The nature and value of healthcare professional virtual communities: an exploration of the ICUConnect listserv

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Certificate of Original Authorship

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as part of the collaborative doctoral degree and/or fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Date: 2 March 2017

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Acknowledgments

‘It takes a village to raise.. a doctoral student’.

Over the eight years that it has taken me to arrive here, my village, including family and friends, professional colleagues and employers, research students at UTS, the Academy, ICUConnectors and supervisor/mentors, have provided the bedrock upon which I have built this thesis. But first a story

_in early 2004 my intensive care unit had a problem. In our enthusiasm to evaluate a patient’s Glasgow coma score (i.e. how awake they were) and elicit the best motor response we had caused significant injury to the skin covering their sternum (breast plate). The collective wisdom was that sternal rub was the best method because orbital pressure (i.e. pressure to the upper bony part of the eye socket) was out of the question and, well, her nail beds were not in good shape either._

_What were we to do?_

_I had recently joined a virtual community called ICUConnect. I posted an email and Wow the feedback was amazing! Within 24 hours I had 12 responses which included a complete lesson in how to do a Glasgow coma score and what it meant._

_And so I was caught in ICUConnect web, hook line and sinker_

My first thankyou goes to my ever-enduring husband Colin and sadly neglected children, Jack, David and Erin. Your willingness to put up with a wife and mother, often absent in mind if not body, enabled me to get through the hard work of these past eight years. A big thankyou to my parents for being my cheer squad even if they were
a little mystified by what I was researching, and for instilling in me a love for reading
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providing your love and support as well as the challenge of striving to be
accomplished. And to my friends who also stood in the cheering section for the past
eight years.

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underscore that you were ahead of your time and way ahead of the curve when it
comes to knowledge translation.

To my research family of students and faculty at UTS, thank you for welcoming me into
the fold and supporting my transition from novice to perhaps a competent research
practitioner. And thanks to the Academy for agreeing to publish my work, I am
humbled beyond belief that I have become a published researcher. I hope I can
continue to contribute to the growth of knowledge in my field and support the
development of knowledge in others.

To my online family, the ICUConnectors, there would be nothing without your
commitment to ensuring intensive care patients received the best possible care. I
salute your professionalism, grace and generosity. It has only been a couple of months
but I already miss my regular contact as Aunty ICUConnect. I am still there, look me up
some time. A special shout-out to everyone who became a part of my thesis, whether
by luck or by design, I cannot thankyou enough.
And now I come to my supervisory team of Professors Elliott, Hansen and Jackson.

Dear Maggie, your advice and knowledge will always be precious to me. Dear Debra, you were a late comer to the team however your advice on research methods and support in writing has been invaluable. And finally to Doug, I have few words to express how much your mentorship has meant to me. Somehow you have cajoled, massaged, and pushed me to places of discomfort that I did not realise I would experience along this doctoral journey. In 2004 when I joined ICCMU I had no idea that I would get to meet let along be mentored by one of the nurse researchers I admired from the Annual Scientific Meeting. And not only did I get to meet you, I was also introduced to many of the others and I became one. I have learnt so many things from you I cannot list them all. From you I have learnt that the Nursing Academy are a welcoming diverse bunch of great people who are not so different from clinicians, it is just their work that is different. From you I finally learnt to write and that I have always been able to write. From you I have learnt the many skills of being a researcher. And from you I hope I have learnt how to be a good mentor for another generation of nurse researchers so that the Academy continues to grow and patients get the best care regardless of geography.
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<td>CoP</td>
<td>Community of practice</td>
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<tr>
<td>VCoP</td>
<td>Virtual community of practice</td>
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<tr>
<td>VC</td>
<td>Virtual community</td>
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<tr>
<td>DoI</td>
<td>Diffusion of innovations</td>
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<tr>
<td>EBP</td>
<td>Evidence based practice</td>
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<tr>
<td>HCP</td>
<td>Healthcare professionals</td>
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<tr>
<td>KB</td>
<td>Knowledge broker</td>
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<tr>
<td>KM</td>
<td>Knowledge management</td>
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## Glossary

