Lessons from Education Sectors

Rajib Shaw and Yukiko Takeuchi

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18th March 2011
Photo by T. Kaizuka, Mainich Shinbunsha, 2011,

Rikuzen Takata

Photo by Geographical Information Authority of Japan, 13th March 2011
23\textsuperscript{th} March 2011
Photo by Q. Sakamaki, Asahi
Shimbun Publication Inc, 2011,

県立高田高校
Takata High School

Photo 2\textsuperscript{nd} June 2011
Sendai Plain: Natori
Photo by Geographical Information Authority of Japan, 13th March 2011

11th March 2011/ Photo by T. Kaizuka, Sanday Mainich, 2011,

Photo 4th June 2011

山元町
中浜小学校
Nakahama
Elementary
School,
Yamamoto Town

Kyoto University
Graduate School of Global Environmental Studies
Total Number: 6,284
Data: 21st June 2011

Source: MEXT, Japan

- **構造/Structure**
  - 屋根Roof [平らで、屋上を備えているものflat roof versus conical / slanted roof]

- **位置/Location**
  - 沿岸の地学Near the coast

- **配置/Layout**
  - 海岸との向きPerpendicular to the sea coast, less damages

- **機能/Function**
  - 学校と地域の係わりSchool-community, multi-purposes

**School Damage**

- 被害度 1/Level 1,
  - 193, 3%

- 被害度 2/Level 2,
  - 747, 13%

- 被害度 3/Level 3,
  - 5064, 84%
Broad types of school damages

- Received Tsunami
  - Yes: Move to Other School
    - Yes: Arahama ES
    - No: Shishiori ES
  - No: Became Evacuation Center
    - Yes: Hashigami JHS
    - No: Toni JHS

- None Damage
  - Accepted other School
    - No: Higashi Miyagino ES
Toni Elementary School
Toni Junior High School
Facilities needed in new school

- **Antiseismic structure**: 78%
- **Heliport**: 25%
- **Private electric generator**: 68%
- **Toilet**: 65%
- **Kitchen**: 37%
- **Evacuation route from school to rising ground**: 64%
- **Large parking space**: 50%
- **Road to the school facilities**: 49%
- **Stock food**: 51%
- **Stock protection against cold**: 54%
- **Reference room about the earthquake**: 18%
- **Library**: 14%
- **Conference room**: 22%
- **Communication system**: 60%

**Functions for disaster prevention**
- More than 60% of the respondents request “Anti-seismic structure, Private generator and Toilet”.

**Functions for daily life**
- About 50% of the respondents request “parking place and access road”.

Kyoto University
International Environment and Disaster Management
Graduate School of Global Environmental Studies
School as multi-purpose facility/evacuation center

Board of Education
- Budget provision
- Guidance & support

Other related departments
- DRR Division
- Recovery/Infrastructure Div.
- Child Division (preschool)

Toni Community Center
- Coordination w/ city gov.
- Community events
- High utilization by comm.

Support in budget and policy

Toni ES
Toni JHS

Preschool - Child Raising Support Club
- ES students use after school
- Existing ties w/ community

PTA
- Bridge between school and parents

Town Association
(incl. temporary housing)

Community Clubs
(incl. Women’s Club)

Former community leaders & residents

Support through community events organized by Community Center

Fishermen’s Association
- Main local industry
- Support through experience programs

Temple (Seigan Ji)
- Active in informal education (Terakoya)
- Support through experience programs
- Spiritual symbol of Toni

Community Fire Squad (Shobo dan)
- Assist in school DRR activities
- Assist in emergencies for schools and community

Support through experience programs

Joint facility

Joint or adjacent facility
Emergency Communication: Linking Local and Global Media

Rajib Shaw, Brett Peary, Ai Ideta and Yukiko Takeuchi
Data collection of examples of social media use in the disaster: examples


Live streaming of TBS News on Ustream after the disaster

“The Eastern Japan Disaster (Tohoku area Pacific Ocean Earthquake)@wiki” Source: http://www46.atwiki.jp/earthquakematome/
## Social Media Usage

