Findings from Case Study of Service-Learning in Japan
—From points of “Minamata Disease” (Mercury pollution) issues —

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1. Introduction

Findings from related studies on the impact of Service-Learning (SL) showed that it is necessary to develop self-esteem in students and instill a sense of responsibility from the young age. Stephens(1995) reported that elementary and middle school students who participated in SL developed a greater sense of civic responsibility and ethics towards service. Kinsley(1997) stated that community SL enlivened learning and involves elementary students in a way that makes school fun, relevant, and meaningful. In addition, community SL motivated students which helped them to learn more about themselves and build a sense of community within classrooms and neighborhoods (cited in Wade,1997,p.142).

According to Kuramoto(2004), as a case study of Service-Learning in Japan, Min-

mata/Service-Learning (M/S-L) is defined as follows:

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M/S-L combines student’s life issues, which are related to Minamata disease, which was caused by dumping mercury poison into Minamata Bay, with learning objectives to recover and improve Minamata’s community. This is accomplished by combining service tasks for Minamata issues with the task of self-reflection, self-discovery, and the acquisition and comprehension of values, skills, and subject knowledge. MS–L is a form of experiential education where learning occurs through a cycle of action and reflection. Students work with environmental recovery from Minamata disease problems and, at the same time, reflecting upon their experience as they seek to achieve real objectives for the community and deeper understanding and skills for themselves.

M/S-L is a teaching and learning method that integrates Minamata issues with academic content and students’ interest to improve Minamata city. With clear learning objectives and organized reflection, M/S–L promoted students’ self-esteem and built civic responsibility focus on environmental issues. Two key words are integration and collaboration. Integration happens on three levels: academic content, students’ interests and the community’s needs. Collaboration occurs across school and community
and amongst teachers and students.

2. The purpose and methodology of the empirical research

To objectively analyze the effectiveness of M/S-L focus on two elements self-esteem and civic responsibility with two research questions:

1) Did M/S-L promote students’ self-esteem?
2) Did M/S-L build students’ civic responsibility?

A mixed method approach that included Text-mining, Discourse Analysis were used in empirical research. The students participated in M/S-L at sixth grade of elementary school. Students were 35 individuals with variety types of background. For instance, students’ relatives were Minamata disease victims or employed by Chisso company which is responsible for causing Minamata disease. And others were in neutral cases, referring to students who had no direct relationship with issues. Applied to each type of case, one victim student whose father was killed by Minamata disease was chosen to be the object of analysis.

2. 1 Text-mining, Discourse Analysis were used to analyze the impact of M/S-L.
—Using text-mining to analyze the impact of M/S-L in 35 students
1) Methodology: Text-mining analysis software “Word-Minor1.0”
2) Data collection: Student’s letters to Classroom Teacher (Kuramoto) just before graduating the elementary school which was famous as a Service-Learning Project school.
3) Background of students: the 6th grade of School Students, the student’s number is 35
4) Classroom Teacher: Tetsuo Kuramoto (first author of this paper)
5) Period: 1 school year (2000/April-2001/March)
2. 1-1. Findings from Text mining

(Table 1. Result of Text mining)

<table>
<thead>
<tr>
<th>Text Mining of 35 Students’ Letters</th>
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<tbody>
<tr>
<td>Cluster components 6</td>
</tr>
<tr>
<td>Cluster components 7</td>
</tr>
<tr>
<td>Cluster components 1</td>
</tr>
<tr>
<td>Cluster components 3</td>
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<td>Cluster components 5</td>
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<tr>
<td>Cluster components 2</td>
</tr>
<tr>
<td>Cluster components 9</td>
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<tr>
<td>Cluster components 4</td>
</tr>
<tr>
<td>Cluster components 8</td>
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</tbody>
</table>

2. 1-2. Data analysis

Setting the meaning of number 1, 2, 3, 4 are following. Each student decided the engagement level about the service-learning activities through their meta-cognitions in the student letter to Classroom Teacher. The number 1 stands for the meaning that the student who appeared to engage very positively in M/S-L projects. The number 2 also means the student who engaged in positively enough M/S-L projects. In contrast, the number 3 stands for the student who appeared to not engage positively in M/S-L projects. Simultaneously, the number 4 stands for students who are not engaged the activities very much.

