

LEARNING ABOUT ICTS IN AN INFORMAL COOPERATIVE ENVIRONMENT

Keri Logan and Barbara Crump
Massey University
New Zealand

Abstract

The not-for-profit community (NFPC) have a need to understand about new technologies but very often do not have the finances to attend courses and conferences in order to gain knowledge about them. In this paper we look at the nature of knowledge as discussed by Polanyi (1995, 2004) and colleagues and use the SECI (socialization, externalization, combination and internalization) model to identify seven key factors for facilitating participants' knowledge when they attended an 'unconference' held in Wellington.

Introduction

The purpose of this paper is to examine how members of the NFPC learn about, and share their knowledge of, new technologies and the Internet through attendance and participation in the relatively new concept of the unconference. Members of the NFPC, many of whom are volunteers, typically do not have the same opportunities as do paid employees in a business for professional development and learning through attendance at conventional conferences and/or workshops with their high registration fees. A further distinction between NFPCs and paid employees of a commercial organisation is the advocacy and promotion of welfare within the different NFPCs. Unconferences are participant-driven gatherings centred on a common interest, theme or purpose. A distinguishing feature is that they provide a 'space' for learning and sharing and, unlike traditional conferences, they are either free or have very small registration fees therefore appealing to community organisations with little spare money.

We compare this concept of learning space provided by the unconference to the Japanese concept of *ba*, a physical, virtual or mental space or place and identify key factors that facilitate participants' creation, sharing and utilisation of knowledge which would not as likely occur from attendance in a traditional conference setting. Nonaka and his colleagues who believe that knowledge is not created in a vacuum but through a knowledge spiral process (Nonaka & Konno, 1998; Nonaka & Takeuchi, 1995; Nonaka & Takeuchi, 2004) developed the SECI (socialisation, externalization, combination, and internalisation) model to explain

the interacting spiral that enables tacit and explicit knowledge to expand and grow.

We begin by examining the nature of knowledge using Polanyi's concept (1966) of tacit and explicit knowledge. We then describe the SECI model and its relationship with the concept of *ba*. A brief background of unconferences is given and the SECI model is used as a framework to analyse and identify key factors that are important in facilitating the creation and expansion of explicit and tacit knowledge in an unconference space.

The Nature of Knowledge

The nature of knowledge has been the subject of much dialogue by philosophers since the days of the early Greeks (Jashapara, 2004). Plato, for example, explored whether knowledge was better than opinion and whether it was purely objective. The traditional definition of knowledge, described but not used by Plato, specifies that knowledge must have the following three conditions. First is the truth condition, whereby an individual's knowledge of something must be true. Second, not only must it be true but the individual must believe it to be true, and finally the justification condition emphasises that there must be evidence to prove the truthfulness of the knowledge (Nonaka & Takeuchi, 1995; White, 1976).

Moving to more recent times, the Oxford philosopher Gilbert Ryle wrote *The Concept of Mind* in an attempt to reject Cartesian dualism, whereby mind and body are considered separate. He asserted that the functions of the mind could not be separated from the body's actions and introduced the concepts of "knowing that" and "knowing how." He proposed that knowing that was associated with reasoning whereas knowing how was associated with doing (Ryle, 1949).

Polanyi comes from a similar behaviourist background as Ryle and in his book *The Tacit Dimension* (1966) he develops the notion of tacit and explicit knowledge. Each aspect of knowledge is always present with the other to some degree in a continuum with tacit knowledge at one extreme and explicit knowledge at the other. He begins his discussion with the idea that "we can know more than we can tell" (Polanyi, 1966, p. 4) and that all knowledge has both tacit and personal elements. He argues that tacit knowledge is personal, emotional and related to individual experiences which are often impossible to verbalise and communicate. Explicit knowledge on the other hand can be expressed verbally and therefore is transmittable. According to Polanyi, the explicit knowledge which can be articulated is a small portion of the total body of knowledge any one person holds. Using Ryle's (1949) concept of knowing that and knowing how, "tacit knowledge" is a type of knowing how whereas "explicit knowledge" relates to knowing that.

