The Effect of Sharing Local Community Information on the Internet: A Case of Mountainous Area in Japan

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ABSTRACT

Local communities in mountainous area in Japan are losing their young people and most of their workforce to the large cities, leaving only the elderly. People in local communities in mountainous area have emphasized the importance of sharing their local information within and beyond their communities in order to sustain their communities. However, their ways of sharing information are limited to traditional means of dissemination of information such as local newspapers or community meetings. Therefore, the objective of our research was to find the best way to share local information and knowledge by local citizens in mountainous area. Based on related work, we built the online information sharing tool for local area. We also developed a learning course with this tool. We implemented this learning course and then surveyed local citizens as learners by monitoring them, administering a questionnaire, and interviewing them in the town of Toei in Aichi, Japan. Based on our survey, we found the best way to share local information and knowledge by local citizens in mountainous area from two points of view as follows; one was to determine the best function on the tool to participate in the virtual site by local citizens. Another was to determine the best way to implement the learning course for local citizens.
Keywords: Local Information Sharing, Mountainous Areas, Middle-aged and Elderly People, Citizen Participation

INTRODUCTION

Local communities in Japan’s mountainous areas had been able to share local information within their communities more than urban areas have. However, they have recently had serious concerns in that they have not had as many opportunities of communicating with their neighborhoods as they used to. For example, the rate of solitary deaths has increased. In addition, medical services or educational services as the basis for human life have been reduced because of aging and depopulation. To solve these problems, citizens in mountainous areas are trying to communicate not only within their communities but also beyond their communities through community action. For example, they have networking events to link local and urban areas (Yoshida, 2008). However, they are only using traditional means of dissemination such as local newspapers or community meetings. On the other hand, people in urban areas have already understood their environment through ICT and are sharing their information. Therefore, the objective of our research was to find the best way to share local information and knowledge by local citizens in mountainous area. We designed and built the online information sharing tool for local area. We also developed learning course with the online tool for local citizens. Next, we surveyed local citizens by monitoring them, administering a questionnaire, and interviewing them through our learning program with the online tool. We tried to find the best way to share local information from two points of view as follows; one was to determine the best function on the tool to participate in the virtual site by local citizens. Another was to determine the best way to implement the learning course for local citizens. We finally found the best ways and future issue.

RELATED WORK

Communities in Japan's mountainous areas were formed as closed systems based on territorial bonding or blood relatives until the 1950s. People in mountainous areas were engaged in self-reliant economic activities that were mainly in agriculture and forestry. However, they had to leave their communities in the 1960s because the changing industrial structure caused agriculture and forestry to decline. Thus, communities in mountainous areas were forced to shift toward an open system that provided human resources to industry
in urban areas (Research Institute For Regional Planning And Development, 1977). They tried to adapt to the rapid environmental changes by opening themselves up to urban areas. Fujiyama (Fujiyama, 2003) insisted on the importance of a system to share processes with local governments and citizens in local areas in the mountains. The process he mentioned consisted of the five steps of "understand the current situation", "analyze and changes", "future strategies", "execute the plans", and "test and validate them". He stated that two importance factors were required to implement the system; the first was for citizens to share local information. The second was for them to share local information with people in urban areas. Furthermore, Maruta (Maruta, 2007) suggested that the Internet encouraged community action because it could solve problems with distance and he built a group-formation network that had economic values as the media. In particular, he emphasized the promotion of public local information by local citizens. Fujiyama (Fujiyama, 2005) suggested a knowledge-sharing system with Web-GIS for citizens to participate in mountainous areas. The system enabled citizens to input their information and for it to be marked on a map through the use of cellular phones equipped with GPS. He insisted that this system would encourage citizens to participate in regional management. As well as this, Matsuno (Matsuno, 2007) developed "newspaper blogs" that could be displayed and printed as in a newspaper. It was developed as a module of "movable type", which is a well known Weblog system offered by Six Apart Ltd. According to Matsuno, the students in elementary schools could learn to be information literate by using it. "Newspaper blogs" are being sold by Six Apart Ltd (SixApart Ltd., 2007).

As discussed in related work, we have already found some web-based tools that enable citizens to share information and to participate local development. There have been some case studies that have focused on use of these tools by children. However, they have not emphasized their use by people of all ages, especially, middle-aged and elderly citizens. Sugawara (Sugawara, Aizawa & Ihashi, 2005) described the importance of building a social common location in mountainous areas that stores and displays the knowledge of elderly citizens. She said that this might encourage people to reactivate their local communities. Therefore, our study focused on participation by middle-aged and elderly citizens.
RESEARCH METHOD

Building the virtual site as a social common place for local citizens

The social common place was considered as the needful site for local citizens in mountainous area according to related work chapter. It would offer local citizens the opportunity to talk about everyday concerns or to discuss problems and the local traditional cultures.