<table>
<thead>
<tr>
<th></th>
<th>Twitter</th>
<th>Facebook</th>
<th>Mixi</th>
<th>SMS</th>
<th>Email</th>
<th>Wikis</th>
<th>Webpages or blogs</th>
<th>Smartphone applications</th>
<th>Maps</th>
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<tbody>
<tr>
<td>General disaster information</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>Safety conformation</td>
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<td>Fundraising</td>
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<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
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<tr>
<td>Infrastructure status notification/ regional facility status</td>
<td>0</td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
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<td>0</td>
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<tr>
<td>Housing provision</td>
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<td></td>
<td>0</td>
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<td></td>
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<td>0</td>
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<tr>
<td>Goods provision</td>
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<td>Moral support</td>
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<td>Resource saving</td>
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<tr>
<td>Volunteer recruitment</td>
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<td></td>
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<tr>
<td>Special needs support</td>
<td>0</td>
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</table>
Online questionnaire survey: layout and framework for analysis

Concept diagram of types of users of social media use in the Tohoku disaster, their larger groups and numbers of respondents for those groups
Results

Most reliable source of information during the disaster

<table>
<thead>
<tr>
<th>Category</th>
<th>Word of mouth</th>
<th>Loudspeaker</th>
<th>Newspaper</th>
<th>Radio</th>
<th>TV</th>
<th>Internet</th>
<th>Email</th>
<th>Social media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manager senders (n=5)</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Volunteer senders (n=32)</td>
<td>11</td>
<td>11</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Basic senders (n=100)</td>
<td>4</td>
<td>41</td>
<td>37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-senders (n=25)</td>
<td>11</td>
<td>6</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-users (n=44)</td>
<td>7</td>
<td>8</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Level of affectedness and most relied on source of information

<table>
<thead>
<tr>
<th>Category</th>
<th>Word of mouth</th>
<th>Loudspeaker</th>
<th>Newspaper</th>
<th>Radio</th>
<th>TV</th>
<th>Internet</th>
<th>Email</th>
<th>Social media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-affected (n=61)</td>
<td>11</td>
<td>20</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirectly affected (n=85)</td>
<td>14</td>
<td>11</td>
<td>37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directly affected (n=60)</td>
<td>6</td>
<td>10</td>
<td>9</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>
Key findings

- In spite of problems, users found social media to be extremely helpful in the disaster.
- **Convenience and mass-sending ability were strong reasons for use** by affected individuals.
- **Trustworthiness of information was a problem** for all to a high degree.
- **Information quality needs to be improved**, particularly *infrastructure information*.
- **Support for government use** of social media in disasters is extremely high.
- The higher the level of participation, the more likely an individual is to share information is from credible sources.
<table>
<thead>
<tr>
<th>Prefecture</th>
<th>Municipality</th>
<th>Opening Date (2011)</th>
<th>Closing Date (2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miyagi</td>
<td>Ohsaki City</td>
<td>Mar. 15</td>
<td>May. 14</td>
</tr>
<tr>
<td></td>
<td>Ishinomaki City</td>
<td>Mar. 16</td>
<td>-</td>
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<tr>
<td></td>
<td>Tome City</td>
<td>Mar. 16</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Shiogama City</td>
<td>Mar. 18</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Iwanuma City</td>
<td>Mar. 20</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Yamamoto Town</td>
<td>Mar. 21</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Kesennnuma City</td>
<td>Mar. 22</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Watari Town</td>
<td>Mar. 24</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Natori City</td>
<td>Apl. 7</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Onagawa Town</td>
<td>Apl. 21</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Kesennnuma City</td>
<td>Apl. 22</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Minami-Sanriku Town</td>
<td>May. 17</td>
<td>-</td>
</tr>
<tr>
<td>Iwate</td>
<td>Ohshu City</td>
<td>Mar. 11</td>
<td>Apl. 3</td>
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<tr>
<td></td>
<td>Miyako City</td>
<td>Mar. 19</td>
<td>-</td>
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<tr>
<td></td>
<td></td>
<td>May. 31</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Ohfunato City</td>
<td>Mar. 28</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Kamaishi City</td>
<td>Apl. 7</td>
<td>-</td>
</tr>
<tr>
<td>Fukushima</td>
<td>Fukushima City</td>
<td>Mar. 16</td>
<td>Mar. 25</td>
</tr>
<tr>
<td></td>
<td>Soma City</td>
<td>Mar. 29</td>
<td>-</td>
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<tr>
<td></td>
<td>Sukagawa City</td>
<td>Apl. 7</td>
<td>Aug. 7</td>
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<tr>
<td></td>
<td>Minami-Soma City</td>
<td>Apl. 13</td>
<td>-</td>
</tr>
</tbody>
</table>