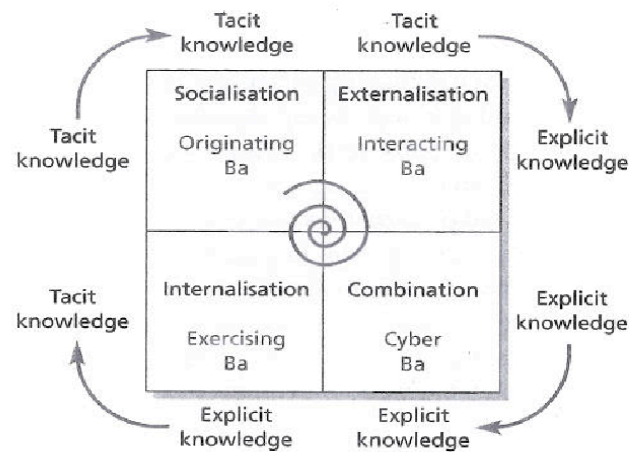
Practical, everyday experience underlies all personal knowledge. As Polanyi and Prosch state “Personal, tacit assessments and evaluations, we see, are required at every step in the acquisition of knowledge” (1975, p. 31). Polanyi placed a great emphasis on conversation and dialogue within a community as a means of understanding and creating tacit knowledge. No knowledge can operate without a shared language and culture (Polanyi, 1962). Tacit knowledge is embedded deeply in a mutual process of socialisation and cannot be obtained through a detached objectivity. It cannot be developed in a vacuum because it is part of the social process in which people are engaged. Because it is so closely associated with action in a specific context Polanyi talks about it indwelling in the mind (Polanyi & Prosch, 1975). It consists partly of that wealth of knowledge developed by experts over time as they build up their experience and skills. Very often this deep knowledge is difficult to articulate and is more easily transferred through imitation and observation.

Nonaka and his colleagues (Nonaka & Konno, 1998; Nonaka & Takeuchi, 1995; Nonaka & Takeuchi, 2004) perceive knowledge in a similar way. They liken knowledge to an iceberg, the tip of which is explicit knowledge and the part of the iceberg that lies under the surface being tacit knowledge. Explicit knowledge is “formal and systematic,” “can be expressed in words and numbers” (Nonaka & Takeuchi, 1995, p. 8), and is easily transmitted and shared with others. They view knowledge as being largely tacit, and therefore difficult to express and identify. It is highly personal, difficult to communicate to others and consists of intuition, hunches and insights.

Nonaka and his colleagues also take the view that tacit and explicit knowledge are always present together and cannot be separated out (Nonaka & Takeuchi, 1995). They have developed a dynamic model where human knowledge is created and expanded through social interchange which they refer to as “knowledge conversion” (p. 61).

The SECI Model

Their SECI model shows how knowledge conversion is unidirectional, that is, knowledge can be converted from tacit to tacit (socialization), tacit to explicit (externalization) explicit to explicit (combination) and from explicit to tacit (internalization) (see Figure 1). Interactions between these modes form a spiral of knowledge which begins with the socialization process. Knowledge is continually expanding and recreating as after the knowledge has been internalized the conversion begins again at a different level.

Figure 1: Knowledge Conversion and Characteristics of *Ba*

(Source: Nonaka & Konno, 1998)

