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## **FROM FRONTIER LEARNING TO BLENDED COMMUNITY LEARNING: A PHENOMENOGRAPHY OF INFORMAL LEARNING IN RURAL COMMUNITY INFORMATICS**

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### **Introduction**

“The skills and knowledge required to take an active part in a society characterised by digital technology are embedded, learned, and practiced in people’s daily lives” (EDEN17, Conference Scope). However, disparities in relation to both the quality and intensity of use of digital information and communications technologies between those with higher levels of education and the less well educated (European Commission, 2008) in addition to reports that “privileged social groups enjoy a seamless integration of different types of learning that is denied to the disadvantaged” and marginalised in society (Colley, Hodgkinson & Malcolm, 2003; p.109) point to the existence of a learning divide – a term used to refer to inequalities in education related to the existence of a digital divide (European Commission, 2008; Sargant, 2000; White, 2011). Like Australia, therefore, many countries and communities are working on strategies to build the capacity of their citizens for active participation “in an information society that includes a concept of civil society as a target for skills development, engagement, decision-making, and societal cohesion” (Taylor, Schauder, & Johanson, 2005; p.4). Such strategies include the Learning Communities movement, in which towns, cities, and communities adopt a “learning-based approach to community development...with a framework in which lifelong learning is the organising principle and social goal” (Faris, 2005; p.31) and grass-roots community technology (Community Informatics) initiatives that seek to leverage digital Information Communications Technologies (ICTs) and the Internet in the interests of supporting the achievement of community development (Gurstein, 2001) and digital inclusion (Alamelu, 2013) goals. This paper draws on the author’s doctoral study into community volunteers’ informal learning experiences in the context of their involvement in a hybrid Learning Community-Community Informatics project called GraniteNet situated in the rural town of Stanthorpe in South-East Queensland, Australia, to generate new insights about the diverse forms of learning in which people engage as they use digital technologies to learn with and from each other in the context of Australian rural community and associational life in the digital era.

### **Conceptual Framework and Methodology**

The author concurs with Merriam et al. (2007; p.430) that “informal learning contexts, including social action and community-based learning, are where much of adult learning

takes place... [and that as adult educators and researchers] we need only see them as sites for learning” to be able to explore and better understand, and make visible, the dynamics and complexity of informal adult learning. Thus, as a third sector Community Informatics and Learning Community initiative aiming to harness the possibilities presented by digital technologies and the internet for enhanced social connectivity, community networking and participation in lifelong learning, GraniteNet affords a rich case study of the nexus between community-based ICTs and informal community learning in an Australian rural context. *Third sector* is a term used to refer to the not-for-profit, voluntary or community sector of social and economic activity to distinguish it from the other two sectors – private enterprise and industry on the one hand, and the government, or public sector, on the other (Schauder, Johanson & Taylor, 2006). The study experiments with phenomenography – a qualitative research approach traditionally used to investigate learning from the learner’s perspective in the context of formal education (Marton, 1988; Marton & Booth, 1997) – as a methodology to investigate informal learning in a community setting with a socio-technical focus. The term *socio-technical* refers to “the mutual constitution of social relations and technologies” whereby “technological artefacts are enmeshed in our activities and our connections to other people” (Tuominen, Savolainen, & Talja, 2005; pp.338-9). A “socio-technical environment” (Fischer, Rohde, & Wulf, 2009; p.77) is therefore an environment in which these relations and “dependencies” (Tuominen et al., 2005; p.339) are thematised, such as GraniteNet. Using a structured phenomenographic interview procedure, respondents’ conceptions (a conception is broadly defined as “the meaning people ascribe to what they experience” (Barnard et al., 1999; p.215)) and experiences of learning were probed in order to illuminate three different learning aspects adapted from Marton (1988; p.5):

1. The experience of the learning process;
2. Different ways of understanding the content learnt;
3. Describing conceptions of the world around us (in this case, GraniteNet as the learning context).

Together, these learning aspects constitute the study’s conceptual and analytical framework (see Figure 1).

