiated and the network expanded.

In November 2006 the Kesennuma ESD/RCE Promotion Committee was established. This created a local hub for the advancement of ESD, and in 2008, all city elementary, middle and high schools are proactively developing ESD through the UNESCO School Network.

\*Kesennuma City, Sendai City and Tajiri area of Osaki City belong to the Greater Sendai RCE. The Greater Sendai RCE is one of several regions worldwide selected by the United Nations University as areas of progressive advancement of ESD. It was one of the first seven RCEs designated in the world in 2005.

## **2. Project Content**

### **(1) Background**

Kesenuma, a part of Miyagi Prefecture, is a region located in the northeast of Honshu Island, Japan. With the Pacific Ocean along its eastern edge, it is a region rich in nature. Covering a total area of 230 square kilometers, Kesenuma City is situated at 141 east longitude and 38 north latitude. With a population of 65,000, the city is the center of the Kesenuma Metropolitan Area which has a population of approximately 90,000.

The region's coast is called the Sanriku Coast. It extends from Iwate Prefecture to its north and is part of a coastline with complex inlets, also known as arias. In the background stand mountains beginning with the 760 meter Mt. Ohmori from which the Oh River, Omose River and other small to mid size rivers flow into the sea. It has long been one of the leading fishing ports in Japan. Fish farming is also very popular. The region is proud to land some of the highest catches in Japan for tuna, bonito and Pacific saury. It is number one in Japan for shark fin.

The region also has traditional performing arts such as its Rice Planting Dance and the Hada-no-oyama-gake. There is a cultural landscape of taking care of nature as can be seen in the Deer Dance where attention is paid to animal behaviors such as the love between parent and child. It is also a precious region that supports food production towards the creation of a sustainable society. In 2002 Kesenuma established Slow Food Kesenuma and drafted the Kesenuma Slow Food Declaration which aims to protect the city's culture and environment while passing on real food taste to future generations.

Within city limits, there are three prefectural high schools, two private high schools, 10 private middle schools and 17 elementary schools. There are children that appear to be envious of big city life, however, many children are expected to take on family businesses such as fishing and there is a relaxed sentiment towards academics. The result is a mediocre level of academic achievement. The city, primarily through the board of education, is working earnestly to raise the level of education.

### **(2) Objective**

Compared to the old days, the environment in which children grow up is rapidly changing. The amount children play in nature has radically decreased, proliferation of video games has led to a decrease in the amount children play with friends, family bonds are loosening, and interaction with a variety of adults in the community has become scarce. As experiences become primarily virtual, the numbers of children that don't know what is real are increasing. Even though children in Kesenuma live right beside the ocean, this does not mean that they have experienced or acquired sufficient knowledge about the ocean.

In order to solve this problem, teachers at OES thought that it would be essential to weave exposure to real things through observation and experience, with having fun in nature, independent thinking, and debating with others, into daily lessons. They also believed that cooperation from a diverse group of adults that lived, worked and did research in the community was indispensable for this type of learning.

The OES ESD project aims to provide high quality experiential education by creating a yearlong curriculum based on experiential learning and by creating a network of school volunteers that support lessons, rather than individual teachers.

We hope that these activities contribute to solving the enormous problems that children face, such as: psychological problems (truancy, social withdrawal), school problems (bullying, collapsing classrooms), family problems (speech deficiency, loss of paternal figure), social problems (young people Not in Education, Employment or Training [NEET], impulsive crime), and academic achievement problems (lack of mental capacity, articulation and motivation).

### **(3) Implementation Structure**

This project began with Miyagi University of Education supporting Kesennuma City Orose Elementary School's education research activities.

Funds for this support came from MUE and MUE external funds as well as external funds brought in by OES. A Japan Fulbright Memorial Foundation contribution was particularly important for international exchange between OES and American counterparts.

MUE, Sendai City Science Museum, Shizugawa Nature Center and other social education facilities contributed personnel and intellectual resources for the project. Information necessary for implementing lessons was provided with the cooperation of local organizations including the Little International Embassy of Kesennuma, Kesennuma UNESCO Association, Northern Miyagi Prefecture Tuna Fishermen's Association, Hashikami Fisheries Co-operative Associations, among others.