The socialization mode of the SECI refers to the process by which tacit to tacit knowledge can be transferred, created or expanded between individuals through the sharing of experiences without using language. An example of this type of knowledge transfer, or building of mental models, is the apprenticeship whereby the apprentice works with the expert practitioner and learns through observing, copying and continually practicing. Tacit knowledge is transmitted through the undertaking of joint activities. Nonaka and Takeuchi (1995) emphasise the importance of the shared experiences in this type of knowledge creation pointing out that without the shared experience it is difficult to understand the thinking of another person. The externalization process is where knowledge is transferred from tacit to explicit by articulation in the form of metaphors or concepts. Metaphor provides a way of intuitively gaining an understanding through the use of symbols. They show how two things that are not similar in most ways are similar in one special way. Individuals attempt to share their knowledge through dialogue and reflection. Combination involves the combining and sharing of different types of explicit knowledge in the form of documents, meetings etc. It is the reconfiguring of explicit knowledge that leads to new understandings and knowledge. The fourth mode is the process of internalising explicit knowledge into new shared mental models. Once this happens these new mental models gained by the individual need to be socialised with other individuals in order to start a “new spiral of knowledge creation” (Nonaka & Takeuchi, 1995, p. 69). In order for this spiral of knowledge creation to occur, they believe that time and space must be created or made available. They refer to this space (or spaces, as there can many different types of interlinking and connected spaces) as *ba*.

The Concept of *Ba*

The Japanese concept of *ba* was originally proposed by Kitaro Nishida, a 19th century Japanese philosopher (Nonaka & Konno, 1998; Nonaka & Takeuchi, 1995). Nonaka and his colleagues adapted Nishida's original concept to use in their work on understanding knowledge creation and expansion. To most Westerners the concept of *ba* is new. Basically *ba* provides the time and space for the individual knowledge conversion (Nonaka & Toyama, 2004). It translates to a shared place, or space, where knowledge can be created. The space can be physical (as in a building), mental (shared experiences), or virtual (virtual worlds). In particular, *ba* needs to be a self-organising place "with its own intention, direction, interest, or mission" (Nonaka & Toyama, 2004, p. 112).

There are four types of *ba* (see Figure 1) that match the four modes of knowledge conversion. First there is originating *ba* that is associated with the socialization mode and involves the sharing of emotions, feelings and experiences between individuals and embedded in their beliefs and values. The values that support the sharing of tacit knowledge are care, trust, love, and commitment (Jashapara, 2004; Nonaka & Konno, 1998). The major characteristic of interacting *ba*, associated with externalization, is individuals sharing their mental models and reflecting on and analyzing their own understandings through dialogue. Cyber *ba* represents the combination mode and inherent in this is the use of technology such as on-line networks and groupware to collect, sort, edit and otherwise manage new explicit knowledge. Finally there is exercising *ba* whereby the internalisation mode is supported through experiencing, training and mentoring.

Unconferences and the Open Space Technology Model

The SECI model and the accompanying concept of *ba* were designed specifically to help understand knowledge creation within an organization. However, we believe that many of the concepts of knowledge and how it is gained can be applied to the NFPC who often operate within an organisational framework but do not necessarily have the support of an organisational structure, especially relating to their personal development needs such as keeping up to date with technology. Participation in an unconference is one way in which knowledge can be gained and facilitated by members of the NFPC. The term unconference was first used to advertise an annual conference in 1998 and became popularised in the early 2000's (Wikipedia, n.d.). Unconferences (sometimes referred to as open space conferences) are participant-driven gatherings centred on a common interest, theme or purpose. A distinguishing feature is that they provide a 'space' for learning and sharing. Unlike traditional conferences, they have no registration fees, top-down organisation or sponsor presentations, therefore appealing to community organisations with little spare money. However unconferences are only useful when seeking innovation and new knowledge. In a situation where

everything is clearly understood, then an unconference is unsuitable (Owen, 1993).

