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ABSTRACT
                Research aimed to enhance rural women's access to
communication and information technologies and to assess the impact of their
technology use on their participation in small business development and
community development. Over 200 women throughout Queensland (Australia) were
involved. A trial electronic mailing list linking rural women to urban women
and women in other countries quickly expanded into a vibrant online community
because it addressed the social isolation of women in rural and remote
situations. Gender was a significant factor in the development of this online
community due to women's use of communication for kinship, friendship, and
community maintenance as well as stress management. The development of
networks between women in government, industry, academic contexts, and rural
communities empowered participants and enhanced community development
processes. Gender was a factor here as well, due to women's holistic
perspectives on community development and to the high value women place on
connectivity, which resulted in contentious issues being introduced with care
and respect. Because of their diverse social and productive roles in rural
communities and by virtue of their communication skills, women are emerging
as innovators and managers of change. It is therefore important that they
have access to new technologies and appropriate training. This research
revealed the need for the integration of social infrastructure with economic
concerns in community development. (Contains 18 references.) (TD)

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Using communication and information technologies to empower women in rural communities

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In Australia, as in other parts of the world, there is considerable interest in many quarters in the potential of new communication and information technologies to contribute significantly to the revitalisation of regional communities. However, much remains to be understood about the factors which contribute most to the success of innovative technology applications in such communities and the terms in which such success might be measured. Research conducted by the Queensland University of Technology (QUT) indicates that gender significantly affects not only access and use of communication and information technologies, but also rural community development. By focussing on rural women's perspectives on communication issues, this research has revealed a need for the development of 'soft' technologies to ensure that both social and economic development occurs in an integrated way in regional, rural and remote communities.

1. Introduction

In Australia, as in some other parts of the world, there is considerable interest in many quarters in the potential of new communication and information technologies to contribute significantly to the revitalisation of regional, rural and remote communities (see, for example, Bryden, J. and Sproull, A. 1997; Buckridge, R. 1996; Cavill and Miller, 1997; Cavill, Miller, Edvi-Illes and Wilde, 1997; Milio, 1996). This interest extends in some cases to substantial investment by government at both state and national levels in supporting technology initiatives and thus stimulating demand. The establishment at commonwealth level of the Regional Telecommunications Infrastructure Fund is one such initiative. Under the program title 'Networking the Nation' this initiative provides funding over a five year period for community-initiated communication and information technology initiatives.

Increasingly, local government authorities and community development officers also recognise the potential of computer mediated technologies to strengthen communication networks within their communities, to provide greater and more equitable access to global information networks and to promote economic development.

However, much remains to be understood about the social factors which contribute most to the success of innovative technology applications in terms of community development (Milio, 1996). As Jones (1997, p12) points out: 'Connection does not necessarily make for community'.

This paper seeks to make a contribution to such understandings. It draws on recent and current research conducted by the author and colleagues at the Queensland University of Technology (Grace, Lundin and Daws, 1996; Grace, Lennie, Daws, Simpson, Previte, Lundin and Stevenson (1998 forthcoming) which indicates that gender is an important factor in how rural people access and use communication technologies. These gendered differences are particularly significant in terms of community development because it is evident that women are emerging as important players in the management of change in regional, rural and remote communities.

Certain understandings of the meanings of 'community' and 'community development' have pervaded this research. The word 'community' is taken as implying the existence of a degree of shared

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cultural meanings and acceptance of social responsibilities together with an accompanying sense of belonging and group identity. However, while continuing to respect and value distinct cultural identities, my colleagues and I consider that in the postmodern social environment we need concepts of community which can also honour and embrace difference. Further, the definition of community we use includes both the customary concept of community as being geographically defined, and a concept of community as capable of existing independent of spacial restrictions.

We regard community development as a process which has both social and economic dimensions, and which adds value to existing communities while enhancing the sense of shared meanings and responsibilities. In the research mentioned above, we have been concerned with the development and resourcing of women in regional, rural and remote communities by enhancing their access to communication and information technologies.