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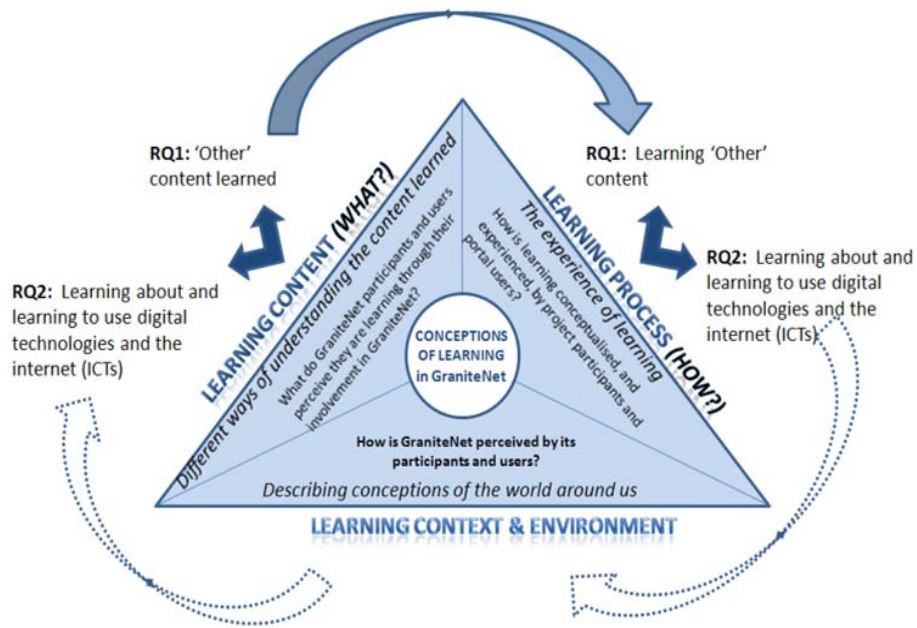


Figure 1. Holistic conceptual and analytical framework incorporating what/how framework (adapted from Marton, 1998; Marton & Booth, 1997).

Structured phenomenographic interviews were conducted with a purposive sample of 20 individuals drawn from among the members of GraniteNet’s diverse communities and networks of interest and practice. Consistent with sampling conventions in phenomenographic studies, the emphasis is on heterogeneity (rather than representativeness) of the sample (Akerlind, 2002). Figure 2 highlights the heterogeneity of the sample with respect to the diversity of respondents’ characteristics, including age, gender and cultural and linguistic background in addition to the nature and length of their involvement in GraniteNet.

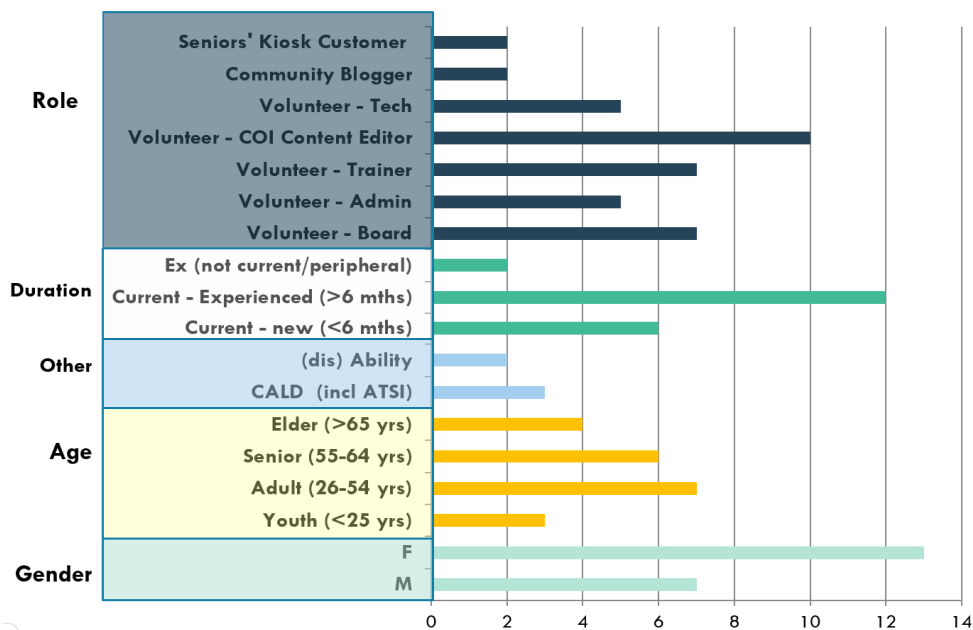


Figure 2. Respondent characteristics: Age, gender, cultural and linguistic background, disability or impairment, and nature and duration of involvement in GraniteNet