The original concept was developed by Harrison Owen in the 1980s although he referred to it as the Open Space Technology method (Owen, 1993). The most important features for Open Space Technology meetings are that there must be a “compelling theme, an interested, [voluntary] and committed group, time and place, and a facilitator” (Owen, n.d., p. 1). There is no pre-determined agenda, but the Open Space provides a supportive environment for individuals to share, discuss and solve issues of interest to the group. Owen emphasised that deep creative learning only occurs when there is real freedom to explore and experiment and a real responsibility to ensure rigor (Owen, n.d.). Preparation for the meeting or conference usually starts some months earlier when an invitation is sent out, or posted on the Internet to potentially interested participants. A wiki is likely to be available to give participants a sense of the topics that may have been suggested and float potential ideas for sessions. The wiki provides a sense of interaction and community amongst interested participants prior to the conference beginning. Typically an Open Space conference or meeting begins with participants gathering in a circle. An introduction is given by the facilitator who explains the “self-organizing” system. Then the agenda is developed from issues posted by individuals on a bulletin board. At this stage some of the people may become anxious as they realise they are responsible for creating the agenda, but as Owen (1993) points out this anxiety generates energy. Potential convenors are encouraged to collaborate on topics that are similar. The individual convenors are responsible for allocating the time and space of their proposed session, leading their discussion and taking notes. At the end of each session, the group convenor enters the results of their discussions into a computer system and a printed copy of all the notes is available to participants as they leave the conference. In more recent times social networking systems, such as wikis have been used to publish the short proceedings and provide ongoing resources and support. Owen (1993) makes the comment that it is amazing that a group of strangers are able to successfully create an agenda for a three-day conference after one hour of apparent chaos.

Using the one day e-Engage Your Community (EYC) unconference held in Wellington in August 2010, we show how this self-organizing system has many of the qualities of *ba* in terms of creating, transferring and expanding both tacit and explicit knowledge between participants. We apply the SECI framework and the characteristics of *ba* and identify seven key factors important to the success of an unconference and in facilitating participants’ tacit and explicit knowledge.

Method

Our qualitative research strategy incorporated naturalistic and participant observation (McKechnie, 2008). During the one-day conference we were

participants-as-observers. This time span did not provide the opportunity for prolonged engagement in the field, noted as desirable in a participant observation approach (McKechnie, 2008) and useful for verifying behaviour and interactions. However as there were two participants observing within the naturalistic setting of the unconference we were able, through informal conversations that provided firsthand accounts, to understand other participants' interactions and behaviours as they unfolded throughout the day. During the conference (usually in the catering breaks) we took field notes (in an unobtrusive manner) of our informal conversations and collected the documentation relating to the sessions. The benefit of participant observation is that the participants are approached in a social environment, rather than participants having to come to the researcher (Spradley, 1979). Prior to the conference we contributed in the wiki and, post conference, we examined the wiki for participant feedback (of which there was very little).

The results of our observations and informal notes were then analysed against the SECI framework and the four types of *ba* (originating, interacting, cyber, and organising). In this way we were able to understand the key factors of space that the unconference provided to aid participants' expansion and development of their tacit and explicit knowledge.

Providing the Time and Space

The 70 plus attendees, most of whom did not know each other, first checked into the registration desk and by 9 a.m. had assembled in a large, tiered lecture theatre. The facilitator quickly got to the point of the conference, explained how an unconference worked, and shaped the ambience by actively engaging, through questioning and gaining responses relating to the interests and expectations of the conference attendees. Thus when the attendees were invited to move from the lecture theatre to the open mezzanine area there was already an excited and engaged 'buzz.' People gathered around a number of whiteboards on which the day's sessions had been specified and were given 45 minutes to fill in the blank slots with large Post-it notes that indicated the title of their contribution and a brief summary of content for a particular session. At this unconference there were five sessions running at the same time. Some sessions had already been allocated prior to the actual conference day by the attendees via the wiki which had been activated some months before. Room 'keepers' were appointed whose duties were to ensure people were in the different venues and acted as timekeepers. When a session concluded people moved to their next session of choice.