The number of students who recognized themselves as a number 1 and 2, appeared to engage positively in M/S-L projects, are located near the cluster components 7 or 9 in the figure of Text Mining. It is possible to interpret “Since we had a lot of volunteer activities with friends in our sixth grade class, we thanks to our friends and memories from our heart.”

The method of text-mining itself has limitations in that there is subjectivity in the process of interpreting and analyzing the meaning of the most frequently-used words. Therefore, with evidence derived from text-mining, clearly delineated yes or no responses could not be ascertained. However, it is possible to interpret that students who appeared to engage positively towards M/S-L had a strong sense of volunteer-spirit. As a result, through having the volunteer experience, they recognized the es-
sential role of volunteer work becoming the basic foundation to improve self-esteem and become active citizens.

<table>
<thead>
<tr>
<th>Cluster 1</th>
<th>Cluster 2</th>
<th>Cluster 3</th>
<th>Cluster 4</th>
<th>Cluster 5</th>
<th>Cluster 6</th>
<th>Cluster 7</th>
<th>Cluster 8</th>
<th>Cluster 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 - 3</td>
<td>beginning</td>
<td>Various</td>
<td>Care</td>
<td>So</td>
<td>At all</td>
<td>thanks</td>
<td>Everyone</td>
<td>Trash</td>
</tr>
<tr>
<td>Good</td>
<td>graduation</td>
<td>However</td>
<td>Sometimes</td>
<td>together</td>
<td>more</td>
<td>do</td>
<td>Everyone</td>
<td>Trash</td>
</tr>
<tr>
<td>impression</td>
<td>Dreams</td>
<td>Most</td>
<td>This year</td>
<td>various</td>
<td>event</td>
<td>with</td>
<td>End</td>
<td>Class</td>
</tr>
<tr>
<td>There</td>
<td>Feeling</td>
<td>Think</td>
<td>various</td>
<td>camp</td>
<td>words</td>
<td>Volunteer</td>
<td>Sport</td>
<td></td>
</tr>
<tr>
<td>Future</td>
<td>Now</td>
<td>Class</td>
<td>A lot</td>
<td>school</td>
<td>memories</td>
<td>absolute</td>
<td>Night hike</td>
<td></td>
</tr>
<tr>
<td>Story</td>
<td>I</td>
<td>Love</td>
<td>abuse</td>
<td>simple</td>
<td>heart</td>
<td>experience</td>
<td>Volunteer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>People</td>
<td>different</td>
<td>what</td>
<td>unpleasant</td>
<td>student</td>
<td>One</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Junior high school</td>
<td>All</td>
<td>voice</td>
<td>important</td>
<td>Appreadate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>time</td>
<td>honest</td>
<td>In</td>
<td></td>
<td>Feeling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuisance</td>
<td>myself</td>
<td>town</td>
<td>day</td>
<td>First</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>teacher</td>
<td>enthusiasm</td>
<td>Friend</td>
<td>Previous</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>Kuramoto</td>
<td>baseball</td>
<td>Sixth</td>
<td>Graduation trip</td>
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<td></td>
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<td></td>
<td>charge</td>
<td></td>
<td></td>
<td>Middle school students</td>
<td></td>
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</tr>
</tbody>
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2. 2. Discourse Analysis in M/S-L in a victim student

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<thead>
<tr>
<th>(Table 3, Discourse Analysis Summary)</th>
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| ① Purpose                             | - To analyze both intellectual and personal-social growth of two chosen students
|                                       | - To find the specific and universality of M/S-L
|                                       | - To examine how students has been changing the way of thinking
| ② Time                                | From 16 to 18 in August, 2010 |
| ③ Method                              | Discourse Analysis of seven steps |
| ④ Object to analyze                   | - The chosen student number 1: Ai was supposed to have the hidden guilty feelings because her father was employed by Chisso which responsible for causing Minamata disease.
|                                       | - The chosen student number 2: Kaori was supposed to have victim feelings because her father died as a result of suffering Minamata disease by being poisoned.
| ⑤ Overview of students                | - Students: 36 sixth grade elementary school students
|                                       | - The teacher: Mr Kuramoto
|                                       | - Period: one year in 2010

According to Kuramoto (2008), Discourse Analysis of seven steps below as essential factors.