Educational practice, teacher training, and site accommodations were provided by MUE, Sendai City Science Museum, Shizugawa Nature Center, Rias Ark Museum of Art, etc.

#### **(4) Orose Elementary School Program Content**

Starting in 2002, Orose Elementary School implemented a Japan-America collaborative environmental education program that utilized the abundant shoreline environment in a theme about humans and their livelihoods. This global environmental education project aims to polish the sensitivity and intellect necessary for children to be rich and strong as they survive the environmental age. This is the 21st century's new environmental education, or "Inquiry-Based Environmental Education Program."

#### **Viewpoints in the Creation of Inquiry-Based EE Program**

Utilizing the accumulated results of research and network connections, OES has established and implemented research with the following five viewpoints in order to create this new inquiry-based environmental education program.

- Development of local Inquiry-Based EE Program
- Implement Global Collaboration with American elementary school
- Construct a Knowledge Creating Web with community, universities and experts
- Achieve Total Physical Presence utilizing Information and Communication Technologies (ICT)
- Foster Global Communication

On the basis of the five viewpoints above Kesennuma has developed and implemented a whole school systematic program that integrates yearlong themes for each grade level that consider children's developmental stages in relationship to appropriate sensitivity and knowledge, and reaps the benefits of the community as a field of study and its educational resources.

#### **Outline of Orose Elementary School Global Environmental Learning Program**

After being selected as a Fulbright Memorial Fund Master Teacher Program (MTP) recipient in 2002, OES took the opportunity to begin developing and implementing ESD programs that were based on global environmental education through collaboration with an American elementary school. In this joint America-Japan environmental learning project, we attempted to develop a systematic learning program informed by both local and global viewpoints across grades one through six in order to implement this international exchange-type environmental learning throughout the school. At the outset of this challenge there was no precedent to such a program; it was the original and creative challenge of OES. In the same year that the project launched, a systematic global environmental education program was developed for grades one through six.

### **(1) Nature and Festival (1st grade) "Let's Discover Nature and Festivals!"**

First graders experienced human cultures, traditions and other aspects of life through games in nature, festivals and other events; the project develops as pupils in America and Japan exchange information and share the similarities about nature and festivals. Pupils experience traditional Japanese events like Tanabata (Star Festival) and eating pumpkin on the winter solstice. They also invited community members from other countries to teach them about how to celebrate Halloween and a Philippine festival. Pupils realize the relationships between nature and human life by enjoying themselves and playing. Pupils also challenge themselves to make soil improvements with leftover vegetables by creating vermicompost.

### **(2) Vegetable Cultivation Project (2nd grade)"Grow, Grow, Grow, Let's Eat!"**

Second graders grow various types of vegetables in the schoolyard. Through this process they feel the vegetables' growth, wonder and mysteriousness; they cook traditional vegetable recipes with their harvest; and the activities foster a sense of gratitude for the bounties of nature. Additionally, pupils share information about vegetable varieties and recipes, they compare their food environments and food cultures, and the activities offer them a chance to encounter new cultures. This entire process is shared with elementary school children in America via television conferencing.

### **(3) Bugs Map Project (3rd grade) "Omoso Bugs World"**

Third graders observe and survey insects then create an environment map. In doing so, they come to understand the insects' diversity and seasonal changes, which they then share and compare with a counterpart in America via the Internet. First, pupils go out into the field to the Omoso River and pond. With support of a local insect expert, pupils observe and survey shoreline insects (mainly dragonflies), and investigate types of species and their distribution. As pupils summarize their findings in observation journals and on maps, they grasp the concepts of biological diversity and seasonal change. Pupils engage in a hands-on investigation about what type of environment is good for dragonflies to live in. The results of this entire process are then summarized and uploaded in a cyber map that is used to compare and share with an American elementary school's Bugs Project (a Japan Fulbright Memorial Fund project).

### **(4) Omoso Sanctuary Project "Omoso River Fostering Life"**

Fourth graders experientially explore food chains, connections between living organisms and the conditions necessary to preserve a rich environment by cultivating small fish (gobiidae family).

