Spatial Variation of Technology Mediated Learning in Rural Communities

Special Topics Geography 4951
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Table of Contents

List of Tables

Introduction

Internet based communications are increasingly being used by rural Canadians as a method of cheap and efficient communication, while also acting as a tool for learning and sharing resources with others. This paper will examine the ways in which communication technology can be used as a tool for learning and development within and across rural communities. It will also focus on communication technology and how it can help to improve the ability of people to learn and develop new contacts and networks, which in turn can lead to an increase in capacity for taking action on local projects. Finally, the paper will look at how communication technologies are able to improve people's competence and confidence for learning purposes, including any geographical variations among rural places related to this issue.

Methodology

The literature review for this paper focuses on several topics related to the ideas of social and human capital and the ability for communities to expand their knowledge base. It also includes issues related to how communication technology can be used to facilitate learning, the role of distance education and the Internet, and community learning networks.

This paper is based on the research interests of the New Rural Economy (NRE) Project and work associated with its Technology Mediated Learning Project, which was developed by the NRE team. The NRE Rural Observatory consists of 32 systematically selected field sites. Five dimensions relevant for rural communities were used in the sampling frame when selecting sites: the extent of exposure to the global economy, the relative stability of the local economy, the adjacency to large metropolitan centers, the level of social and institutional infrastructure, and then extent to which the site is lagging or leading on a number of socio-economic variables. Sites were identified from the 1991 boundary files for Census Subdivisions, ranging in size from 130 to 5,997 residents, across all provinces and two territories in Canada (Reimer, 2002). The NRE research project has completed field work in 22 of these 32 sites, and it is from those 22 sites that participants were invited to participate in the technology mediated learning sessions.

Nine organizations or community groups which are active in most or all of the 22 field sites, were identified[1] to participate in the technology mediated learning project:
- ‣ Economic development officers
- ‣ Tourism representatives
- ‣ Chief Administrative Officers
- ‣ Newspaper editors or staff
- ‣ Chamber of Commerce members

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[1]Key informant interviews were conducted in the Summer of 2001 in each site. One question asked "name three outcomes you want to achieve or projects you wish to complete before you finish your term or decide to leave this position." Based on the collective responses given, nine priority issues or topics were selected for discussions in the Technology Mediated Learning Project.

- ► Environmental organizations representatives
- ► CAP site committee members/staff
- ► Recreation committee members/staff
- ► Volunteer group representatives.

These nine organizations are highly active within their local communities and dedicated to enhancing their local economy and social well being. From each of these nine organizations, participants from each site were contacted by e-mail and invited to participate in an on-line facilitated discussion, pertaining to a topic which was linked to their specific interest group they represented.

The primary objective of the learning sessions was to link participants with others who are working on similar issues in other rural communities. Other objectives included helping people to improve their use of Internet technologies and improving the ability to gain new ideas and knowledge from others. To begin this project an on-line chat web site was chosen as the beginning form of technology to introduce to people. The program chatzy.com, is simple to use, accessible for all and at no cost. Participants were sent an on-line invitation to join the chat room prior to the scheduled time, where they would meet and discussion would begin.

Data for this paper is taken from three main sources. This first source is the on-line assessment and evaluation surveys, which were created for this Technology Mediated Learning Project. Before people participated in the on-line discussion, they were asked to fill out an on-line assessment survey. The assessment survey is made up of questions which look at the types of technology participants have used, their comfort level, computer access, topics of interest and basic demographics. Following the scheduled discussions, participants were then asked to complete an evaluation survey. This survey is comprised of questions which look at the usefulness of the technology, if they may use it again in their work, and what other forms of technology they may be willing to try. Participants' responses to several of the questions from both the assessment and evaluation surveys were analyzed in an attempt to determine if such on-line learning is useful for further learning and development and if it can help rural and remote people to build capacity and gain useful knowledge.

The second source comes directly from the on-line discussion transcripts, which were documented once discussions were completed. Content analysis was used to analyze the transcripts to determine:
- ► if and how people are using the technology in other settings
- ► knowledge gained from the discussions in other settings
- ► if they are continuing to network with others from the discussions
- ► how people share their ideas and knowledge with others.