1/Observing the class
2/ Take record the protocol of the teacher and students in the class
3/ Transcribe the protocol recorded in the tape
4/ Hold a peer conference with educational experts, specialists, and the teacher who
did the class (from 5 to 10 people)
   - Focus analyzing on the chosen student(s), the relationship between the chosen stu-
dent(s) with the teacher and other members
   - Focus on the educational goals of the class, did the teacher involve students in the
right way to get the goals
5/ Record the speech at the peer conference
6/ Transcribe all the recorded speech at the peer conference
7/ Analyze the research based on the transcription of the speech

The student appeared with the nickname Kaori in following discussion. Kaori is
considered to be a student had strong feelings about Minamata disease because her fa-
ther died of the illness. He passed away when she was a fifth grade of elementary
school student just one year before she got involved in M/S-L.

2. 2-1. While examining the comments number 2 and 4 on the sample student in the discus-
sion of peer conference, we found
   - The sample student had strong feelings toward Minamata disease.
   - These feelings correlated with low self-esteem.

   ● Comment 2 : Below was her comment after talking with a fetal Minamata disease
   victim at the end of April
      “I knew the story of Miss Shinobu when I was a kid because her mother was a
friend of my grandmother. I was so surprised because I have not seen her for a
long time. Like Miss Shinobu, my aunt was a Minamata disease victim. I do not
want to know about Minamata disease. But after listening to Miss Shinobu’s story,
I wanted to care about it a little. It was so great. She hoped that the environment
of Minamata would become more beautiful.”

   ● Comment 4 : Below was her comment after talking with Ms Ueno Eiko, a Mi-
amata disease victim
      “In this story, the husband and children died. Furthermore, she was discriminated
against, poor her. Besides, she still had mother and had to take care of her. That
was so terrible”

2. 2-2. While examining the comments number 5 and 7 on the sample student in the discus-
sion of peer conference, we found
   - The student gradually changed to overcome her victim feelings.
   - Her positive attitude towards M/S-L correlated with improved self-esteem
   - Due to correlation between self-esteem and civic responsibility, it appeared that M/
S-L promoted the development of self-esteem and at the same time developed a
sense of civic-responsible of the student.

Comment 5: Below was her comment after the demonstration in Nagasaki

“I also told everybody about our efforts to rebuild Minamata. That was good because everyone seemed to pay attention to and look at some pictures of the nature of Minamata.” (at the beginning of November)

Comment 7: “when I first came Minamata Disease Victim Center, I saw somebody was cleaning up some boxes and did not look like that they were disabled people. Because like me they were doing the same thing and they had their feelings. And I went to the place where they are working. After working, everybody sang a song together. The song was “Believe”. I did not intend to choose this song but it really matched. Coming here, doing volunteer activities was so great. Everybody here was stronger than me, and made clear their feelings better than I could do. There is just one setting place for twenty disable to work that so poor of them. But everybody could work together happily that really made me envious.”

2. 2-3. Findings from Discourse Analysis

Results shown in the two figures indicated that M/S-L succeeded in promoting self-esteem and developing a sense of civic responsibility in two differently orientated students. Kaori who had direct but opposing familial ties to Minamata disease were different than other students. Clearly, it was very hard for them to react positively towards M/S-L. According to Grayson (2002), when students are engaged in service community volunteer work they have the opportunity to meet their needs that are not being met in the traditional classroom. This was proved in the case of two students.

(Figure 2. The effectiveness of M/S-L found in sample student)
When Kaori engaged in M/S-L they had opportunities to meet their needs that helped them to overcome individual problems, which was the evidence to find their self-esteem gradually improved. By examining the students' comments, it appeared that not only self-esteem but also civic-responsibility was developed. The process of participating in M/S-L led students to develop greater civic-responsibility. Put another way, they felt a closer identity with and responsibility for the class, the school and Minamata community.

3. Conclusions — significance of the study—

According to Grayson (2002), a strength of SL is that it occurs outside of the traditional classroom. This is because when students are engaged in community volunteer work students have the opportunity to meet their needs that are not being met in the school environment. Clearly, this contention idea of Grayson’s matched with the case study of M/S-L.

Based on these findings, the researchers found that, M/S-L succeeded in promoting self-esteem and building civic-responsibility in all students for both alternative and neutral cases. M/S-L involved students in meaningful community volunteer work to help them become valued members of their class, their school and of Minamata city. Students developed a sense of Minamata citizenship and exhibited high self-esteem through the participation in meaningful volunteer work to improve Minamata city.

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