First, pupils put their eyes to the water and survey native species in the nearby Omoso River. They gather some of the fish and create a Miniature Omoso Aquarium. Through continual observation as pupils cultivate the fish, they seek out optimum conditions for these fish to survive, such as: correct water temperature, space and living quarters, dissolved oxygen, and food. With the help of fish and aquatic microorganism specialists, pupils learn about the aquatic organisms and insects that fish feed on and observe an even more microscopic world. This makes pupils realize the connections between aquatic organisms and their food chains. They are able to look at the environment of Omoso River in light of a very important perspective for maintaining a rich water environment while having an experiential, problem-solving exploration. After organizing their discoveries and realizations, pupils create the Omoso Sanctuary. They recognize the ecosystems and richness of the river and develop a sense of stewardship for them.

### **(5) Sea Museum Project (5th grade) "Rich Coastal-Ocean Environment and Human Life"**

Through a series of experiential activities, fifth graders inquire about the connections amongst marine organisms and between the forests and the ocean, while also thinking about the relationship between the ocean environment and human life. First, pupils go out to the local beach where they realize the diversity of coastal areas by observing organisms along the seashore. Thereafter, pupils heighten their awareness about marine ecosystems when they experience making herbarium specimens from seaweed and listen to a talk about the linkages between organisms within the realm of the sea. In September, in an activity called "Healthy Forests Store Water and Cultivate Ocean Life via Rivers," pupils recognize the connections

between forests and oceans when they observe and go stream climbing in a beech forest with guidance from a plant expert at Mt. Kurikoma. Again in the fall, pupils tour local key industries that are staged in the sea: deep-sea tuna fishing and oyster farming. As pupils realize how human life (industry) and the ocean are connected, they also realize the importance of protecting it and the depth of the relationship between humans and the ocean's environment when they gain the viewpoint of "food" through a Parent/Child Tuna Cooking Class in which they taste the treasures of the sea.

#### **(6) Future City Project (6th grade) "We are Earthlings! Waterfront Future City Omoze"**

Sixth graders work on a future-oriented project in which they contemplate how to connect city, forest, river and ocean and how to create the city's future in a way that coexists with the environment. First, pupils carry out a field study and conduct a questionnaire in order to understand good things about the region's environment, as well as its problems. They also work with a water quality specialist to conduct a scientific Omoze River Water Quality Survey. By creating a story about changes in water that the eye cannot see, pupils realize the current conditions of the shoreline environment as well as the causal relationship to their own daily lives. Also, in collaboration with the Energy Conservation Center and Tohoku-Electric Power, pupils learn how energy is generated in a lesson with a model and by going on a tour of a power plant. They set up energy conservation monitors and study the relationship between their own lives and energy supply, and deepen their thoughts about co-existing with the environment from an energy perspective. Based on what they learn and after integrating ideas and advice from various experts in the fields of environment, health, industry, etc., pupils reexamine their own lifestyles in a sustainable future and articulate their model future city in a diorama.

### **(5) Strategies and Processes for OES ESD Program Development and Collaboration Structure**

#### **Method and Process for Developing Systematic ESD Program Incorporated at all Grade Levels**

##### **(1) Program Development Utilizing Content and Materials from Previous Activities**

In 2002 the first step in creating the systematic ESD program for grades one through six was to reexamine material and content related to the environment, international understanding, etc. in individual subject or other cross curricular units and to restructure the yearlong program for each grade level.

Since being designated a foreign language education research development school by the Ministry of Education in 1994, the school had broadened its research from English education to education for international understanding within which it also gradually began integrating learning about the environment, welfare and human rights in light of the "period for integrated studies" which began with the 2002 New Course of Study.

The first phase of program development was to make the most of existing curricula. Emphasizing "environment" and "global," we examined each grade's developmental stage and coordination with other grade levels while reexamining curricula content and the overall story. Then we reformulated the materials, objectives and content for each grade level to develop the global environmental education ESD program.

##### **(2) Discovering New Community and Environmental Material and Creating a Systematic Program**

When creating our systematic learning program for all grade levels, all former activities were restructured and placed into the new program, but this alone was not sufficient. Some grades required that we find new materials, set a new theme and develop the learning program. Others required major additions or changes in content. At that point, the schools lead researcher suggested new learning materials, themes, concepts and program structure based on the developmental stage and interests of pupils at each grade level and the overall systematic integration of all grades. The researcher and classroom teachers held numerous meetings after school to discuss program development. At this time, the lead researcher shared with teachers of all grade levels how each grade level fit into the systematic approach, what the educational objects and concepts are, and what qualities and skills are targeted. On the other hand, teachers shared

their opinions and discussed challenges with the researcher based on their experiences teaching the children directly. Improvements were made through this process and a refined program proposal was created.