The third source is any correspondence, such as e-mails or conversations with participants, regarding the technology mediated learning project and their feelings and reactions pertaining to the project.

Communication Technology in Facilitating Learning Capacity

Many communities are facing economic concerns, poverty, lower levels of education, unemployment and other market problems, which are making it increasingly difficult for them to succeed in the global economy (Bruce, 2003). Rural and remote communities, which were once dependent on local natural resources that are now being depleted due to over extraction and excessive use, are looking for new ways to sustain their once vibrant communities. Many of these communities are turning to the creation of knowledge based economies, where their communities are learning how to incorporate new forms of technology into their daily activities and incorporating these new ideas into their local economic practices (Faris, 2001).
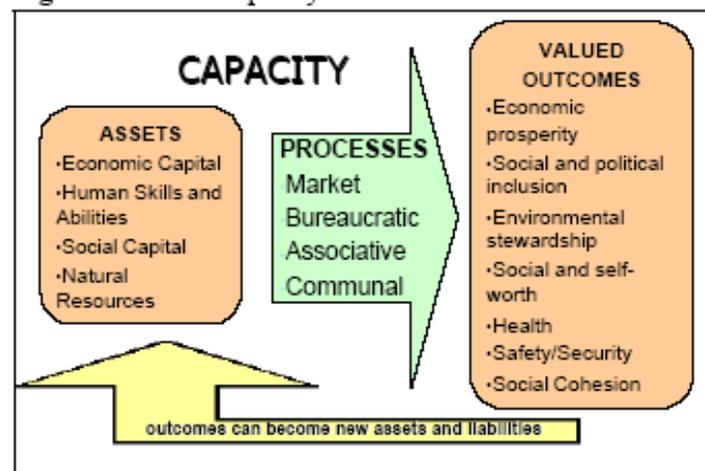
This approach to creating a sustainable community (one which will be able to maintain itself within the new economy), is to first create a learning community, by promoting social capital and social cohesion. In order for a community to increase social capital and social cohesion it must first understand social capacity. Social capacity is "the ability of people to organize their assets and resources to achieve objectives they consider important" (Reimer, 2003). The assets, or as Figure 1 shows, the economic capital, human skills and abilities, social capital and natural resources, are all forms of capital which can be thought of as important when a community is looking at how they wish to build their capacity. Although all of these assets are important, the creation of human and social capital are discussed more deeply in this paper, because they are directly related to the knowledge based society.

Figure 1: Social Capacity Framework

When looking at what social capital does for a community, one must first understand that capital refers to "the part of production that is reinvested into future production" (Reimer, 2003). Social capital therefore refers to the social form as "reflected in organizations, collective activities, networks, and relationships" in order to "achieve valued outcomes" for the local community (Reimer, 2003). The idea of human capital not only helps to organize the local community, but in turn helps to build on the social capital ideas of trust, networking and shared values, all which lead to the creation of social cohesion (Faris, 2001).

Social cohesion builds on the ideas presented in the explanation of social capital. Such forms of cohesion can be created through efficient communication practices, which in this case focuses on the Internet and other technology based forms of communication, such as chat rooms and on-line video conferencing. In many regions the integration of learning technologies are being used to help the community continue its quest in becoming a learning center and to conquer new

initiatives. By reaching these goals and objectives, communities are slowly building social capacity for themselves (Reimer, 2003; Faris, 2001). These new forms of communication technology may alter the nature of social cohesion within and across rural communities.

The second important form of capacity is that of human capital. This refers to the abilities, knowledge and learned skills of individuals within the community, and how they can learn to use these abilities in different ways to benefit not only themselves, but the community. In this paper, human capital looks at the ability of humans to use computers and to be able to use the Internet. By using these skills, their valued outcomes can be the ability to learn how to incorporate new forms of technology into their every days lives, either within the local work force or in voluntary organizations to which they belong. Their human capacity and that which they learn pertaining to technology, will help benefit not only themselves but the local economy.