2. About the Research Projects

This paper draws on two research projects. The first is a Telstra-funded study of Queensland rural women's use of communication technologies conducted by Grace, Lundin and Daws in 1994-95. This study produced a profile of women in rural Queensland as diverse in terms of life styles, occupations and ethnic backgrounds, but as sharing many commonalities as communicators. Women were identified as significant nodes of communication in their communities, but as doubly disadvantaged by gender and rurality in terms of access to new technologies (Grace, Lundin and Daws. 1996).

In a second study conducted in 1996-97 Stevenson, Lennie and Simpson joined the research team. This action research project was funded by an Australian Research Council (ARC) collaborative research grant. The project involved collaboration with seven 'Industry Partners' including several state government departments, Telstra Corporation and Pegasus Networks. It also involved the participation of over two hundred women from various parts of Queensland.

The aims of the second project included enhancing women's access to communication and information technologies, and assessing the impact of their use of such technologies on their participation in small business development, community development, research, consultation and planning.

3. Profiling Rural Women as Users of Communication Technologies

In both studies, the significance of women as communicators was related to the diversity of their social and productive roles; to the influence of gender on communicative styles; and to their integration of social and economic activities.

Women in regional, rural and remote Queensland continue to be heavily involved in domestic and family responsibilities. They typically assume a major responsibility for the care of husbands, children and the elderly, and for the education of their children. They therefore tend to be particularly concerned with health and education services both as consumers and providers.

Like their urban counterparts, many of these women work the 'double shift' of paid employment as well as home and family management. Some in the agricultural sector work a triple shift of family, farm and paid employment. Many are also engaged in voluntary community work. Their paid employment includes work in agricultural research and extension, the education and health professions, librarianship, social work, community development, tourism and small business, and local government.

These diverse occupations and concerns contribute in important ways to a strong vested interest on the part of such women in communication issues. The more remote the women are, the more critical becomes the availability of reliable telecommunications. Paradoxically, those who have the most critical need have the least access.

A survey of rural women conducted in 1994 as part of our first project showed that women in rural and remote situations in Queensland were relying heavily on such interactive communication technologies as the telephone, facsimile and two-way (VHF and UHF) radio services (Grace, Lundin and Daws, 1996). Our more recent research (Grace et al., 1998 forthcoming) has shown that by the end of 1997 a steadily increasing number of such women were using electronic mail and other facilities which are accessible through the Internet.

Our studies indicate that the features of women's distinctive culture of the telephone as identified by Moyal (1989) are likely to be replicated in women's use of electronic mail. Moyal used the terms 'instrumental' and 'intrinsic' to categorise different ways in which women use the telephone. Calls of

short duration made for a specific purpose such as making appointments or ordering goods are 'instrumental'. 'Intrinsic' calls are longer, more conversational calls which are made for kinship, friendship and community maintenance. While they might have a specific purpose, the overarching function of 'intrinsic' calls is to affirm and maintain connection.

Our first study revealed that in addition to making 'instrumental' telephone calls, rural women make use of 'intrinsic' telephone calls to family and friends not only for kinship and friendship maintenance, but also for the management of stress during critical periods such as drought. Our second study indicates that women in rural and remote locations will use electronic mail in similar ways.

4. Using Email in Participant Research

The use of electronic mail which this paper reports was embedded in the action research methodology of our second project. This included the conduct of consultative and awareness-raising workshops in each year of the project in ten widely separated locations in rural and remote Queensland and a communications exercise at the 1996 annual conference of the Queensland Rural Women's Network. The latter involved 'hands-on' workshops and demonstrations of the Internet and Email.

4.1 The History of the Online Communication

At each of the workshops conducted in 1996, we enlisted one or two women to take part in a trial of Email as part of their association with the research project. A few of these women were already online, but the rest came online progressively over a period of several months. Many of them experienced problems with 'getting started'. Some of the problems can be related to timidity with the new technology, but many were the result of deficiencies in the technical infrastructure in parts of rural Queensland and the dearth of available local training and support.

The first stage in the use of Email in the research project extended from July 1996 to about May 1997. This was the establishment of online communication with women who had attended the workshops. Group communication was established in the first instance simply by copying messages to all participants.