Ringo Radio in Yamamotocho

Ringo Radio in Yamamotocho
Natori FM Radio: Natoraji
Changes before and after March 11, 2011 on Use of FM radio

<table>
<thead>
<tr>
<th>Category</th>
<th>Before (%)</th>
<th>After (%)</th>
<th>Increase (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondents Total (N=150)</td>
<td>36.7</td>
<td>63.3</td>
<td>+15.3%</td>
</tr>
<tr>
<td>Respondents Total (N=148)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondents NOT in temporary housing (N=104)</td>
<td>39.4</td>
<td>48</td>
<td>+13.5%</td>
</tr>
<tr>
<td>Respondents NOT in temporary housing (N=104)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(A-NT)</td>
<td>52</td>
<td>52.9</td>
<td></td>
</tr>
<tr>
<td>Respondents in temporary housing (N=46)</td>
<td>60.6</td>
<td>47.1</td>
<td></td>
</tr>
<tr>
<td>Respondents in temporary housing (N=46)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(A-T)</td>
<td>52.9</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>In temporary housing (N=44)</td>
<td>69.6</td>
<td>50</td>
<td>+19.6%</td>
</tr>
</tbody>
</table>

The reason to start to listen to the radio after 3/11/2011

- For giving people some local information that it makes people feel relaxed.
- Because have access to such detailed information on local area as not to broadcast on TV.
- Because helped the volunteer during rehabilitation and reconstruction.
- To get disaster information regularly.
- I heard that there was community FM and I thought that I would like to listen to it.
- I was getting information only on the radio because there were no television and the Internet environment.

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Willingness to pay funds as the operational expenses

Total (N=159)

- 0: 22 (16.4%)
- 100 - 300: 11.9
- 400 - 500: 11.9
- 600 - 900: 8.2
- No response: 1.3
- Over 10000: 28.3

NOT in temporary housing (N=104) (A-NT)

- 0: 20.2
- 100 - 300: 18.3
- 400 - 500: 13.5
- 600 - 900: 11.5
- No response: 1.9
- Over 10000: 20.2

In temporary housing (N=46) (A-T)

- 0: 30.4
- 100 - 300: 19.6
- 400 - 500: 10.8
- 600 - 900: 8.7
- No response: 2.2
- Over 10000: 28.3
Do you think that the radio station is need in your city?

<table>
<thead>
<tr>
<th>Category</th>
<th>Need</th>
<th>No need</th>
<th>No response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total (N=160)</td>
<td>53.8</td>
<td>25</td>
<td>21.2</td>
</tr>
<tr>
<td>Respondent NOT in temporary housing</td>
<td>64.8</td>
<td>22.8</td>
<td>12.4</td>
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<tr>
<td>(A-NT)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Respondent in temporary housing</td>
<td>39.1</td>
<td>34.8</td>
<td>26.1</td>
</tr>
<tr>
<td>(A-T)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The reason that respondents feels the radio do need in their area.

- Need to get disaster information and weather news regularly: 67
- Because do in a pinch: 65
- I got some information on disaster from the radio in The Greate East Japan Earthquake so I think that the radio is need: 45

(N=86)
Published in March 2012

Publications: Tohoku Research
http://www.iedm.ges.kyoto-u.ac.jp/
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