When looking at the concept of technology mediated learning with reference to Figure 1, one can see that it would be mainly facilitated by associative relations. These associative relations are based on shared interests, and relates to those ideas which the majority of the community feel is important to them (Reimer, 2003). As a community decides that together they will learn to incorporate technology into their local economy and knowledge base, it is the desired outcome of better skills, networks with other communities and gained knowledge and ideas that will emerge from their original human and social capital abilities, therefore building social capacity.

Use of the Internet for Distance Education and Learning

Many schools and universities from around the world are beginning to heavily invest in on-line learning and distance education programs. Such methods of information delivery are beginning to shape a new way of learning, which invests its time and money into creating new educational markets and benefits. Such on-line learning allows participants to have the opportunity to access new forms or methods of technology such as bulletin boards or chat rooms, which helps to improve their technology use skills. These also provide participants with an opportunity to participate in a learning society, which is created through these distance education programs while allowing them to participate in collaborative learning exercises which builds new knowledge (Bartolic-Zlomistic and Bates, 1999). On-line learning opportunities creates growth (a greater knowledge base and a never ending supply of information) for the individual, through both human and social capital. It is with the growth of a knowledge based society, that comes the need for life long learning to occur (Bartolic-Zlomistic and Bates, 1999).

Virtual learning communities can be created using two approaches: synchronous and asynchronous on-line learning methods. Synchronous learning means that the learning among participants is occurring at the same time. People who are divided by time and space learn together in real time, due to instantaneous messaging. Chat rooms are a form of synchronous learning, which operate in real time and form an on-line community, where people are able to meet and share/discuss ideas with one another. Asynchronous learning, on the other hand, does not function in real time. This method uses bulletin boards that allows users to post messages

and their thoughts for later use or viewing for others. Participants visit the bulletin board on their own time, reading what others have posted. This method of learning can be useful for learning content and issues, but not for developing an on-line community. Each method incorporates the ideas of collaborative learning and group participation, which are highly recommended to promote learning. The knowledge that is generated from these two methods of interaction is created through a social process which links interaction and the environment in which people are participating in and creating a learning community, where people are able to build upon their capacity and knowledge from others (Dykes, 2003; Schwier, 2002).

One important aspect of on-line learning or distance education is the idea of collaborative learning. Knowledge is constructed by individuals with help from others, by collaboratively sharing ideas and experiences. New methods of technology are allowing once isolated rural and remote areas to participate and be brought into this learning environment, where they can enter into a virtual community. This allows them to communicate with their peers or others who are in similar situations or isolated rural communities.

Collaborative learning is when participants (students) work together in small/large groups, towards an end goal or learning task. In order for such learning to occur and be productive, participants (students) need to feel a commitment to the others in their group. When such a commitment is created, participants feel more responsible, and tend to be more productive or produce better work, as they are responsible for the well being of others, not just themselves (Katz, 1999). By working together collectively or as a team, the group will benefit greatly from others knowledge and personal experiences.

Community Learning Network

Community learning networks and their development through the use of information and communication technologies can be highly useful in connecting and developing networks across geographically separated regions and support both the idea of development from a bottom up and top down approach. One of the most important aspects of ICT usage for communities is not only learning how to use the available technologies, but looking at how these technologies can be developed into strategies and applications for using ICT's to further develop local economic development initiatives, social justice, political empowerment or to ensure local access to education and health services (Gurstein, 2003). Although much time and effort has been spent on creating local access points or CAP sites for rural communities, very little time has been directed towards expanding local capacity for developing and maintaining ICT systems within these communities. Such development is important and when developed with the communities initiatives in mind (building capacity), these ICT systems are quite useful at transforming the condition of the community.

The key aspect of information and communication technology systems is to find ways of making efficient use of these technologies for creating wealth and opportunities within the rural community (Gurstein, 2003). When looking at the ideas of effective use within the community, it

is important to go "beyond the idea of access and look rather at how this availability fits into larger concerns for use or users that will ultimately benefit individuals and the community" (Gurstein, 2003). Some of the conditions that Gurstein outlines for "active and effective use of ICT's" include the following aspects:

▶ Carriage facilities: the types of infrastructure that is available within the community, such as broadband or dial up.