## Findings: Diverse conceptions and experiences of learning in GraniteNet

Phenomenographic analysis of interview transcripts and respondents' mind maps revealed seven distinct and logically related conceptions of learning in GraniteNet (see Table 2), reflecting the range of qualitatively different ways GraniteNet participants and portal users perceive and experience learning in the context of their volunteering activities in GraniteNet's face-to-face, virtual and hybrid learning and working environments including: governance and management of the community-based organisation; delivery of community technology services to the local community; and development and/or use of the community portal. These seven categories of description coalesce into four distinct groupings, each of which reflects a particular perspective of GraniteNet as the learning context and environment: a Seniors kiosk Customer Perspective, a Community of Practice Group; a Communities of Interest Cluster; and a Community Development Cluster. Consistent with phenomenographic research conventions, the meaning of the conception of learning in each category – in terms of how learning in GraniteNet is actually experienced by respondents adopting that particular conception – is reflected in each category's title.

Table 2: Categories of Description, Groupings and Perspectives

1. The <i>Frontier Learning</i> Conception	<i>(Seniors' Kiosk customer' perspective)</i>
2. The <i>(Community)Service Learning</i> Conception, with three subcategories: 2A <i>Altruistic</i> Conception 2B <i>Vocational</i> Conception 2C <i>Leadership</i> Conception	<i>Community of Practice Group</i>
3. The <i>Community Information Literacy/Social Inclusion</i> Conception	<i>Communities of Interest Cluster</i>
4. The <i>Blended Community Learning</i> Conception	
5. The <i>Digital Stewardship/Enterprise Learning</i> Conception	<i>Community Development Cluster</i>
6. The <i>Building Community Technology Capacity</i> Conception	
7. The <i>Learning Community</i> Conception.	

These seven categories constitute the study's phenomenographic outcome space, which represents a snapshot of the collective learning consciousness of GraniteNet at a particular point in time in its history. In phenomenography, no single category or conception represents the perspective of any one individual; rather, the categories describe the range of variation in ways of seeing and experiencing learning reflected in the data, any number and combination of which may reflect an individual's way of seeing and experiencing the phenomena in question at a particular point in time. Overall, the findings reveal the precise nature of learning in GraniteNet to be primarily dependant on:

- the nature of the particular community organisational volunteering role that the individual is performing at the time, and related to this, whether they are experiencing learning in GraniteNet from the perspective of a Customer, Provider, shared Customer/Provider or Developer perspective;

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- whether the individual's participation is situated in community volunteering activities occurring primarily in a face-to-face organisational setting, in a blended or hybrid face-to-face –virtual setting that “combines digital interactions with offline encounters” (Field, 2005; p.140), or indeed, primarily in a web-based environment;
- the individual's age; that is whether or not they are a younger community volunteer (Livingstone & Scholtz, 2010; Schugurensky et al., 2010) and “digital native” (Prensky, 2001) or alternatively a “third age learner” (Hazzlewood, 2003; p.1) and “digital immigrant” (Prensky, 2001; p.1).

### ***What are people learning? Significant and valuable learning across seven content domains***

Significant and valuable learning was discovered for respondents in a diverse range of content areas, or domains, as shown in Table 3. In addition to the categories traditionally used to describe learning content in formal education settings (such as knowledge, skills, and attitudes, for example), the descriptions of the learning content in Table 3 use “much more far-reaching categories” (Illeris, 2006; p.74) to reflect the breadth and depth of meanings, understandings, and dispositions inherent in respondents' own expressions of their learning.

These findings confirm those reported in the literature on learning in associational life and volunteer work that emphasise the variety of learning opportunities afforded by small-scale voluntary and community-based organisations “across the spectrum of adult learning” (Kerka, 1998; p.1) along with the breadth, depth, and significance of this learning for learners (Field, 2005; McGivney, 2006; Schugurensky, Duguid, & Mundel, 2010). The findings also show significant, valuable, and pervasive learning for GraniteNet volunteers at the intersections of particular content domains afforded, in part, by GraniteNet's organisational characteristics and culture as a Community Informatics and Learning Community initiative.