By the early in 1997 the group comprised six members of the research team, three or four women who were in middle to senior management positions in the state government departments which were associated with the project, and about fifteen women who lived in various parts of rural and remote Queensland. The term wechat, short for 'women's electronic chat' was devised to describe this part of the project.

The second stage was the establishment on the Pegasus Networks server of a mailing list called welink which operated from March 1997 onwards. Its stated intention was to link urban and rural women. Welink included members of the wechat group, but its scope quickly expanded to include women in other Australian states and in other countries. A vibrant online community rapidly developed. By July 1997, there were over ninety subscribers and postings reached a hundred messages per week. Currently (May 1998) there are about 120 subscribers. Details of the participation rates, and comparisons with similar women's online mailing lists are given in the forthcoming report of the project (Grace et al., 1998).

It is clear that the subscribers to welink have a high degree of sense of ownership in this group communication, and that many have been empowered by their participation. In the following section I mention some of the factors which we have identified as contributing to the effectiveness of this communication technology initiative.

5. Factors Contributing to Rural Women's Uptake and Effective Use of Electronic Mail

5.1 Accessibility

Electronic mail is a relatively low-tech facility which can be used effectively even by women on isolated grazing properties who have to rely on a digital radio concentrator system (DRCS) for telephone access.

The cost to the participants is less compared with long distance telephone charges for equivalent amounts of conversation. Email connection to a large mailing list such as welink can be made for the cost

of one call. In many areas, this call can now be to a local service provider.

5.2 Methodology

The Email communication was embedded in a participative, feminist research process which included face-to-face meetings and which promoted community development. Its success can in part be attributed the quality of commitment over an extended period of both the research team and key rural participants.

5.3 Meeting a Need for Supportive Social Contact with Other Women

The online communication with other women is meeting a very real need for social interaction, particularly for women who are isolated on the large grazing properties. Cultural factors also contribute to the social isolation of women in rural and remote parts of Queensland. Where news and gossip spread quickly in small communities, people learn to be guarded about personal matters. It can be both liberating and supportive to have an alternative social context which offers a wider range of people, interests and opinion than is available in the local community, and where the maintenance of established patterns of relationships is not such a critical issue.

We are aware that in addition to the group online conversations, a good deal of one-to-one communication takes place by Email and between women on the list. Repeatedly, the women express their appreciation for both forms of communication, but it is apparent that participation in the online group conversations in particular is highly meaningful and very valuable to them.

5.4 Giving Rural Women Voice and Creating Empowering Networks

As we have discussed elsewhere (Grace and Lennie, 1998 forthcoming), rural people tend to be constructed as 'the Other' in public discourse in Australia, which is urban-normed. As a result, they can experience marginalisation and the invalidation of their perspectives. Needing their voices can be heard and understood is thus a burning issue for many people in rural and remote parts of the country.

Feedback from the rural women who took part in wechat and welink indicates that this online communication proved to be effective in this respect. Not only did the regular online communication give the rural women ready access to a wide range of information, but it also enabled information from women in 'the bush' to reach women in the city. Because of the conversational style of the communication, this information was enhanced by understanding. That is, through the glimpses of their daily lives which the rural women provided incidentally, the urban women came not only to admire the rural women, but to develop a deeper appreciation of their perspectives and issues.

Further, because of the relationships with îIndustry Partnersî provided by the collaborative structure of the research project, wechat and welink empowered rural women by linking them with city women who were strategically placed, for example, in tertiary education institutions and the public service.

5.5 The nature and quality of the communication

The fact that the focus of both wechat and welink has been on conversation rather than merely on information exchange or debate has been crucial to the creation of the sense of community which pervades the communication. In the early stages, in response to queries from the rural participants about what could be discussed, the research team let it be known that although communication technology was the ostensible focus of the research, the women could feel free to 'chat' about anything. Moreover, each woman was asked to write a short self introduction when she first came on line.

While the guidelines from the research team proved very important in personalising the communication and in establishing a friendly atmosphere, the ways in which the rural women have responded to the possibilities of this technology have been equally important in defining the quality of the communication.