▶ Input/output devices: what users need in order to undertake a particular activity such as a printer for text or microphone/web camera for on-line conferences.

▶ Tools and supports: available software, services or physical support such as specific programs like spreadsheets or available information texts.

▶ Content services: content which is designed with a specific end user in mind such as a specific language or design interface.

▶ Service access/provision: what types of social and organizational infrastructure are necessary?

▶ Social facilitation: what local infrastructure or training is necessary before the application can be applied or used?

▶ Governance: what is the necessary funding or regulatory requirements before the application can be used within the community?

As these conditions help to outline the important aspects of creating an effective and useful ICT system, it is not only the ideas of access which are important, but how these ideas of availability will help to benefit the community and it's users in the end.

Human Capital and Technology Use

Human capital is the ability, knowledge and the learned skills of individuals within the community, and how they are able to use these abilities in different ways to help benefit the greater community as shown earlier in Figure 1 (Reimer, 2003). In this case we are looking at the ability of humans to use technology, specifically computer and Internet usage in order to help them develop their knowledge and skills by on-line discussions.

Everyone has the capacity to learn, but in order to benefit and be able to use the Internet for building knowledge, people must first have certain factors which are necessary for them to be able to "access and use ICT in their daily lives" (Bridges.org). Although everyone can see ICT's and on-line learning communities are very valuable, people first have to overcome the barriers and limitations of such technology before the are able to fully benefit from it.

Physical access or the ability to access the technology in order to use it, is extremely important for community members. Many CAP sites have been developed in rural areas in hopes of overcoming such issues (Bridges.org). Although on-line learning creates a great opportunity for those who are geographically isolated from on another, to learn and interact, they do not have the opportunity to socialize like those who learn together in a classroom setting. Another factor is to find a common time to meet on-line as a group for learning. Time constraints due to work or personal commitments or different time zones all create conflict towards the creation of virtual communities or group learning. A lack of skills or money are also barriers to participating in these on-line learning communities. People who are unable to use a computer or certain programs, or who do not have the money to upgrade their computers or pay for the course(s), automatically become unable to benefit from on-line learning. Those who do not have high speed Internet connections could also experience problems when participating in the real time chat discussions. Due to the transfer speed of information, those using dial up could have problems keeping up to the discussion because of the low information transfer speed. Differing types of software/hardware can also cause problems due to compatibility between participants. Student preparedness is another factor which can limit learning. If someone fails to complete the assigned tasks before the group meeting, they limit what they can contribute and in turn the group is limited to what they will learn (Bartolic-Zlomistic and Bates, 1999; Katz, 1999; Bridges.org).

Capacity and trust are two other important aspects of ICT development. In order for people to be able to use technology, they must first understand how they will be able to use it in their daily activities, how it will benefit them and how they will receive the needed training to use it. Once the capacity has been gained, people need to trust the technology and understand how it works, in order for them to believe it will truly benefit them.

Data Analysis

This section beings with a look at who the participants are, by both age and gender, their geographical location and if they are from a field site that has leading or lagging economic outcomes and of high or low capability. Table 1 shows that there were 26 participants, with almost two-thirds of these being female. 62% of participants were age 35-54 while the remaining fit into the 55-64 age category. Over half of the participants were from a western field site, while the other half of participants were from either an Atlantic or Ontario site. Those sites that are considered to be lagging and of high capability were represented by a greater number of participants than those sites that were leading and of low capability.

Table 1: Profile of Project Participants

	Number	Percent
Total	26	100
Male	7	27

	Number	Percent
Female	19	73
Age 18-24	0	0
Age 25-34	0	0
Age 35-54	16	62
Age 55-64	10	38
Age 65+	0	0
Atlantic	6	23
Ontario	6	23
West	14	54
Leading	9	35
Lagging	17	65
High Capability	18	69
Low Capability	8	31

Table 2 looks at the participants use of technology prior to their participation in the Technology Mediated Learning Project. Almost two-thirds of the participants had used telephone conference calls. About half had used a chat room at least once. For the other forms of communication technology, very few people had experience with them.