The participants came from different backgrounds. The majority worked within the NFPC, organisation, many of whom were volunteers. Others (the minority) had their own businesses and a few worked for large information technology (IT) organisations. Despite the disparate backgrounds the 'glue' which formed participants into a collaborative, cooperative group, were the common beliefs, values and their interest in contributing to the NFPC. Thus there appeared to be an

altruism that created a bond, important in enabling the sharing and expansion of knowledge. For instance a woman who was active in the running of a suburban community group confided that she had a very basic knowledge of technology but was keen to learn. This contrasted with a young woman, employed in an IT company and who was keen to contribute and expand her knowledge about Moodle, a free, open-source software application for producing modular Internet-based courses (<http://moodle.org>). In this example each woman contributed her 'know how' which included their insights, embedded in their values and beliefs. The "indwelling" (Nonaka, 1994; Polanyi, 1966) knowledge possessed by the expert who had experience and in-depth knowledge of Moodle was articulated and shared within the socialised setting of the open space. This open sharing generated attributes of trust, commitment and care amongst participants, such that an individual who had less technical knowledge within a session felt comfortable asking questions in front of the group, of someone with the expertise. These attributes supported the sharing of tacit knowledge, noted in originating *ba*, in a respectful manner.

Dialogue is a major factor in interacting *ba*. With dialogue the mental models are brought to an explicit state thereby converting tacit to explicit knowledge (Jashapara, 2004). The convivial social space created at the unconference was conducive to conversation and dialogue amongst the participants. During the unconference sessions individuals shared their knowledge and took the time to reflect and analyse their own understandings. The shared language of ICT (noted for its jargon, acronyms and terms that are not always understood by those who have little interest in ICT) took place within a space where a high level of socialisation was evident. This suggests an environment conducive to expanding and creating tacit knowledge as Polanyi (1962) notes that tacit knowledge is embedded deeply in a mutual process of socialisation. On numerous occasions metaphors were used to explicate a concept. For example, one presenter used the metaphor of a hotel chain and the individual room pigeon holes in the reception/foyer area to explain how TCP/IP addresses operated. Using this concept, participants were able to understand the rather complex concept of public addresses and private and secure ports. The interactions that occurred within that specific time and space, particularly notable during the talking circle sessions, were typical of interacting *ba* (Nonaka & Toyama, 2004). The "shared space" used by the unconference attendees allowed for "emerging relationships" (Nonaka & Konno, 1998, p. 40) where they shared their experiences, ideas and ideals. In this way interacting *ba* enabled the expansion and sharing of knowledge.

The unconference utilised the communications technologies central to cyber *ba* and related to the combination mode. Prior to the unconference commencing a wiki was developed displaying a list of suggested topics that attendees would like to run and would like to see run. Anyone who was interested could add a topic to this list. The wiki was updated to include notes, links, references and other materials from the unconference. Included in this section were several blogs which held notes of the individual sessions. These blogs have links to other

resources and continue to be updated six months after the event. An example is the informal notes taken about Brenda's security session comparing Joomla with Drupal (both open source content management systems) thus providing a record of the session (see <http://coffee.geek.nz/engage-your-community-unconference.html-0>). There were also references to sites of interest to the NFPC population, YouTube resources, electronic instructions for setting up Twitter and Google Docs, and links to open source software sites. As one participant said "I am still in the processing phase because there was a lot of information today, a number of web sites to check out, things to try out for myself and wrapping my head around."

The wiki also contains what is referred to as a Wordle. During the closing session participants were asked to shout out words that summarized the unconference and these were used to co-create a Wordle to reflect what people had gained from the day. A Google application, Wordle takes the number of times specific words are used and generates a "word cloud" whereby the more frequently a word is used the greater its prominence in the picture. The "word cloud" is then saved electronically and belongs to the person who generated it. At the unconference these were words that should remind the participants of what knowledge they gained and continue to gain, such as "sharing, open, inspirational, open-source" etc. It is interesting to note that the words "fun" and "joomla" (a type of open-source software) held the greatest prominence a reflection of the socialization and learning that took place. There was, and continues to be, the capability to place a voice thread on the wiki site, although no one has chosen to interact in this way.