Most messages cover more than one topic, and the women use a conversational style which frequently incorporates humour and storytelling. Reports of daily doings are interwoven with the exchange of information and opinion about a wide range of topics including the weather, health matters, family matters, recreational interests and local, national and international events. Quite frequently, personal problems are shared and supportive responses are received.

When the larger mailing list welink began to run alongside the small informal wechat, several women expressed apprehension that the friendly and supportive quality of the communication would be lost. One woman said that she thought it would be like the difference between 'having a few friends

round for afternoon tea and making a speech at a public meeting'. In the event, this was not the case. The friendly atmosphere transferred to the larger group and welink gradually replaced wechat.

The value which the women placed on friendship and feeling connected was evident in a certain reluctance to introduce contentious topics in the early stages. It seemed that there was an unexpressed shared assumption that the airing of divergent opinions would threaten the friendly nature of the communication. As welink developed, contentious topics were introduced, but usually with care and respect. This contrasts strongly with some online discussion groups where 'flaming' and harassment occur.

We believe that gender is a very important factor determining the way online communication developed in wechat and welink. The high value placed on connectivity is a feature of women's communication patterns which has been observed by other feminist scholars (see, for example, the work of socio-linguist, Deborah Tannen (1992)). In summary, the communication has developed in ways which reflect women's distinctive communicative styles and with which they feel comfortable.

6. Impacts of the Project On Women and on Rural Communities

The project and the technologies have had both direct and indirect impacts. While it is not possible to attribute all the changes which we have observed in the lives of the women who have participated directly to their involvement in the project, we consider that the project has been instrumental in helping women who were ready to do so to seize an expanded range of opportunities.

During an audioconference with participants held towards the end of the project, a woman who works in a community development capacity in a central Queensland mining district made the following remarks which epitomise the kind of positive feedback we have received:

I'd just like to say thanks for the opportunity. I've been told that once your mind's been expanded, it never goes back to the same size, and that's certainly been the case with me. When I went to that workshop in Emerald, little did I know how my method of working would change. My involvement in this project has really taken me into a new dimension .

Of all the project activities, the participation in wechat and welink has had the most impact in personal terms. Positive impacts on the lives of our participants include:
- Better access to information.
- Reduced social isolation resulting in better stress management.
- Increased confidence from gaining competency in using the technologies and accessing a wider range of information and opinion.
- The creation of employment and small business opportunities. Examples include a woman who teleworks for the Office of Rural Communities from a remote sheep station and a woman who set up her own small business in basic computer training and home support.

Impacts at local community or regional level include:
- Raised awareness about communications issues in local communities through the network ing activities of participants.
- The facilitation of access to funding for community projects. For example, welink has facilitated direct links between interested women in rural communities and project officers for 'Networking the Nation', the grants program which disburses the Regional Telecommunications Infrastructure Fund (RTIF).
- Enhanced leadership capacity and public profile of rural women (see Daws, 1997).

7. Actual and Potential Application by Women of Communication and Information Technologies in Regional, Rural and Remote Communities

In this paper I have concentrated on the use made of Email by women who have participated in our research. This is not to say that these women are not using other applications, for example accessing information on the Internet. We envisage that as they gain access to new communication and information technologies, women in rural and remote communities will apply a range of technologies in the various arenas of their lives. The following are some of the ways in which such women are likely to use these technologies.

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7.1 Family and kinship maintenance

Those women who have participated in the online conversations created by our research projects are already using Email to communicate with distant family members and to enlarge their friendship networks. Two very positive examples of the use of this technology are enhanced communication between children at boarding schools and their families, and the extension of friendship networks and interest-group networks.

7.2 Health

Both professional health workers and women who are caring for their own and their families' health have shown interest in using the Internet to access health and safety information. Some isolated women are already using the Internet and electronic mail to access support networks for sufferers of particular conditions or disabilities and their carers, and there is potential for electronic mail to create networks which will enhance professional support of isolated health workers.