### **(3) University and Specialist Knowledge Introduced for Quality Improvement**

As described above, first drafts for the program were created through ongoing discussion between teachers at each grade level and the school's lead researcher. However, when we created programs for each grade level, we were setback. We could not envision the details and concrete progression of activities because teachers' conceptions of their environmental materials (plants, insects, seaweed, water quality, forests, community development) were either too vague or insufficient.

It was at this point that OES recruited MUE-EEC, Sendai City Science Museum, Shizugawa Nature Center and other specialist organizations to provide leadership and support for program development. For each of the environmental materials for each grade level, OES made requests to specialists to host trainings or have teachers visit with them. Teachers were trained with direct guidance in specialized knowledge and skills related to their materials. This process enabled teachers to envision how to present materials in a way that heightens children's interests and that deepens their thoughts. This led to a significant improvement in the quality of the program.

### **(4) Program Systematization: learning from Wisconsin Environmental Education Curriculum and activities**

When developing its systematic program, OES learned from and referred to the State of Wisconsin progressive environmental education curricula, its concepts, planning methodology and case studies, in attempts to refine its own program. In the United States, Wisconsin is known for its emphasis on environmental education as well as its progressive environmental education programs and excellent facilities. The Wisconsin Department of Public Instruction (DPI) publishes *A Guide to Curriculum Planning in Environmental Education*. This publication outlines comprehensive goals and the qualities and skills to be fostered, as well as what types of materials should be used, content and methodology. Teachers utilize the guide to create environmental education curriculum at each school. That is to say, there is a system in place to implement comprehensive environmental education that aligns with grade level and stages of development that is based on state level guidelines.

Teachers from OES visited Wisconsin to learn its approach to environmental education. When they visited Lincoln Elementary School to observe its environmental education activities, they also went on an environmental learning field trip, observed cross curricular environmental learning, and studied Wisconsin University's cutting edge environmental education learning materials. After returning back to Japan, when teachers continued to develop and improve the Omoso program, their experiences were helpful to refer to methods for experiential learning and conducting investigations, as well as how to weave together a cross curricular course of study.

OES set out to develop its own first through sixth grade comprehensive learning program while referring to the State of Wisconsin's environmental education curriculum planning system.

### **[Method and Process for Structuring Collaboration with Community, Universities and Specialist Organizations]**

One other unique characteristic of OES's ESD is the broad collaboration system that makes up the knowledge base which supports its activities. This system is highly regarded both nationally and internationally for the various levels of organizations, from very local to international agencies, and for the depth and diversity of its resources. At a global level, the United Nations University, whose mission it is to promote ESD, has evaluated and introduced this system as a model for other communities. The Japanese National Commission for UNESCO has also included this collaboration system as part of "Major examples of efforts and activities in Japan" in its proposal to UNESCO *Regarding the Further Promotion of the UN Decade of Education for Sustainable Development* which was reported to 193 member countries and adopted by the UNESCO General Assembly.

## **(1) Starting Collaboration through Activities -from individual to grade level collaboration-**

This collaboration system did not start and was not organized as the ESD supporting knowledge base that it has become. Rather, the first step was back in the late 1990s when individual teachers or sometimes an entire grade reached out for support from outside resources and organizations to supplement subjects or cross-curricular learning (education for international understanding, environmental education, social welfare education, etc.) that teachers and the school could not cover thoroughly. However, the school gradually recognized the educational impact and these collaborations spread from individual teachers to entire grade levels and even passed on to the next grade level. In other words, one-on-one "individual" collaborations became "shared collaborations."

## **(2) Beginnings of Organized Collaboration -collaboration through ESD with MUE-**

In April 2002, after returning from Lincoln Elementary School in Wisconsin, we became keenly aware that specialized support was needed to develop the program in Kesennuma City. When the global environmental education program began we wasted no time in requesting for support from MUE.