Table 2: Types of Communication Technology Participants Have Used or are Currently Using

	Sample Size	Number Who Said Yes	Percent
Telephone Conference	26	17	65
Chat Rooms	23	11	48
Discussion Boards	22	6	27
Chat Programs Downloaded	21	5	24
Web Camera	22	1	5

While Table 2 shows the technologies that participants are using, Table 3 shows their relative comfort level when working with different forms of communication technologies. Once again people have a high level of comfort with telephone conference calls, with 48% of respondents saying that their level of comfort is excellent or very good. There are high levels of fair or poor comfort relating to the use of other communication technology. These results can be linked to a lack of knowledge and experience of using computers for more than basic functions, and little

knowledge of how these forms of technology may be able to help enhance their skills and workplace practices and broaden networks.

Table 3: Comfort Level with Communication Technologies
Sample Size = 27

	Excellent/Very Good (%)	Good (%)	Fair/Poor (%)
Telephone Conference	48	22	30
Discussion Boards	15	19	67
Chat Rooms	15	19	67
On-line Video Seminars	15	4	81
Chat Rooms (downloaded)	15	0	85
Web Camera	7	0	93

Tables 4 - 9 summarize the results of the Technology Mediated Learning Project experiences for the participants. Table 4 looks at the usefulness of chat room technology, on a scale of 1 to 5, where 1 is not very useful and 5 is very useful. Over half of those participants who provided an evaluation of their experiences, found the chat room discussion and technology to be useful to very useful (4 or 5 on the scale). A higher percentage of participants from communities with lagging economies and from communities with high capability find the technology more useful than those from leading and low capability communities. Lagging communities generally have fewer options, so by providing them with the skills and knowledge to use such forms of communication technology is highly useful and provides them with options as to how they may incorporate the technology into other aspect of their community. Those from communities of high capability also found the technology to be useful, as they are considered as places which have more ability, and are more likely to see how useful these communication technologies are, and devise a way to incorporate them into community activities.

Table 4: Chat Room Technology and Its Usefulness
Sample Size = 26

	Total Count	% Answered	% Leading	% Lagging	% High Capability	% Low Capability
1 (Not Very)	2	8	11	6	0	25
2	6	23	33	17	22	25
3	4	15	22	17	17	13
4	10	39	33	39	39	38
5 (Very)	4	15	0	22	22	0

Table 5 looks at the usefulness of the discussion topics. Again over half of those who responded

felt that the topics chosen for discussion and the discussions were useful or very useful. A larger percent of those from lagging sites found the topic of discussion useful to very useful. This suggests that by engaging in relevant discussions via ICT's, there is potential to provide underdeveloped and less well-connected sites with useful information to assistant them in learning to overcome some of their problems. Participants from both sites with high and low capabilities found the topics useful.

Table 5: The Topic of Discussion and Its Usefulness
Sample = 26

	Total Count	% Answered	% Leading	% Lagging	% High Capability	% Low Capability
1 (Not Very)	2	8	22	0	6	13
2	4	15	22	11	11	25
3	6	23	22	28	28	13
4	8	31	22	33	33	25
5 (Very)	6	23	11	28	22	25

Table 6, looks at any problems that participants may have experienced with or while using the technology. Examples of problems include receiving the link to the discussion room, accessing the discussion or any problems that may have arose during the discussion time. Most participants (77%) encountered no problems while participating in the discussion. There was little variation amoung participants from leading and lagging and high and low capability sites are all high, showing that the majority of participants found this chat room technology to be user friendly.

Table 6: Problems Experienced While Using the Technology
Sample = 26

	Total Count	% Answered	% Leading	% Lagging	% High Capability	% Low Capability
Yes	6	23	11	28	22	25
No	20	77	89	72	78	75

Table 7 looks at the number of participants who feel they will continue to use this form of technology in their current work. Although there is not a high number in total who are certain they will use it, 65% (over half of those participants from lagging and high capability sites) are at least thinking about how they may be able to incorporate such forms of technology into their work place and now have the skills and ability to use a form of chat room discussion for communication practices. Almost 90% of participants from low capability sites said they would use (50%) or think about (38%) using this form of technology in their current work.