We therefore designed and built the online information sharing tool for local area to form the virtual site as a social common place on the web. The reason why we need to form the virtual site on the web is as follows; firstly, the contexts of local information or knowledge are visualized by electronic media. Secondly, all local citizens need is Internet environment to access the virtual site easily.

Figure 1 shows the system outline of the online information sharing tool. The virtual site gives various types of media such as text, photo, movie and geographic information to show the contexts. It was built on our design based on a blog system "Wordpress", which has been distributed as a general public license (Wordpress.org, n.d.). “Wordpress” has the standard functions for posting text descriptions and inserting images or movies. However, the online information sharing tool should contribute to encourage middle-aged and elderly citizens to post their knowledge. To accomplish this, we installed more four functions as plug-ins.

- Google maps plug-in: It enabled novices to insert geographic information easily by using Google maps. Users only have to search for the address with Google maps on the posting view. Search results appear as markers on the map itself. Also, the normal view shows as it as markers on the Google map (Figure2).
- Web 2.0 plug-in: It enabled novices to share images or movies between the virtual site and other web services such as Youtube, Picasa, and Flickr.
- iPod Touch/iPhone and cellular phone plug-in: It is available for several media such as iPhones and iPod Touch.
- Newspaper and theme plug-in: It is available to show local information like that in newspapers (4plus Inc., 2008) (Figure3). These enhance the accessibility of the virtual site for people who are familiar with newspapers.
Figure 1 The system outline of the virtual site as a social common place

Figure 2 View of geographic information obtained by Google map
Planning the learning course

We designed and built the online information sharing tool to form the virtual site as a social common place by local citizens. However, our study focused on the participation by middle-aged and elderly citizens. We therefore aimed to build a total environment to manage local information and knowledge by them.

The learning course consists of three days and two hours each day programs. The first day's program was planning local-community action without devices such as PC. Learners in work groups tried to make action plan. The second and third day involved the training programs. We prepared a brief the manual including many images and simple sentences. On the second day learners are offered the basic training of the online information sharing tool. Also Learners practiced a case study on the third day. In the case study, learners tried to share the information that had been planned on the first day.

We considered that learners could gain experience along with the process from the phase of preparing local information to the phase of visualizing information by using the Web and paper.

VERIFICATION EXPERIMENT

Our investigation centered on the evaluation of the learning course with the online information sharing tool for local citizens. Specifically we monitored, administered a questionnaire, and interviewed trial subjects as a learner. There were two focus points of the experiment. One was to determine the best function on the tool to participate in the virtual site by local citizens. Another was to determine the best way to implement the learning course for local citizens.
The location of its test area was in Toei-town in Aichi prefecture. Toei is located in an intermediate and mountainous area in central Japan. It is a typical town in a local area with a population of about 4,200. It has a traditional culture that has been inherited over a very long time. However, it is now on the brink of disappearing due to aging and depopulation. According to a survey done by Aichi prefecture (Aichi prefecture, 2005), Toei retains loose bonds between local citizens and their relatives in urban area. Furthermore, they have generated numerous opportunities for interactions between local and urban people without their relatives. They are hoping to increase urban people who are interested in local area and will move to local area as new residents. 39 total citizens as learners in Toei-town participated in the experiment. All of them were males.

**Trial subjects’ backgrounds: age and occupation**

The survey of learner's age compositions found that learners were over 30s. About 40% of them were over 50's (See Figure4). The survey of learners' occupations revealed that 23% of them were self-employed, 15% were officials, 15% were employees, 15% were farmers, 15% were unemployed, 8% were the staff of forestry cooperatives, and 8% did not respond.

![Figure 4 Learner's age compositions](image)

**Learners' backgrounds: Internet use**

The survey on learners' Internet utilization found that 54% of them used it everyday, 15% used it once a week, 23% used it once a month, and 8% did not respond. In terms of a broadband environment, 83% of learners were ADSL users, 8% were telephone-line users, and 9% did not respond. In addition, 86% of them used the Internet with PCs, 7% used it with their mobile phones, and 7% did not respond.
According to the survey done on their impressions of the Internet, 65% of them responded they could easily use it to search for various information, and 18% responded they could easily connect with friends who lived far away. In contrast, 6% of them responded that they had bad impressions such as it being a nest of crime. Although 6% responded they had no interest, 6% did not respond at all.