As we created the structure for our collaboration with MUE, we progressed with the basic principle that collaborations should be between organizations rather than individuals, which was a suggestion from the university. We immediately consulted with the OES principal and the president of the Kesennuma City Board of Education, and had OES form a collaboration with MUE-EEC (Environment Research Group) and the Kesennuma City Board of Education. The relationship progressed smoothly. In the first year, four to five instructors from the MUE-EEC Environment Research Group participated in OES projects; by the second and third years, 10 instructors were involved in participating and supporting OES activities.

Specialists were invited to instruct teachers at trainings and participate in project meetings as well as to meet directly with pupils in class at appropriate times to impart their specialized knowledge.

As this went on, OES continued to strive to make these assets and the privilege of collaborating with the Environment Research Group not only their own but to open the way for other teachers in other schools. As a result, collaboration with MUE extended to include the entire city and subject areas beyond environmental education. In March 2006, the collaboration had developed into an official relationship when MUE and the Kesennuma City Board of Education signed the *Collaboration and Cooperation Memorandum of Understanding*.

## **(1) Completing the Knowledge Base -Project Collaboration Promotion Committee-**

Our collaboration with MUE began in 2002 but we integrated all of our global environmental education based ESD collaborators (community, university and specialized organization) by forming the Project Collaboration Promotion Committee (see chart). This aimed to further enhance projects by promoting information exchange between the community and specialized organizations. The committee was formed from 29 individuals and 20 organizations, representing industry, specialized organizations, local government, NPOs and educational organizations. Its goal is to contribute to the development of the community's environmental education and ESD. The establishment of this committee led to the creation of a knowledge base which allows community and specialized organizations to take advantage of their resources and OES has developed a systematic and continuous support structure for its projects. This system has been recognized as a leading whole community ESD collaboration model by the Ministry of Education, Culture, Sports, Science & Technology in Japan as well as internationally by organizations such as UNESCO.

### **B) Project Evaluation**

#### **1. Impacts on People in Collaboration with Specialized Organization and Communities and Systematic ESD Learning Program**

## **(1) Impact on Teachers and Teachers as a Group**

### **[All Faculty Participate in Creating School System]**

The first people to change through this program were the teachers. At the beginning of the project, not all OES teachers were highly motivated and proactively trying to participate. On the contrary, a majority of teachers were not. Their primary reasons were things such as: "There is no need to go out of one's way to do something that is not in the textbook." "I'm already busy. With another unnecessary thing, I'll be way too busy." "I don't know what to do because there is no precedent." "This will be impossible for teachers that don't speak English to work with American schools." "Why don't you do the project with administrative staff and the lead researcher?"

At this point we implemented several strategies to advance the project with the participation and teamwork of all faculty.

First, we confirmed that this project was something that should be tackled by the entire school and created a system for all faculty to be a part of the program. This enabled all faculty to share project goals and an understanding of issues. Collaborations with American elementary schools would be implemented as pair projects for each grade level. We decided all grade levels would exchange with American counterparts via television conferences. By doing so, teachers from all grade levels could clarify the direction and content of activities and increase their stake as a central player in the project.

On the other hand, the lead researcher steered the project by meeting with teachers from each grade level to make suggestions about materials, themes and general structure. After repeated debate, teachers gradually began to see the prospect of the program. As they began to see the potential, teachers' motivation to act greatly increased. This process is partially the development of OES's systematic program, but it is also a system designed to have full faculty participation.

### **[Increased Motivation due to Specialist Support]**

The second strategy was to obtain support from specialists in the development and implementation of programs at each grade level. Because teachers went to hear specialists' lectures and received instruction for preliminary surveys and experiments prior to implementing the program, they heightened their understanding and awareness for the environment and gained ideas about how to proceed with the program. More than anything, as teachers progressed with their learning throughout the program, just like their pupils, many of them made new realizations, gained new perspectives, reaffirmed the importance of environmental education and ESD and increased their own motivation for the activities. For some teachers, the scales fell from their eyes and their eyes shone brighter than even their students'.