Table 3: Significant and valuable learning across seven domains of learning content

Content Domains	Specific Content	Conceptions of learning in GraniteNet
1. <b>Technology/Socio-technical</b>	<ul style="list-style-type: none"> <li>Digital literacies (basic and more advanced) including learning about and learning to use digital technologies for a range of purposes</li> <li>(Digital) Community Information Literacy</li> <li>GraniteNet Content Editor Skills Set</li> <li>Web design/development</li> <li>Programming skills</li> <li>Technology stewarding</li> <li>Community Informatics</li> </ul>	Cat 1: Frontier learning conception Cat 2:(Community) service learning conception Cat 3: Community Information Literacy/Social inclusion conception Cat 4: Blended community learning conception Cat 5: Digital stewardship/Enterprise learning conception Cat 6: Community technology capacity-building conception Cat 7: Learning community conception
2. <b>Learning</b>	<ul style="list-style-type: none"> <li>Understanding and facilitating adults' (digital literacy) learning</li> <li>Meta-learning (learning about one's own learning), including digital meta-learning</li> <li>Community Information Literacy (learning about one's own and other people's information needs)</li> <li>(Blended) Community learning</li> <li>Informal learning</li> <li>Action Learning/Action Research</li> <li>Lifelong learning</li> </ul>	Cat 2: (Community) service learning conception Cat 3: Community Information Literacy/Social Inclusion conception Cat 4: Blended community learning conception Cat 5: Digital stewardship/Enterprise learning conception Cat 6: Community technology capacity-building conception Cat 7: Learning community conception
3. <b>Community</b>	<ul style="list-style-type: none"> <li>Civic engagement/participatory democracy</li> <li>Local community knowledge (Community Information Literacy)</li> <li>Blended community learning</li> <li>Community Informatics</li> <li>Community Development</li> <li>Community Learning</li> </ul>	Cat 2:(Community) service learning Cat 3: Community Information Literacy/Social inclusion conception Cat 4: Blended community learning conception Cat 5: Digital stewardship/Enterprise learning conception Cat 6: Community technology capacity-building Cat 7: Learning community conception
4. <b>Special Interest</b>	<ul style="list-style-type: none"> <li>Knowledge and skills in the specialised domain of the Community of Interest (CoI) (includes digital technologies/computing and local community as special interest areas)</li> </ul>	Cat 3: Community Information Literacy/Social Inclusion conception Cat 4: Blended community learning Cat 5: Digital Stewardship/Enterprise learning
5. <b>Vocational</b>	<ul style="list-style-type: none"> <li>Vocational competencies and literacies (various occupational fields)</li> <li>Career development learning</li> <li>Enterprise learning</li> </ul>	Cat 2B: (Community) service learning conception – Vocational emphasis Category 5: Digital Stewardship/Enterprise Learning conception
6. <b>Personal/Relational</b>	<ul style="list-style-type: none"> <li>Self-efficacy, self-confidence, personal agency, personal development</li> <li>Generic and 'soft' skills (such as interpersonal and communication skills, social competence, social literacy, social awareness)</li> <li>Leadership</li> </ul>	Cat 1: Frontier Learning conception Cat 2: (Community) service learning conception
7. <b>Organisational/Associational</b>	<ul style="list-style-type: none"> <li>Organisational knowledge and know-how</li> <li>Participatory democracy</li> <li>Organisational governance, management, administration (community-based)</li> <li>Organisational development</li> </ul>	Cat 2: (Community) service learning conception

### ***How are people learning? Multiple learning processes under the umbrella of social participation***

The data show this learning to be first and foremost a function of people's social participation (Wenger, 2009) or interaction (Illeris, 2006) in the context of their community volunteering in GraniteNet's hybrid socio-technical learning and working environments. Against this backdrop of learning as social participation, the data reveal multiple learning processes reflected in conceptions and experiences of the process of learning across all categories in the study's outcome space. A learning process is understood here as an activity involving the learner's agency in acquiring, knowing, and making use of the learning content (Marton & Booth, 1997), although this may occur incidentally, "as a by-product of another activity" (Mezirow, 2000; p.5) that may or may not involve intentional learning. Learning may also be experienced as an individual or a collective phenomenon, but is always practical (practical learning is understood here first and foremost as learning "that is about action in a pragmatic manner in order to achieve certain goals and behaviours" involving "primary rather than secondary experience" and "using practical knowledge" developed through this experience in the context of "practical living in the everyday" (Jarvis, 2009; p.11)) and predominantly relational in nature. Relational learning is learning primarily with and through interactions with others and with things in the physical, socio-technical environment. As such, learning can be seen as "emerging in the relationships that develop among all people and everything in a particular situation" (Fenwick & Tennant, 2004; p.56) and can therefore be viewed through both a socio-cultural and a social constructivist lens (Booth, 2008). Learning processes include observation, imitation and benchmarking; practice (as repetition or overlearning); problem-solving, trial-and-error (Hager & Halliday, 2006), "trying out" (or deliberative learning) (Eraut, 2004); performing allocated or self-initiated tasks and fulfilling particular roles in the community of practice (Wenger, 1998); learning through communication, cooperation, participation and exchange in networks of interest and practice (Fischer, Rhode, & Wulf, 2009); learning through helping others to learn; and learning through collaborative problem-solving, experimentation and inquiry, self-directed research, deliberation, and reflection in and on action (Schön, 1991). Learning in GraniteNet also includes browsing for, sharing and evaluating information for learning (Informed Learning) (Bruce, 2008a), learning through the construction of artefacts (reification) and learning through information and knowledge exchange, networking, connection, construction, and bricolage (Wenger, White, & Smith, 2009). The term *bricolage* is used in the literature reviewed for this study to refer to improvisations in technology-rich environments as "tinkering through the combination of resources at hand" to solve real-world technology-related problems (Ali & Bailur, 2007; p.5)