Learners’ backgrounds: Habitation community and situation of information sharing

The eight communities belonging to Toei-town were Furikusa, Misono, Ashigome, Tsuki, Nakashitara, Hongo, Shimokawa, and Miwa. They already have shared their local information. There were three patterns to share the information as follows; "within a local community", "among local communities within town limits" and "outside town limits".

Firstly I describe the method they have used to share local information within a local community. As shown Figure 5, six communities have shared by "Kairanban", i.e., by passing notices around from house to house in the neighborhood. Four communities shared information through "phone calls" and three communities shared information through community meetings. These are traditional Japanese ways of sharing local information. However, one community in Misono has circulated local publications and another in Tsuki has used the Internet. Misono has circulated their local publications in addition to using Kairanban, phone calls and community meetings. Furthermore, they have also shared by e-mail messages on mobile phones. The Tsuki community has shared by the Internet in addition to traditional means of dissemination. We found that all communities have multiple methods of sharing information with their community.

![Figure 5 How information is shared within communities in town of Toei](image-url)
Secondly I describe the method they have used to share local information among communities within town limits. Two communities, Misono and Tsuki have shared their local information with other communities in Toei-town. They have shared by local publications or the Internet.

At last, I describe the method they have used to share local information with outside town limits. Three communities have shared their information with outside town limits. Misono and Tsuki have shared by local publications or the Internet. Another community, Shimokawa, has used the Internet. According to the interviews, Shimokawa has inherited a traditional festival called “Bon-Odori”. Related events are held once a year by participating citizens. They are trying to announce the event on the Internet.

The environment of experiment
The first day in the learning program was in a meeting room at the town hall. The second and third days were spent in the computer room at the local junior high school. The school provided 20 Windows PCs with Internet Explorer 7.0. However, only an ADSL line was provided per 20 PCs. That is why the Internet connection was slow.

RESULTS
We implemented the experiment through the learning course with the online information sharing tool in Toei-town. There were two focus points of the experiment. One was to determine the best function on the tool to participate in the virtual site by local citizens. Another was to determine the best way to implement the learning course for local citizens.

The result of Monitoring
At first day, we held a meeting in the Toei town hall. We moved desks as needed to enable group work. The participants discussed matters positively and looked as though they were enjoying the meeting. They had no problems with using learning tools such as a "paper planning sheet", Post-it Notes, or magic markers (Figure6). Finally, all groups made effective presentations utilizing the Paper Planning Sheet.

At second and third days, we held a learning session in the computer room of Toei junior high school. We could not move the desks because these were fixed (Figure7). Therefore, several learners had to turn their heads by more than 90-degrees to see the
instruction on screen at the front of the room. Moreover, a few elder learners were confused in following the lesson because they had trouble reading small captions on the monitor in front of them. However, none of them had any trouble typing. Few learners talked with their neighbors. When they could post and see their articles on the online information sharing tool by themselves, they cheered up and smiled.

![Figure6 Group work on first day of learning course](image6)

![Figure7 Individual work on second day of learning course](image7)

**The results of questionnaire and interviews**

- The online information sharing tool’s survey: We first conducted a survey in which we asked learners to rank the strengths and weaknesses of this online tool. They considered a strength to be posting text descriptions. However, they hesitated on the function to insert images and movies. The function to insert Google Maps was considered neither a strength or a weakness. (See Figure8) Second, we carried out interviews. We found the learners generally felt uneasy. They described their experiences as: "All the functions were difficult for me to use", "I found myself lacking in PC skills", and "I needed a lot of time to become familiar with it". Moreover,
we received specific requests such as "I need some function like a Windows Paint brush, which is a function for drawing images" and "Obvious rules for posting are needed". Finally, a comprehensive survey on usability revealed that 15% of learners responded that this online tool was "very useful", 62% responded that it was "useful", and 23% responded that it was "not useful".

Figure 8 Strengths and weaknesses of the online information sharing tool

- Survey on learning course: First, the survey on learning time revealed that 50% of participants responded that the duration was "suitable", 40% responded that it was "unsuitable", and 10% responded "neither". Second, the survey on course materials found that 60% responded that they were "suitable", 20% responded that they were "unsuitable", and 20% did not respond. Finally, the survey on understanding found that 90% of them responded "contributed" and 10% responded "neither".