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Absorptive capacity</td>
<td>(in relation to an organisation) ability of an organisation to acquire, assimilate and exploit new knowledge for organisational advantage (Ehin 2004)</td>
</tr>
<tr>
<td>Actors 1</td>
<td>Are distinct individuals or collective units within a network (Hawe, Webster &amp; Shiell 2004)</td>
</tr>
<tr>
<td>Boundary spanners</td>
<td>Individuals who have links across social systems including organisations or organizational units (Rogers 2003)</td>
</tr>
<tr>
<td>Centralisation</td>
<td>(in relation to an organisation) degree to which power and control are concentrated in few individuals (Rogers 2003)</td>
</tr>
<tr>
<td>Child email</td>
<td>Replies to an email (Kerr 2003)</td>
</tr>
<tr>
<td>Complexity</td>
<td>(in relation to an organisation) degree to which members possess a high level of knowledge and skill (Rogers 2003)</td>
</tr>
<tr>
<td>Cosmopile</td>
<td>An individual who has extensive communication channels outside usual social system (Rogers 2003)</td>
</tr>
<tr>
<td>Cosmopolitan</td>
<td>Individual positioned across multiple external communities (Dahlander &amp; Frederiksen 2012)</td>
</tr>
<tr>
<td>Culture</td>
<td>‘customs, traditions, heritage, habits, ways, mores, values’ p 176 (The Australian Concise Oxford Dictionary 2004)</td>
</tr>
<tr>
<td>Digital immigrant</td>
<td>Person born before 1980 (Helsper &amp; Eynon 2010; Margaryan, Littlejohn &amp; Vojt 2011)</td>
</tr>
<tr>
<td>Digital native</td>
<td>Person born after 1980 (Helsper &amp; Eynon 2010; Margaryan, Littlejohn &amp; Vojt 2011)</td>
</tr>
<tr>
<td>Discussion thread</td>
<td>‘as a collection of individual messages related to each other by the reply function in email’ (Kerr 2003) p1</td>
</tr>
<tr>
<td>Emojis</td>
<td>A small digital image or icon used to express an idea or emotion (Dictionary 2017)</td>
</tr>
<tr>
<td>External Orientation</td>
<td>(in relation to an organisation) Where organisational leaders have professional networks external to their workplace (Aarons, Hurlburt &amp; Horwitz 2011; Purcell &amp; McGrath 2013)</td>
</tr>
<tr>
<td>Flaming / trolling</td>
<td>Hostile and insulting online behaviour deliberately designed to offend and /or generate argument. Individuals who habitually engage in this behaviour are referred to as trolls. (Burnett 2000)</td>
</tr>
<tr>
<td>Formalisation</td>
<td>(in relation to an organisation) degree to which an organisation emphasises rules and regulation (Rogers 2003)</td>
</tr>
<tr>
<td>Heterophily</td>
<td>The degree to which two or more individuals who interact are different in certain attributes (Rogers 2003)</td>
</tr>
<tr>
<td>Word</td>
<td>Definition</td>
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<td>--------------------</td>
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<tr>
<td>Homophily</td>
<td>The degree to which two or more individuals who interact are similar in certain attributes (Rogers 2003)</td>
</tr>
<tr>
<td>Innovation</td>
<td>Process whereby disconnected chunks of knowledge are integrated &amp; combined into novel products, concepts and practices to create value (Dahlander &amp; Frederiksen 2012) p989</td>
</tr>
<tr>
<td>Inter-connectedness</td>
<td>(in relation to an organisation) Degree to which separate units within an organisation are linked by social networks (Nieves &amp; Osorio 2012)</td>
</tr>
<tr>
<td>Knowledge broker</td>
<td>Are individuals who occupy positions across more than one knowledge network that affords them access to new knowledge (Burt 2009; Ziam, Landry &amp; Amara 2009)</td>
</tr>
<tr>
<td>Knowledge worker</td>
<td>An individual who transfers, discovers or creates knowledge (Paul 2006)</td>
</tr>
<tr>
<td>Lurker</td>
<td>Silent majority, one who never or rarely posts (Neelen &amp; Fetter 2010; Nonnecke, Andrews &amp; Preece 2006)</td>
</tr>
<tr>
<td>Maven</td>
<td>High level of broad based market knowledge (Walsh, Gwinner &amp; Swanson 2004)</td>
</tr>
<tr>
<td>Moderator</td>
<td>Individual/s who manage all or some aspects of a virtual community including authorization of new members, technology</td>
</tr>
<tr>
<td>Netiquette</td>
<td>A formal or informal list of rules governing acceptable online behavior (The Australian Concise Oxford Dictionary 2004)</td>
</tr>
<tr>
<td>Netiquette</td>
<td>accepted conventions of online behaviour for the purposes of promoting polite and civil interactions; Combination of ‘networks’ and ‘etiquette’ (Scheuermann &amp; Taylor 1997)</td>
</tr>
<tr>
<td>Opinion Leaders</td>
<td>Individuals who are able to influence others within their social system (Rogers 2003)</td>
</tr>
<tr>
<td>Organisational slack</td>
<td>(in relation to an organisation) degree to which uncommitted resources are available (Rogers 2003)</td>
</tr>
<tr>
<td>Parent email</td>
<td>The message to which a reply is sent (Kerr 2003) p1</td>
</tr>
<tr>
<td>Social network</td>
<td>‘Finite set or sets of actors and the relation or relations defined on them’ (Wasserman &amp; Faust 1994) p20</td>
</tr>
<tr>
<td>Thread thwacking</td>
<td>introduction of an unrelated subject or topic into a discussion thread</td>
</tr>
<tr>
<td>Watercooler</td>
<td>location in workplace where informal opportunistic conversations occurs (Siu 2015; Zhao &amp; Rosson 2009)</td>
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Abstract