Table 7: Participants Willing to Continue Use This Technology In Their Current Work
Sample = 26

	Total Count	% Answered	% Leading	%Lagging	%High Capability	%Low Capability
Yes	7	27	33	22	17	50
No	2	8	11	11	6	13
Maybe	17	65	56	67	78	38

Table 8 looks at some other types of communication technologies that participants said they would be willing test, if they were given some training and guidance. Many said that they would like to try on-line video seminars. This type of technology provides participants with face to face interaction. The ability to see who you are communicating with becomes an important aspect of creating efficient and lasting connections with those whom a person works. Two-thirds of participants from lagging sites and 75% of those from low capability sites said they would be willing to use this type of technology if provided with guidance. Telephone conference calls, bulletin boards and web cameras were all ranked next highest as forms of technology people would be willing to try. Three quarters of low capability site participants were interested in using web cameras as another means of communication.

Table 8: Other Types of Technology Participants Would Be Willing to Use
Sample = 26

	Total Count	% Answered	% Leading	% Lagging	% High Capability	% Low Capability
On-line Video Seminar	16	62	44	67	56	75
Telephone Conference Call	14	54	67	50	50	63
Discussion Boards	14	54	33	61	50	63
Web Camera	14	54	56	50	44	75
Chat Programs (downloaded)	11	42	33	44	39	50
Chat Rooms	9	35	11	44	39	25

Table 9 summarizes participants willingness to participate in another on-line discussion session. 89% of those who participated said they would be willing to try another session. A slightly higher percentage of participants from lagging communities than leading communities said they were willing to participate in another on-line discussion.

Table 9: Participants Willing to Participate in Another On-Line Session
Sample = 26

	Total Count	% Answered	% Leading	% Lagging	% High Capability	% Low Capability
Yes	23	89	78	89	89	88
No	1	4	11	0	0	13
Maybe	2	8	11	11	11	0

Discussion Transcripts and Correspondence

The second source of data used for this paper is the on-line discussion transcripts. The transcripts were analyzed based on five major topics:
▸ are people using the technology in other settings
▸ the concept of using the ideas presented in the discussion in some other context
▸ the concept of further network either with other participants or the discussion moderator
▸ whether or not the discussion was useful
▸ if those participating in the discussion were sharing ideas and knowledge with one another.

A total of 17 facilitated discussions took place from September 2003 to February 2004. In total there were 40 participants from across the 22 field sites, 24 of these were women and 16 were men. Some of these participated in more than one discussion.

Topic number one for analysis looked at how people are using the technology from the chat room in other settings such as at work or for other committees or organizations they are involved in. From the 17 discussions which took place, it was mentioned by participants in 4 separate chats that they would be using this form of technology in another setting. The discussions where the topic of using the chat room technology in other settings was discussed were economic development, CAP site and chamber of commerce discussions, while the majority of people who made this suggestion were from one of the Ontario sites and were from high capability communities. One of the participants after using the chat room technology from this project applied it to her work with a province wide committee which normally meets face to face. Instead of everyone driving an hour or more for a meeting, the committee met and held their meeting on-line, eliminating travel time and inconvenience for everyone.

The second topic is if the ideas presented in the discussion would be used in some other context. Participants in six of the 17 discussions made mention that ideas from their discussion would be useful and said they would look into using or applying them to their day-to-day work Once again it was the economic development, CAP site, chamber of commerce and also recreation discussion participants who made reference to further use. Many of the participants who suggested they would use ideas gained via the discussion were from the Western sites and from lagging and high capacity areas.