The conversion of explicit into tacit knowledge for many of the attendees occurred during the internalisation mode of the SECI where they gained experience by doing. At the unconference, not only do participants and session convenors have the opportunity to verbally share their ideas and knowledge, but very often there are face-to-face classes where the participants are able to imitate experts and ask them to show them how a particular task is undertaken. Documentation such as manuals and instruction books help internalisation. The EYC unconference did not have the time or equipment for physically learning from the experts or for practising on specific types of media. However, in some of the sessions instructions were handed out so participants could take them away and practise at a later date, enabling them to build up tacit knowledge from the explicit knowledge that had been given in terms of instructions. Demonstrations by experts were given and these generated considerable discussion. Thus the internalisation of knowledge can take place through ongoing practice after the unconference.

Key Factors

From analysis of the naturalistic and participant observations we identify the seven key factors of space, type of socialisation, competent facilitator, shared

experience, clear focus, time, and self-organising as necessary for a successful unconference. We suggest that the key factor of space facilitates the different aspects of the knowledge conversion process by un-conference participants via the four types of *ba* — originating, interacting, cyber and exercising. These are each associated with the SECI modes of socialisation, externalisation, combination and internalisation. The major part of the proceedings was held in an open mezzanine floor with groups spread around. Most of these groups were in circles. It was particularly noticeable that the session convenor was always part of the circle, and while they may have been leading the discussion they never dominated the conversation. There were also some computer rooms at the side of the mezzanine floor where more formal sessions could take place using power point slides. This type of discussion did not have the same ambience as the attendees sat in straight lines. Some of these convenors encouraged questions from attendees more successfully than others.

Another key factor is that of the type of socialisation taking place within the space. The relaxed and informal process of getting the conference under way, resulting quickly in a cogent plan for the day from the seemingly high potential for chaos, contributed to a socialised ambience that engendered a collaborative and cooperative atmosphere of all participants, whether they were ICT experts, practitioners or volunteers from the NFPC. The conversation and dialogue, earlier identified in this paper as important flowed freely within this space.

While some of this may have occurred naturally, it was engineered by the expert, friendly facilitator/leader who established an inclusive feeling from the beginning, in the introductory start to the day, by inviting opinions and comment and keeping explanations and instructions to a minimum. The facilitator created the overall framework and structure within which the unconference functioned and then allowed participants to solve the issues such as what to do and when by themselves. By providing the time, space and theme he then set aside all aspects of control and let the members manage the rest of their day until convening the closing session. Thus the day belonged to the attendees rather than to the convenors.

Within this socialisation process a further key factor emerged, that of shared experience. This factor was notable because of the enthusiastic, spontaneous engagement of the majority of participants that created a type of bonding experience. We suspect that without this type of socialisation the involvement of participants from disparate backgrounds would not have occurred so readily. Of particular interest was the respect displayed by all attendees to what was being said. It was evident that they wanted to learn and share their knowledge without promoting themselves. Experts did not claim to be experts but quietly discussed their area of interest, asking questions and sharing experiences. We believe that part of the willingness of the attendees to share their experiences was generated not only by the *ba* but from the fact that it was a community of people with similar values and ideals. One presenter referred to his business at the start and

conclusion of his talk and this was not viewed favourably by some participants as it was considered to be outside the boundaries of the NFPC culture. On the other hand another presenter, who was a contractor, never advertised his business but simply and passionately discussed his area of interest and expertise, explaining the problems he had, the way he had overcome them and encouraging active participation and discussion.

The necessity of having a clear focus for an unconference (Owen, 1993) was verified from the observations. The use of the wiki (cyber *ba*) during the pre-conference phase served both to generate participant involvement and identify sessions of interest to participants. Through this process together with a clear statement of topic and targeting of the interested participants, an explicit and unambiguous focus was achieved which is a key factor for un-conferences. It inspired attendees to participate because of their very real interest in the theme, and without such participation and interaction an unconference will not be successful. They were deeply involved in the theme and excited by the emerging knowledge.