### **[Hosting Public Research Group Meetings]**

In order to promote the project to the community as well as articulate and publicize the results of each grade level and the entire OES project, OES hosted four Global Environmental Education Public Research Group Meetings. The truth is this was an enormous pressure on teachers but they all worked together and diligently implemented their daily activities with each grade level and each teacher embracing a sense of nervousness. This Public Research Group Meeting started out very local as a collaboration with MUE, but when the group was designated by the prefectural board of education, it became much more international with participants coming from the United Nations University (UNU) and with meetings held jointly with UNESCO's International Seminar. Lecturers have attended from the Central Council for Education, the Ministry of Education, Culture, Sports, Science & Technology, UNESCO and UNU. What started out as public meetings for one school has turned into quite the international event. What supported this success is the unmistakably the teachers of OES.

## **(2) Impact on Children**

### **[Sensitivity towards Nature and Life]**

The first thing that can be noted about children's transformation through this project is their heightened interest in nature and the environment. Each grade level program emphasized experiential activities; many activities that had direct and real contact with real living creatures were integrated. For OES children that have grown up playing in a virtual world with video games, televisions, comics etc., they could not appreciate wonderful nature even though it was in their immediate surroundings. However, through playing in nature and discovery learning at each grade level, children were amazed with a sense of wonder towards nature and their interest was piqued. The number of children playing in the rivers and fields and raising insects and other organisms at home has increased since the start of this program. We have also heard from parents and guardians that there has been an increase in conversations at home about nature, the environment and living creatures.

Along with heightened interest has come an increased ability to observe nature. As children draw insects and fish, or make models out of clay, the abstract dragonfly or fish can be articulated in fine detail. The numbers of children that can create detailed artwork so fine that you can tell seeds apart have increased. Specialists were surprised but the level of improvement is objectively clear when comparing OES's excellent levels of achievement for observation skills--in the *Comprehensive Academic Achievement Diagnostic Test - Environmental Education Edition* (developed by OES)--to other schools.

### **[Increased Intellectual Curiosity]**

In learning activities at all grade levels children have indicated a vigorous thirst for knowledge and intellectual curiosity based on a rich sensitivity and curiosity for nature and the environment. This is evident in comments: "I want to learn more about this." "Why is this the way it is? I want to learn more." Some pupils that came to be called "professor dragonfly" or "professor fish" gained abundant knowledge through observation and study. Others discovered the most indiscreet changes (that even the teacher didn't notice) and began formulating and presenting the reasons why. Children began to learn, think and problem-solve on their own. This is exactly what the Ministry of Education is aiming for in its period for integrated studies and complements *ikiru chikara* (a zest for living). This also coincides with the direction of ESD.

### **[Compassion and Conscientiousness towards Nature and Life]**

These learning activities were not just smooth sailing for children and teachers. There were failures followed by numerous trials and errors. There were even situations in which life was lost while raising living organisms. At times like these, when children experience the fragility and irreversibility of life face to face, they realize how irreplaceable life is. Making the most of this lesson, children challenged themselves to raise and observe their chosen creature at home or school and to seek advice from experts and consult with their friends to find solutions.

Children gain compassion and conscientiousness towards life (environmental ethics) through such experiences and they learn to have a multifaceted and balanced perception and relationship with nature as they develop.

### **(3) Impact on Guardians and Community Members**

#### **[Impact on Guardians]**

Since the understanding and cooperation of parents and guardians is so essential for the promotion of this program, initially OES proactively sent out information about the school's global environmental education efforts via class letters and through parent/guardian meetings. Guardians were invited to visit the classroom to see their children's activities during research lessons, an Omose festival was held and they were welcome to participate in Public Research Group Meetings. Additionally, guardians were given questionnaires to evaluate different aspects of the project at the end of the school year.

Guardian cooperation and willingness to participate increased through these types of efforts and dissemination of information. They now support a variety of OES experiential activities as school volunteers

for field trips, helping prepare for and support experiential learning activities, etc.

The cooperation and participation of guardians in each grade level projects really brings out how wonderful these activities are as well as their significance; parents can converse with their children about their project; direct and indirect ripple effects also have parents and children out on weekends participating in nature experiences. Based on questionnaires and comments made at research group meetings, it is clear that guardians highly value OES's global environmental education ESD activities, they are proud of them, and they would like for them to continue.