Concepts of expanding or furthering networking capabilities with either the participants or the moderators was the third topic examined. The concept of networking and gaining ideas from others was mentioned in eight out of 17 discussions, as people made mention of following up on an idea or suggestion with another participant/moderator. The chamber of commerce participants were active in this networking idea, while participants from economic development, environmental, tourism and recreation discussions also showed interest, with the majority of participants from Ontario and the Western sites and from lagging and high capability sites. Correspondence with several participants brought up such comments as that they looked forward to being in contact with or networking with others who are in similar situations but in different environments and regions of Canada. Several of the participants also followed up with the moderators, asking them questions pertaining to important contacts they needed to make, while others were seeking advice to problems or inquires they had.

Topic four related to the usefulness of the discussions and 7 out of 17 discussions showed evidence that the discussions were indeed useful and a good idea. Economic development, chamber of commerce and recreation participants all commented on the usefulness of the discussions.

The final topic related to participants openly sharing their ideas and knowledge with other participants within their chat. Most of the discussions, 13 out of 17, had participants sharing and providing others with useful information by either answering questions, providing web sites that may be of assistance to others or providing them with examples of what happened locally in their community and how things were fixed/changed. All of the nine groups except tourism and volunteers were active in sharing any ideas they had, while the majority were from sites that were lagging and of high capacity. One e-mail that was received from a participant made mention of how she looked forward to "participating in the project, as it followed their work philosophy of sharing and communication among communities."

Discussion

This section discusses the link between the literature review and the findings from the data analysis section. More specifically, the discussion examines 1. the ways communication technology can be used as a tool for learning and development in rural areas, 2. how communication technology can improve the ability for people to learn and develop new contacts, 3. improved competence and confidence in using technology and networks and 4. geographical variations among participants and outcomes.

Communication Technology for Learning and Development
Communication technologies can be an important tool for learning and development in rural areas because they allow participants to collaborate and build new ideas and knowledge. Collaboration allows people to build knowledge by working together towards an end goal or task with others in their group, as stated by Katz. In the case of the Technology Mediated Learning Project, site participants from specific organizations were given the opportunity to meet with and

discuss issues that were important to them, with others who share a similar background. These participants were provided with the tools and guidance, to learn how to use a form of communication technology, which only 48% of them had used prior to the on-line discussion. Not only did they build their skills pertaining to communication technology, but these people working in key community sector groups were able to share ideas and knowledge with others (which occurred in 13 of the 17 on-line discussions).

It is through the method of synchronous learning, where people are able to discuss and talk to one another, which is most conducive to creating an on-line community and learning. On-line learning and distance education programs allow participants to learn and experience how to use new forms of technology, like bulletin boards and chat rooms, which help to improve their technology skills. This on-line learning also provides participants with the ability to participate in a learning society, created through virtual communities. It is in these communities where people have the chance to interact with others, and learn and gain knowledge from their experiences. The Technology Mediated Learning Project chose to use synchronous learning as our main tool of creating an on-line community. An on-line chat room was chosen, as it gave participants the opportunity to discuss issues with one another in real time.

In order for such learning to occur, people need to feel committed to the others in their group, while a certain level of comfort must be established. Once the group has established this trust and commitment, they begin to work as a team, and it is here where knowledge is created and learning begins. In 7 of the 17 discussions, people felt that good or useful ideas came out of the discussion, but little commitment to participate in another discussion was established. Many of the participants only participated in one online discussion and due to other commitments or prior engagements, were unable to participate in a second round of online discussions. This commitment to others may have been stronger if participants had to function in a face to face setting, while in this situation, an online community had yet to be established or built, making it easier to forgo their online commitment.

Improved Ability to Learn and Develop within Communities
Building capacity and gaining knowledge are two of the major issues focused on within this paper. In order to succeed and create a learning community, one must first understand social and human capacity and the requirement that people must organize their assets and resources to achieve an objective that they consider important, as stated by Reimer. The development of social and human capacity is created through communication technology, by improving people's ability to use new forms of technology. By using this information they gain from the technology, they are able to network and develop contacts with others, in hopes of using this newly acquired knowledge to apply it back into other aspects of daily and community life. It is when people are able to use these new skills in order to achieve greater benefits, that capacity is truly being created.