### ***Learning at the intersection of the Community, Sociotechnical and Learning domains: A spectrum of community sociotechnical literacy practices***

As shown in Table 3, learning in the Technology/Socio-technical, Community and Learning domains is central to the experience of learning in GraniteNet and can be theorised as a spectrum of community socio-technical literacy practices, as illustrated in Figure 3. Critical to



this theorising is the recognition that in the digital age, the social contexts in which literacy practices are embedded are essentially socio-technical contexts; that is, “combinations of social relations and information communications technologies” (Resnick, 2002; p.649). Situated within this broader socio-technical context, GraniteNet is seen as a socio-technical learning environment, with learning experienced both as acquisition of generic skills and as a function of social participation (Wenger, 2009) in communities and networks of interest and practice (Fischer et al., 2009). At the foundation level of the spectrum is the practice field of interpersonal communications, as reflected in the Frontier Learning conception of learning in GraniteNet in Category 1. Here, socio-technical literacy practices focus on the practices of using technology to communicate with significant others in a network society and digital world, where “the mutual constitution of social relations and technologies takes place because technological artefacts are enmeshed in our activities and our connections to other people” (Tuominen, Savolainen, & Talja, 2005; p.330). Moving up from the relational to the associational level in Figure 3, the practice context is the GraniteNet technology hub Community of Practice, as reflected in the three emphases in the (Community) Service Learning conception (Category 2). Here, participation in a broader range of literacy practices includes learning about one’s own and others’ digital literacy needs and experiences in addition to learning about and learning to use digital technologies to contribute to the helping organisation in the interests of digital and social inclusion by supporting older adults’ digital literacy learning. Digital literacy learning at the associational level is therefore both embedded in and a function of social networks and cultural practices, with knowledge linked to human agency in terms of “people’s ability to act, participate, and make appropriate and informed decisions in socio-technical environments” (Fischer et al., 2009; p.77).