### **[Impact on Community Members]**

OES's global environmental education ESD is implemented with the support of and in collaboration with various human resources and organizations in the community. The individuals and organizations that have supported the OES program highly merit its value and are positive about cooperating and supporting its activities, sometime more so than the school or teachers. Amongst them are many that felt joy and pride in being able to participate in the OES project. Under such favorable circumstances, the program acted as a centripetal force in creating a local knowledge base, fostering resource collaboration in the community and in invigorating each of the various activities. The program also created a base for the ESD Learning System and ESD Learning Space.

### **[Impact on Support Providing Higher Learning Institutions]**

As mentioned previously, MUE made many efforts leading up to the full support of remote Kesennuma City. Until reaching this point, EEC debated about how to support OES and the significance and value in doing so. Now their experimental achievements are beginning to add up.

The university learned that what they need to be most careful about when promoting ESD or collaboration in the community is maintaining the "give and take" relationship between supporters and the supported. Particularly common between higher learning institutions and schools is a sense of arrogance in their support on the part of graduate students or researchers. Supporters can't forget that they too can learn from schools and children and enjoy themselves through their assistance. Support is not achieved if one party services the other and demands gratitude in return. When doing community outreach, higher learning institutions need to be keenly aware that the instant they run down a self serving path, the thread holding their collaboration together will be cut.

Furthermore, the success of Kesennuma City and MUE entering into a collaboration agreement was the foundation for MUE developing collaboration agreements with five cities in Miyagi Prefecture.

## **2. Social Impact**

OES activities have created various kinds of impact on the local community.

### **(1) Collaborating with International Organizations and ESD Regional Hub -broadening the OES collaboration system-**

Having developed an environmental theme pair project together with an American elementary school through the Master Teacher Program (MTP) and carried out a joint learning project, the Japan Fulbright Memorial Fund (JFMF) reported both partner schools' activities as good practices. OES's knowledge base collaboration system matched particularly well with the "Global Knowledge Creating Web" that the JFMF was advocating, and has been actively promoted as a model program to participating schools in both Japan and America. As an acknowledgment of these achievements, Kesennuma elementary, middle and high schools have been selected together for MTP three years in a row starting in 2005. Kesennuma has also taken on the important role of promoting ESD in the region.

UNU, which is promoting the decade starting in 2005 as the UN Decade of Education for Sustainable

Development (DESD), has been paying close attention to OES's systematic, global environmental education ESD activities and the knowledge base that supports them. It has also deployed experts to offer advice and support the continuation, development and promotion of OES programs and collaboration system. In June 2005 when the UNU designated global Regional Centres of Expertise to advance DESD, OES activities were highly regarded and Kesennuma City became a part of the potential location for the Greater Sendai RCE.

Following these events, in 2006 the Kesennuma City Board of Education founded the Kesennuma ESD/RCE Promotion Committee in order to further the advancement of ESD throughout the entire city. With OES Project Promotion Committee as a base, the Kesennuma ESD/RCE Promotion Committee was comprised of 25 groups including schools, NPOs, specialized organizations, government, media, etc. This committee has become the nucleus of promoting ESD in the Kesennuma region. Member groups share information about activities as well as host satellite training, workshops and an enlarged citywide version of OES project meetings. They are implementing the community's ESD outreach and improving the instruction quality of faculty.

In Kesennuma, we are promoting ESD based on a three dimensional collaboration system that is made up of a "vertical link" (the systematic activities of OES elementary, middle and high schools), a "horizontal link" that spreads the activities to other schools, and a "lateral link" that the community's knowledge base supports.

### **(2) Possibility of Community Collaboration with Overseas Partners -community collaboration with Texas and progressing to ASP-**

The progressive OES global environmental education ESD activities are having a ripple effect overseas as well.

Inspired by Kesennuma's global environmental education ESD program and collaboration system, MTP pair partners Callisburg Elementary, Middle and High Schools introduced the program's methods and systems starting in 2005. They particularly recognized the importance of ESD and the need to promote ESD so they used the OES case as a model to implement in their own community. They are currently moving forward with the creation of a network, including several northern Texas universities and research institutions, and are building a system to promote ESD. In a conservative region, in an area of Texas that is rather flat towards environmental education and ESD, this program was revolutionary. Now, several colleges and organizations are participating and the program is spreading into the community. In 2007, Callisburg became part of the second RCE designated in the United States, the Greater North Central Texas RCE.