7.3 Education

The applications of advanced communication and information technology in distance education and open learning are well known. These applications apply at all levels from primary schooling through to advanced postgraduate study. Women in rural and remote are involved with the progressive introduction of information technology as education professionals, as students and as parents, especially those who are home tutors for pupils of the schools of distance education.

7.4 Agriculture

In the past decade significant changes have taken place in the economics of family farming which have resulted in many women increasing their involvement in both managerial and manual aspects of farm work. Some women (usually widows) are managing properties on their own. Women often have better keyboard and other clerical skills than their husbands, and our research suggests that on family farms, it is often the female partner who has the greater interest in information technology.

The farming and grazing women who attended our workshops were resourceful, caring, and deeply committed to their husbands, families and local communities. Such women are a precious and strategically significant resource for Queensland agriculture. Many of these women can see the potential for new technologies to improve both their efficiency as farmers and their quality of life, and they are prepared to learn. However, especially if they are older, they need to be supported and resourced. In particular, they need training which is accessible, affordable and appropriate. They also need networks of women in similar circumstances to provide peer support.

7.5 Small Business Development

According to a report of the Tasmanian Women's Consultative Council (1996), women comprise nearly one third of small business operators in Australia. Other research (Employment and Skills Formation Council, 1994; Still and Chia, 1995) indicates that the survival rate of small businesses operated by women is higher than that of businesses operated by men, and that if such trends continue, women will eventually outnumber men in small business, both as proprietors and employees. As mentioned above, our research shows that many women are active partners, especially with regard to financial management, in agricultural businesses, both small and large.

Communication and information technologies offer the following potential strategic opportunities for women in business:
* enhanced access to relevant information, training and business services;
* access to resources such as World Wide Web sites;
* use of the World Wide Web as a stimulus for creative ideas;
* diversification and pluriactivity of primary producers through women's small business and teleworking activities;
* facilitation of cooperative action by primary producers to engage in value-adding of
* their products, including beef and wool, and to create collaborative commodity data
* bases and access new markets;
* enhanced market access through the commercial aspects of the World Wide Web for niche market agricultural products, arts and craft products, and farm tourism;

- opportunities for small business development in information industry services and training provision;
- enhanced business and professional networking for women through the creation of online networks;
- opportunities for teleworking both through networks of individuals and through Telecentres;
- opportunities to be involved in the development of social infrastructure to support teleworking such as marketing facilities including the development of employer and client databases.

7.6 Networking

The use of Email and other applications of computer mediated communication
can potentially overcome the tyranny of distance facing regional, state-wide and national rural women's organisations by enabling more frequent, faster, less costly communication between dispersed committee members and other members, and by facilitating the networking of rural women's groups and organisations nationally and internationally. This application is already very evident in the way women are using welink.

Networking is a key factor among those contributing to small business success and is also an effective way of nurturing women's business enterprise (see, for example, Grace, (1997); Still and Chia (1995); and the report (1996) of the Tasmanian Women's Consultative Council). Conversely, social isolation is one of the greatest obstacles facing enterprising women in rural and remote Queensland. However, there is significant potential in computer mediated communication for enabling business women in rural and remote Queensland to develop supportive networks.

We can envisage that the components of a project which would aim to promote women's small business enterprise would include both training in information technology and the creation of online networks. A network of geographically dispersed women who were actual or potential small business proprietors could be formed, using a community development model which would include some face-to-face workshopping and basic training, supplemented by audio teleconferences and frequent online communication. The online networking could be used:

- to provide supportive friends and business contacts including mentors;
- to apprise them of the capabilities of the technology;
- to exchange information and get feedback about their creative business concepts and their experiences as business operators;
- to circulate a wide range information relative to business development such as necessary skills and how to acquire them, management principles and practices, marketing princi ples and expertise, legal matters and available services.

8. The Community Development Significance Of Women In Rural And Remote Situations As Communicators And Users Of Communication And Information Technologies

The examples which are given above of project and technology impacts and of the arenas in which rural women apply communication technologies indicate the community development potential of working with women in ways which enhance their access to communication and information technologies and their competence to use new technologies.