Current organisational structures and cultures limit the social networks of healthcare professionals (HCPs) who facilitate translation of evidence into practice and consistency of patient care standards. ICUConnect, a listserv for intensive care clinicians, was explored as an exemplar to evaluate whether HCP virtual communities (VC) facilitate knowledge and clinical expertise exchange within a broader professional social network. A series of studies using multiple methods, underpinned by the Diffusion of Innovations and Community of Practice (CoP) theories, was conducted to address the thesis aim, focusing on ‘who’, ‘what’ and ‘why’ of VC membership and activity.

An integrative review (1990-2015) of findings from 72 studies demonstrated that HCPs primarily used VCs to exchange domain specific experiential knowledge with colleagues in their clinical specialty. Reliance on readily available data however meant that the perspective of the non-posting majority of users had not been explored.

A retrospective descriptive study of ‘who’ belonged to the social network revealed that 78% (n=1042/1340) of HCPs who joined remained members, with ‘ICUConnect’ evolving from a single state nurse-specific network to an Australian-wide multi-disciplinary and multi-organisational intensive care network.

A retrospective qualitative descriptive study explored the nature of ‘what’ knowledge was exchanged. Over ten years (2004-13) 133 members from 80 organisations posted 326 emails in the 40 discussion threads with nurses in clinical leadership roles contributing 55% of data. Knowledge exchanged was categorised as: experiential
experiential and explicit (20%); explicit (21%); know-how (20%); know-why 
(5%); no knowledge (6%). Thematic analysis revealed the central construct of virtual 
community work with six elements identified that worked synergistically to develop a 
collegial professional online environment, reflecting the activities of a virtual CoP.

A naturalistic qualitative study developed an understanding of ‘why’ HCPs belong to 
the VC. Twenty-three members participated in three asynchronous online focus groups 
(frequent-posters: 3; low-posters: 13; non-posters: 7) and four frequent posters were 
interviewed. The major emergent theme was that these participants joined and 
remained members because this broader community of intensive care clinicians 
provided them with enhanced access to credible best practice knowledge.

This evaluation of ICUConnect demonstrated that members belong to a virtual CoP 
with a diverse professional network to support their professional development and 
enable access to innovations in practice. It is recommended that healthcare 
organisations consider using virtual CoP to improve internal clinical practices. Further 
research is required to demonstrate if patient care and outcomes are improved by HCP 
participation in virtual CoPs.