- Fitness estimates of the online information sharing tool in local communities: We asked learners whether this online tool had advantages or disadvantages in local communities. As a result, 85% of learners responded that it had "advantages" and 15% of them responded that it had "disadvantages" in enabling local information to be shared within local communities. Two issues were involved in the reason for "disadvantages". The first was the inadequate infrastructure of the Internet in local communities. The second was the shortage of Internet users in local communities. Second, 92% of learners responded that this online tool had "advantages" and 8% of them responded that it had "disadvantages" in enabling local information to be shared among local communities within Toei's town limits. Third, 92% of learners responded
this online tool had "advantages" and 8% of them responded that it had "disadvantages" in enabling local information to be shared inside and outside town limits. In addition, we asked learners whether a "normal view" or "newspaper view" was more familiar to them. As a result, 82% of learners responded that a "newspaper view" was, 9% of them responded that a "normal view" was, and 9% did not respond at all. In addition, all of them responded "yes" when we asked whether the function for publishing local newspapers was advantageous for their community. Finally, all the learners responded "yes" when we asked them, "Do you want to use this online tool in your community?". However, one of them said, "Even though this online tool is an advantageous tool for local communities, it is necessary to organize a framework to manage it. We do not have enough human resources."

**Key findings**

In summary, we found several key findings as results of the experiment. Firstly, almost learners could post text descriptions smoothly even if elderly citizens. However, they hesitated the complicated functions such as to insert images and movies. In addition, they confused to read the small caption on the monitor while learning. At that time, they needed reposition themselves to see the screen at the front of the room. It became increasingly difficult to read the caption on the monitor for them. Secondly, they recognized the advantage of the online information sharing tools. Particularly "newspaper view" was considered as a good function. At last, they said the necessity of organizing a framework to manage the tool. We found that they need the sustainable management system to share their information by themselves even if that is the situation of depopulation and aging.

**DISCUSSION**

**The best function on the tool to participate in the virtual site by local citizens**

According to Key findings in result chapter, learners are posting text descriptions. Monitoring user activity also revealed that all learners were accustomed to typing. The function for them to insert images or movies, on the other hand, was difficult for them to use. The online information sharing tool we built was based on “Wordpress”. Although its interface and usability are defacto standards around the world, this is not an intuitive
interface for novice users. On the other hand, the newspaper-view function, which is an output interface, could be adapted for local citizens. Therefore, the importance factors of the tool are a simple interface and various output interfaces such as local newspapers, which are familiar to users of all ages.

The best way to implement the learning course for local citizens

We recognized the learning course we designed is suitable for local citizens. However, we also found that they confused to read the small caption on the monitor while learning. At that time, they needed reposition themselves to see the instructions on screen at the front of the room. This is the reason why it became increasingly difficult to read the caption on the monitor for them. Therefore, the improvement is that learner’s eyes are level with the instructions on screen without their reposition.

Future issue

We found two crucial issues. One is how the online information sharing tool could be made to collaborate with traditional means of dissemination such as local publications or community meetings in local area. As we mentioned in verification experiment chapter, all communities have multiple methods that were available to local citizens in their communities to share local information. Therefore, the future issue will be the collaboration work with traditional dissemination as Figure 9 shows.

Another is the necessity of organizing a framework to manage the tool for local citizens. This framework means the sustainable management system to share their information by themselves even if that is the situation of depopulation and aging. To resolve this issue, we suggest providing the tool as ASP system (application service provider system). ASP system is software that provides computer-based services to various customers by way of a network. Basically, the ASP vendor houses the software and allows users to access the software. This approach allows for users to use software, which can be rather expensive, without having to actually buy it and maintain by them. However, the importance of developing the supporter in local area to help novices is increasing. Therefore we should consider the framework of developing the supporters and support organization in local area.
Local citizens in mountainous area have recently emphasized the importance of sharing their local information within and beyond communities. However, they have only relied on traditional dissemination. This is because there are many elderly people in local areas are not familiar with the Internet or PCs and do not know how to use them. Therefore, the objective of our research was to find the best way to share local information and knowledge by local citizens in mountainous area. Specifically we found from two points of view as follows; one was to determine the best function on the tool to participate in the virtual site by local citizens. Another was to determine the best way to implement the learning course for local citizens.

We built the online information sharing tool and developed a learning course for local citizens. We also implemented the experiment in Toei-cho, which is a typical town in mountainous area. According to results chapter and discussion chapter, we considered the importance factors of the tool are a simple interface and various output interfaces such as local newspapers, which are familiar to users of all ages. Moreover we recognized the improvement of learning environment.

Our future issue has two points. One is how the online information sharing tool could be made to collaborate with traditional means of dissemination such as local publications or community meetings in local area. Another is the necessity of organizing a framework to...
manage the tool for local citizens. In this paragraph, we described the importance of developing the supporter in local area to help novices. We are studying to resolve these future issues.

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REFERENCES