Time is identified as another key factor. This relates to strict time keeping of the sessions so that the planned itinerary for the day was adhered to and the energy and engagement of attendees was sustained. Time was also important for reflection, a necessary process for converting knowledge from tacit to explicit. At times, such was the enthusiasm, participants had to be reminded that a particular session was over, but time was available at the longish tea/coffee and lunch breaks where some attendees continued discussions on topics (particularly from the sessions using circle spaces) that interested individuals.

The apparent self-organising nature of the conference is the final key factor. Once the facilitator had explained the ground rules, people immediately began organising the day's agenda. The topic, room and delivery choices were all left to them. It was noted by several people throughout the day that participants were effectively self-moderating the sessions. Energy levels were high throughout the day. What appeared to be a fairly chaotic start very quickly settled into a cohesive process. However the length of the sessions had been pre-determined and Owen (1993) suggests that time should be decided by the needs of the group and if it needs more than an hour then the groups should take more. He also notes that given the particular theme and the people in attendance then whatever happens is unique and nothing else could have occurred.

Conclusion

The naturalistic observation method proved appropriate in providing rich data within the particular context under study, the unconference, and closely reflected the actual actions and behaviours which other methods may not have done. For instance a survey would not fit the ethos or intent of the unconference with its

emphasis on informality, bottom-up organisation and contributions. Future research could combine the naturalistic observation method with follow-up interviews of participants to further reveal the creation, conversion and expansion of their knowledge.

Unconferences provide a shared space for members of the NPFC (many of whom have little opportunity or funds for attendance at traditional fee-paying conferences) to create, convert and expand their knowledge. Analysis of participants' behaviours and interactions was framed by the SECI model and *ba*, considered to be a shared space. The four types of *ba*: originating, interacting, cyber and organizing, contributed to identifying the seven key factors of the unconference which helped in understanding how the creation and expansion of tacit and explicit knowledge was facilitated. *Ba* therefore provides the setting for the ongoing process of the knowledge spiral. This is the strength of the unconference.

References

- Jashapara, A. (2004). *Knowledge management. An integrated approach*. London: Prentice Hall.
- McKechnie, L. (2008). Naturalistic observation. *The Sage Encyclopedia of Qualitative Research Methods*. Retrieved March 14, 2011, from http://www.sagereference.com/research/Article_n281.html
- Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, 5(1), 14–38.
- Nonaka, I., & Konno, N. (1998). The concept of “Ba”: Building a foundation for knowledge creation. *California Management Review*, 40(3), 40–54.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company. How Japanese companies create the dynamics of innovation*. New York: Oxford University Press.
- Nonaka, I., & Takeuchi, H. (2004). Theory of organizational knowledge creation. In H. Takeuchi & I. Nonaka (Eds.), *Hitotsubashi on knowledge management*. Singapore: John Wiley & Sons (Asia).
- Nonaka, I., & Toyama, R. (2004). Knowledge creation as a synthesizing process. In H. Takeuchi & I. Nonaka (Eds.), *Hitotsubashi on Knowledge Management*. Singapore: John Wiley & Sons (Asia).
- Owen, H. (1993). *Open space technology: A user's guide* (3rd ed.). San Francisco: Berrett-Koehler.
- Owen, H. (n.d.). *A brief user's guide to open space technology*. From http://www.openspaceworld.com/users_guide.htm
- Polanyi, M. (1962). *Personal knowledge: Towards a post-critical philosophy*. London: Routledge.
- Polanyi, M. (1966). *The tacit dimension*. New York: Doubleday.
- Polanyi, M., & Prosch, H. (1975). *Meaning*. London: The University of Chicago Press.
- Ryle, G. (1949). *The concept of mind*. London: Hutheson.

- Spradley, J. P. (1979). *Participant observation*. New York: Holt, Rinehart and Winston.
- White, N. (1976). *Plato on knowledge and reality*. Indianapolis, IN: Hackett Publishing.
- Wikipedia. (n.d.). *Unconference*. From <http://en.wikipedia.org/wiki/Unconference>