By creating these new contacts from the on-line discussions, people have more choice of where they are able to go when looking for information they need. They also have the ability to contact

participants or the moderator when looking for direction, answers or information to any problems or concerns they have. In 8 of the 17 discussions, people made the comment that they would follow up with someone from the discussion in order to gain needed information. In one example, a participant e-mailed the moderator asking for advice on where to look for needed information for a project she was working on.

Collaborative learning is another important aspect within the concept of building capacity. It allows for the sharing of ideas, knowledge and personal experiences with other participants in the on-line community. In order for participants to benefit from others knowledge and personal experiences, a sense of commitment between participants in the online discussions must first be established. This commitment creates a sense of responsibility between participants to one another, allowing better work to be produced and making their online time more productive. Unfortunately, within the Technology Mediated Learning project, this sense of commitment has yet to be established, limiting the amount of collaborative learning occurring during the on-line discussions.

Competence and Confidence with Technology
As people who have never used technology before are introduced to various methods such as bulletin boards and chat rooms, their technology skills begin to improve. Bartolic-Zlomistic says that by providing people with on-line learning opportunities, individual growth occurs as they are provided with a never ending supply of information and knowledge. Once this capacity has been established with help and guidance, people who are using this technology begin to see how the Internet really works, allowing them to trust what they are finding. In the case of the on-line discussions, people were provided with the needed guidance to understand how chat room technology really works. Overall, the majority of participants found the discussion and information gained to be useful to very useful (see Table 3). The majority of participants encountered few, if any, problems while using the chat room. This made a positive impact on the users, as almost 90% said they were willing to participate in another discussion while 92% said that they would consider continuing to use this type of technology in their current work. One participant e-mailed telling us that she had implemented the chat technology with one of her committees. Instead of having to travel long distance for a meeting, the committee had an on-line meeting, which went well for everyone who participated.

Geographical Variations
On-line learning and distance education programs create a way for those who do not live near a major geographical center to participate in a learning environment. As noted in our data analysis, participants ranged from various areas across Canada. Results showed that a large majority of our participants who were active in the discussion were from the Ontario and Western sites. It can also be noted that in most cases those sites that were lagging and had high capabilities were most intrigued and interested in learning how to use communication technologies and in continuing to use these in their current work. In lagging communities, this type of technology could be used to help build capacity, and once established, could be useful in helping to achieve better economic success within the community. Such participation from high capacity

communities could be due to their interest and involvement in their local area, which in many cases is a direct result of higher education levels or high levels of stability within the community.

Conclusion

Internet based communication technology is becoming an important and useful tool for those residents who live outside of metropolitan areas. It is increasingly being used by rural citizens as a method of learning and sharing resources, while connecting them to others with whom they are separated from due to time and space.

One suggestion that emerges from this research is the idea that Internet based communication technology possibilities need to be more widely advertised and explained to rural communities, and for someone to show them how they can implement it into their local practices. Local CAP sites are available to provide and teach the necessary skills to those who might be interested, but perhaps CAP sites are not playing a proactive role in this regard. It is also important that once the skills have been acquired that people realize how they can use them with their work or organizations they belong to, which is the key aspect in building a knowledge based society (social capacity). It is these learning communities, which are able to survive in the ever changing economy due to their human and social capital, which allows them to change and adapt.

Communication technologies are becoming increasingly adopted throughout rural Canada. These technologies are proving to be a useful tool for learning and development in rural areas. By helping to provide people with the skills necessary to understand and use these technologies, many important community sectors are beginning to implement them into everyday practices, making their job easier, and helping to build capacity within their community.

By helping people to learn about cost effective ways of communicating, it gives them the ability to develop contacts and create networks, which extend beyond the boundaries of their community. These networks and contacts can be useful in helping to solve problems or gain solutions, which can greatly benefit the community. In many cases, communities believe that their problems are their own, while these external contacts show them that no one's problem is solely their own, as all small towns and rural areas share similar issues which they are attempting to solve.

By providing people with the necessary skills to use Internet communication technologies, they begin to become more comfortable with the technology and are able to apply it to their daily lives. This not only builds human capital through the skills they have gained, but it helps to build social capital which in turn develops social capacity, due to an increase in knowledge and skills.

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