In the future, there is a possibility that Kesennuma will no longer collaborate with Texas on a school to school level through MTP, but that the relationship will mature into a collaboration on a regional level through RCEs.

There is also a movement initiated by the city board of education to actively promote ESD at the school level by participating in the UNESCO School Network (ASPnet). Currently 16 city schools (10 elementary, 4 middle, 2 high schools) are in the process of applying to UNESCO School (ASP). This is how environmental education started at one small school is developing into community-wide ESD.

### **3. Project Sustainability and Development**

The activities in Kesennuma and the seeds of OES have begun to sprout in various ways throughout the region. Collaboration in environmental education has progressed to middle schools and then on to high schools. Horizontal linkages have been made within the community and the school can now put on elementary, middle and high school science presentations. A "Science Workshop in Kesennuma" was held for teacher training.

Starting in 2005, there was much progress in the relationship with MUE. What started out as a relationship with just one school has become a collaboration between MUE and Kesennuma City and there are "satellite trainings" for citizens and faculty, "science workshops" for teachers and a "friendship program" for neighborhood children. In 2007 a Japanese National Commission for UNESCO publication highlighted the public environmental education "satellite trainings" as a leading ESD model curriculum in Japan. The same year the publication was submitted to the general assembly of UNESCO. This satellite project had gone beyond environmental education and is expanding to cover science and mathematics education.

### **C) Significance as ESD**

#### **【OES Project as ESD】**

The OES project is based in environmental education and integrates education for international understanding, food education, social welfare education and is supported by information and communication technology (ICT) and English education (global communication). The OES model is a rare multi-disciplinary approach to education. The project has also developed and been implemented utilizing local materials at the same time pupils go beyond their countries' borders to share and compare studies with pupils in other countries. It truly is a program that embodies the saying, "Think Globally, Act Locally."

Through various experiences and inquiry based activities, children reexamined local nature, the environment and society; they recognized the value of these things as well as their challenges from both local and global perspectives; and they learned the need to conserve and to problem-solve. That is, the program provides a place for children to deepen their understanding about sustainability in the community they live in and on earth, the planet they live on. The program did not just impact children. For the many guardians, community members and organization members, the program provided an opportunity to think about the sustainability of their community and the earth. More specifically, the value of the OES project is its expression of the importance of ESD learning and its direction--start with public education at the nucleus, establish an inclusive ESD learning system (including guardians, community, organizations, etc.) and involve the entire community or even the world.

### **D) Future Implementation and Suggestions**

Four years have passed since DESD began. In the six years that remain Kesennuma would like to become a city where people are proud of their local culture and nature and have high awareness concerning conservation of the global environment from a global perspective. And, as national education policies take one step forward, we can expect broader acceptance and support for ESD as it has been included in the New Course of Study. At such a time, MUE will utilize the UNESCO School Network and progress with rebuilding a network based in Miyagi Prefecture to promote ESD. In response to this, elementary, middle and high schools are applying to join the network. The issues schools address are diverse: local environmental education, disaster prevention education, human rights education, education for international understanding, and welfare education. Thanks to having the Kesennuma UNESCO Association as a stakeholder, we were introduced to ASPnet where we receive global information and you should look forward to citywide development of ESD in Kesennuma.

#### **Afterword**

The success of OES programs was made possible by the remarkable skills of a teacher, Mr. Oikawa, and the many other colleagues that supported and understood him. It was also made possible by the former school principal, Mr. Kikuchi, who kindly let us carry out our activities freely, and the profound president of the Kesennuma Board of Education, Mr. Abe. If any of these people was missing, we could not have succeeded. I was very lucky to have the heart-strengthening support of colleagues, the understanding and support of the university president, and my office staff at a time when the MUE-EEC, which I directed, was being tested by society. People questioned how the center could contribute to a remote community? With the deep understanding of Superintendent Abe, Kesennuma City Board of Education and the university were able to unite. A circle of people in collaboration made this project blossom beautifully. Now that I think about it, this happens to be the soul of ESD. I am grateful that the timing, location and network of people all came together in a miraculous way.

The first half of DESD is almost over. Look forward to the further development of ESD in schools and the restructuring of the UNESCO School Network as we move into the second half of the Decade.

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