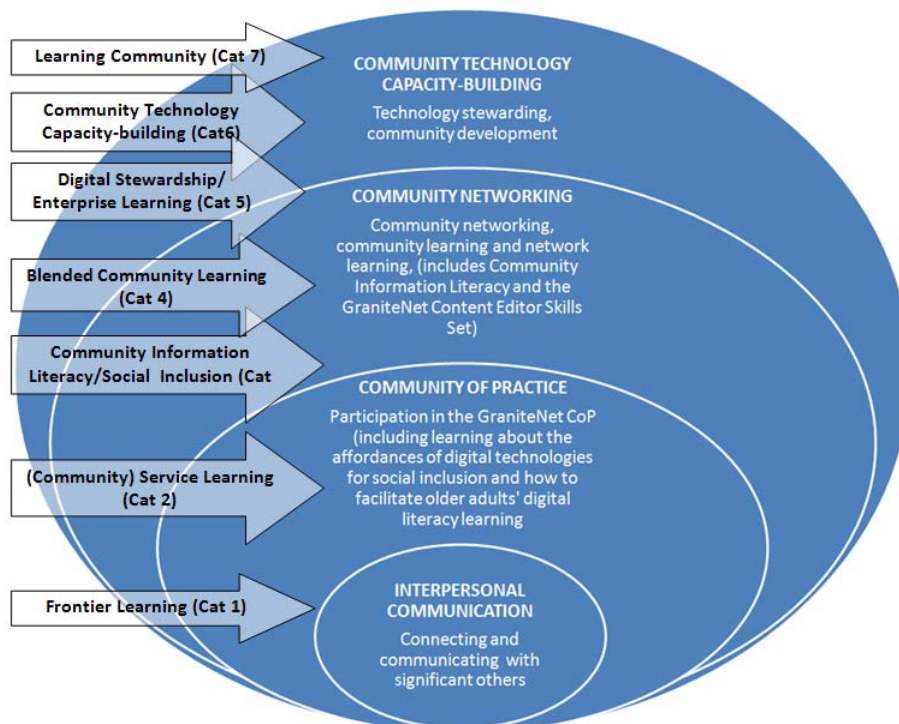


Figure 3. A spectrum of community socio-technical literacy practices



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Moving up to the Community Networking level in Figure 3, participation in the hybrid socio-technical environment of the GraniteNet community web portal as reflected in the two conceptions in the Communities of Interest cluster involves socio-technical literacies for community networking, information-sharing and (blended) community learning. Learning in the Blended Community learning conception as learning to be a community group Content Editor, learning in the specialised domain of the Community of Interest and learning in community with others. With respect to the conception of the learning content in the Blended Community Learning conception, a primary focus is on learning to be the Content Editor for one or more community groups, which involves creating, uploading and updating content on the group's webpage using the ModX Content Management System (CMS) and managing communications for the group/s on the GraniteNet community portal. In the Community Information Literacy/Social Inclusion conception in Category 3, for example, the GraniteNet community portal is seen as a lifeline for people who are marginalised to connect with their local community through access to, and sharing of, local community information. As community connections are made, links forged with local community services, community groups and associations, and digital Community Information Literacy skills developed for the purpose of sharing information via the community portal, opportunities are afforded for active participation in local community associational life in which physical and virtual interactions and activities become mutually reinforcing. Thus, this study's findings contribute to our understanding of the information practices of an "informed citizenry" (Bruce, 2008b; p.6) by illuminating the "information practices that enable people to use information effectively" (ibid.) and to "learn with and from each other" (Bruce, 2008a; p.vi) in the context of community and associational life. Further, as part of the spectrum of community socio-technical literacy practices, these findings provide support for theorising about learning that emphasises positive correlations among people's social networks and relationships, their participation in civil society and associational life, their use of information for learning in socio-technical environments and their engagement in informal, community and network learning (Bruce, 2008a; 2008b; de Laat & Schreurs, 2013; Field, 2005; Fischer, Rohde, & Wulf, 2009; Kavanaugh et al., 2009).

In the top layer of the diagram are literacy practices for community technology capacity-building (reflected in the three conceptions in the Community Development cluster), including technology stewarding (Category 5), community technology capacity-building (Category 6) and a community learning as a "learning-based approach to community development" (Faris, 2005; p.31) (Category 7). Learning content at the intersection of learning in the Community, Technology-Sociotechnical and Learning domains of learning in GraniteNet reflected in these three conceptions of learning from the "Developer Perspective" takes community information practices to the next level of community technology capacity-building, as a set of transformative and emancipatory socio-technical literacy practices. These practices require new kinds of literacies, including technology stewarding, as "a flexible understanding about how digital habitats can serve the learning of communities" (Wenger, 2009; p.184), along with an ability to envision new opportunities and possibilities for the

community web portal. It also requires a practical understanding of how technology can be used to support community development (Community Informatics), including learning about the affordances of digital technologies and the internet for supporting lifelong learning. Bruner's (2012) theory of informal learning as "generating and testing possibilities" or "cultivating the possible" (p.29) is particularly pertinent to theorising about learning and socio-technical literacy practices at the community development level.

## **Conclusion**

The above findings contribute to knowledge about the experience of informal community learning from the learner's perspective, and specifically, learning embedded in social participation in rural community volunteering and associational life in the digital era. It is further argued that the findings contribute to understandings about the nature of learning in geographic learning communities, generating new insights about "how knowledge is shaped and shared in communities" (Bishop & Bruce, 2005; p.6) and in particular, about the effects of socio-emotional and socio-technical factors in these interactions. As such, new insights are generated about the nature of informal adult learning that contribute to an "emerging view of learning" that enables us to "learn to think more creatively and productively about learning in all of its manifestations" (Hager, 2004; p.15). Related to this are new understandings and insights generated about informal learning as a phenomenon linked to adults' growing capacity for metacognition and reflexivity in the interests of understanding and furthering their own learning. Overall, these findings confirm that under the right conditions, digital technology can be used to "support sustainable environments where learners gain new perspectives on their learning, share and learn collectively, and master their own drive for learning" (Eden17, Conference Scope).

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