The particular significance of women as users of communication technologies for community development lies in:

- the diversity of their paid and unpaid activities, interests and responsibilities within rural and remote communities;
- changes in women's social roles, including their greater participation and leadership in paid employment, agricultural management, community development and public life;
- women's capacity to integrate social and economic issues; and
- the value of women's distinct communicative capacities and styles.

There is another more profound reason for women's full participation not only at the level of program implementation but also at the level of policy development. This is their potential contribution to the creation of innovation.

The occupations and interests of rural women tend to transcend conventional social science cat-

egories (Grace and Lennie, 1998; Shortall, 1994). This is reflected in their daily lives and attitudes which commonly exhibit a high degree of integration of economic and social activity and concerns. Women therefore tend to develop more holistic perspectives which integrate social and economic issues. Such perspectives are necessary for the management of change as rural communities move into the twenty-first century.

Speaking at the first National Rural Women's Forum held in Parliament House, Canberra in 1995, Dr Onko Kingma said:

... while great achievements have been made in building the material and productive wealth of our nation, there are signs that 'more of the same' may increasingly contradict important social, cultural and spiritual values. Many believe that it is only women who can turn this ship around and bring into play new concepts of social justice, community and empowerment (Kingma, 1995, p47).

9. Implications for the implementation of policy

There is much more to the use of communication and information technology for rural revitalisation than providing the technical infrastructure and assuming that the community will take advantage of it. In Engines of Empowerment, an informative and insightful analysis of the applications of information technology for the creation of healthy communities in the United States, Milio (1996, p22) concludes that:

The technological advances of the telematics revolution are stunning. The social 'soft technologies' - the arrangements that determine their use, by and for whom, when, and at what cost - are much less advanced by comparison.

Our research experience has shown that community participation in information technology applications requires processes of awareness raising and knowledge and skills creation to accompany the provision of access. Participation is driven by both need and awareness, and is dependent on knowledge and skills acquisition, as well as being affected by access issues such as costs and reliable technology infrastructure. These processes are circular rather than linear. Therefore, to create the right circumstances a variety of mutually reinforcing strategies need to be adopted concurrently. Further, as Milio indicates, there are important social justice issues to consider. To ensure equitable access the effect of factors such as gender, ethnicity, age and socio-economic circumstances must be addressed.

However, while relevant federal and state government policies and strategies emphasise the importance of consultation with rural communities in policy formation and the role of rural community initiatives in the stimulation of demand for advanced communication and information technology, insufficient advice has been offered about how this is to be done.

10. Conclusion

A vibrant online community has been created which facilitates communication among women in rural and remote parts of Australia and which links them with urban women and women in other countries. This has occurred because the online communication was embedded in a research project methodology characterised by community development processes, and because it addressed a real need: the social isolation of women in rural and remote situations. In turn, by enabling ongoing daily communication among participants separated by vast distances, the online communication has enabled community development processes to occur in a project which sought to encompass a geographic area the size of the whole state of Queensland.

Gender has been another factor in the success of this enterprise. This can be seen in the influence of women's communicative styles on the way the online conversations have developed, and in women's holistic perspectives on community development.

One of the most important outcomes of the online communication has been the empowerment of the participants. This empowerment derives from two factors: the confidence building and supportive nature of the communication between women which validates women's experiences and perspectives; and the powerful potential in the links forged between women in rural and remote communities, women working in academic contexts, and women who are strategically placed in government and industry.

The development of partnership between government, private industry and rural communities is an important aspect of effective rural community development.Wechat and welink have demonstrated the potential of online communication to facilitate such partnerships.

Gender is also a significant factor in relation to the capacity of communication and information technologies to stimulate community development. Through their diverse social and productive roles in

rural and remote communities, and by virtue of their communication skills, women are emerging as innovators and managers of change. It is therefore important that they have access to the new technologies. This access includes appropriate training provision.

By focusing on rural women's perspectives on community development issues, the research reported here has revealed the need for the integration of social and economic concerns in community development initiatives and for 'soft' technologies or social infrastructure to be developed in association with 'hard' infrastructure. The initiation of community development processes and the flexible delivery of appropriate training in information technology were identified as crucial elements of such social infrastructure.

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