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## **Online knowledge sharing and media selection in a community organisation: An application of the Theory of Media Synchronicity**

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### **Abstract**

*One of the significant developments of knowledge management in a networked organisation is the application of information and communication technology (ICT) to support knowledge sharing among its members who are separated by distance. Even though much has been written on media selection for collaborative tasks in virtual teams, very little attention has been devoted to media selection and distributed online knowledge sharing environments. This paper reports part of a study that examines how ICT can support peer consulting, a knowledge sharing activity, among counsellors in a New Zealand not-for-profit human services organisation which has many small offices around the country. In particular, the paper describes Dennis and Valacich's Theory of Media Synchronicity and how it can be applied to media selection to support various peer consulting activities.*

### **Keywords**

Peer consulting, knowledge sharing, media selection, media synchronicity

### **INTRODUCTION**

Over recent decades organisations have begun to realise the importance of the tacit knowledge that employees hold, and employ knowledge management practices and develop knowledge management systems that attempt to tap into this knowledge and distribute it more effectively throughout the organisation (Alavi and Leidner 2001). In doing this increasing emphasis is being placed on encouraging peers to share knowledge with each other. However, this sharing of knowledge between peers becomes difficult when the employees are not co-located. Members of the same organisation who work independent of time and location can often be working on very similar problems, but because of the lack of day-to-day physical contact, do not have the opportunity to share knowledge and ideas around these common problems.

A peer consultation system provides a process that professionals can follow to allow them to effectively exchange knowledge and expertise with their peers. Previous research has shown how Information and Communication Technologies (ICT) can support work groups working independent of time and location (Watson-Manheim et al. 2002), particularly on tasks involving collaboration and communication (Dennis and Valacich 1999). However, little research has focused specifically on the steps involved in peer consultation and how ICT can support such a process. Thus, the research posed the question: "how can ICT support the peer consulting activities of a group of professional practitioners?" In response to this question, this paper reports part of a study that examines how ICT can support peer consulting, a knowledge sharing activity, among counsellors in a New Zealand community-based human services organisation which has many small offices around the country. In particular, the paper describes Dennis and Valacich's Theory of Media Synchronicity and how it can be applied to media selection to support various peer consulting activities.

### **THE NATURE OF PEER CONSULTING**

In the organisational situation where groups of practitioners face similar problems, approaches to professional development that incorporate knowledge sharing within groups of peers are especially appropriate. Peer consulting is one such approach where "two, three or more individuals agree to have a development relationship

with one another which may involve occasional or regular meetings, phone calls, exchanges of information and specific forms of support which go beyond networking” (Holbeche 1996, p. 25). Essentially, peer consulting is the sharing of people’s experience through action and reflection in the context of actual practice (Eisen 2001). Peer consulting relationships can be established across organisational functions or divisions, and even go beyond the organisation as a means of addressing both organisational needs for teamwork and greater collaboration and individual needs for support (Holbeche 1996).

However, many organisations still focus on external development activities and overlook the internal learning environment where coaching and mentoring may take place. The traditional concept of professional development was the hierarchical structure of the mentor-protégé relationship, within which the person being mentored had a development relationship with some one in the organisation who is more senior or more experienced in a particular area of interest to them (Holbeche 1996). This fosters a power imbalance as well as a one-way flow of information from the mentor to the novice. Mentoring can help employees to refine their organisational role, prepares them for advancement and provides a social sphere in which they receive role modelling counselling and friendship (Siegel 2000). Many organisations still adopt the mentor-protégé professional development form. In some situations it is appropriate, but for many professionals (even if at the early stages of their career) the mentor-protégé relationship often fails to tap into the expertise that they have already developed by senior as well as junior staff. (Eisen 2001). Therefore, peer mentoring, termed *peer consulting* for the purposes of this paper, offers professionals a powerful alternative for personal and professional growth (Holbeche 1996; Siegel 2000).

## BACKGROUND INFORMATION

The setting for the study is Counselling Incorporated (CI)<sup>1</sup> – a not-for-profit counselling organisation that specialises in supporting people who are building or maintaining effective relationships in marriages, families, workplaces and communities. CI is community-based and structured according to regions and there are 30 regional offices. In addition to these 30 offices in the main urban centres, there are a further 34 outposts in more remote locations.

There is approximately 215 staff employed at CI, with 10 regional managers assigned to the offices and outposts, who report to the CEO at the national office. In addition to the regional managers there are 14 senior counsellors spread among the offices and outposts, responsible for managing the delivery of counselling services in their respective areas. The senior counsellor role involves supervision and support of counsellors, much of which is done remotely, as not every office (or outpost) has its own senior counsellor. In addition to their managerial role, each senior counsellor is also a practicing counsellor within their area. Consultation frequently takes place in the supervisory relationship between senior counsellors and counsellors. Peer consultation is also commonplace between the CEO, regional managers, and senior counsellors. However, peer consultation is not so common between offices and regions, with counsellors at the lower level rarely going outside their particular office to seek advice from peers. In order to understand how peer consultation takes place in CI, we undertook a two-stage study to map the peer consulting process.

### Mapping of the peer consulting process

Two rounds of data gathering and analysis took place for this study. Five participants were interviewed during the first round (Keats 2003) and five participants for the second round (Abbott 2004). In both rounds of interviews, participants were asked to recall actual occurrences of both *seeking* advice or help from a peer and *giving* advice or help to a peer (a peer can be either another senior counsellor or counsellor). Information about their perception of the nature of their role was also collected so as to gain an understanding of the organisational situation faced by each participant. All interviews were recorded and transcribed soon after the interview. Each interview transcript was sent (via email attachment) to the relevant participant for verification.

Based on the data collected, an initial peer consulting process map was developed from the first round and significantly refined and extended during the second round. Figure 1 shows the peer consulting process mapped from the latest effort (Abbott 2004) and depicts the process followed by a counselor (consultee) who is seeking advice from a peer (consultor). Table 1 describes the steps in more detail.

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<sup>1</sup> Due to privacy requirements, we have assigned a fictitious name to the organisation we have studied.

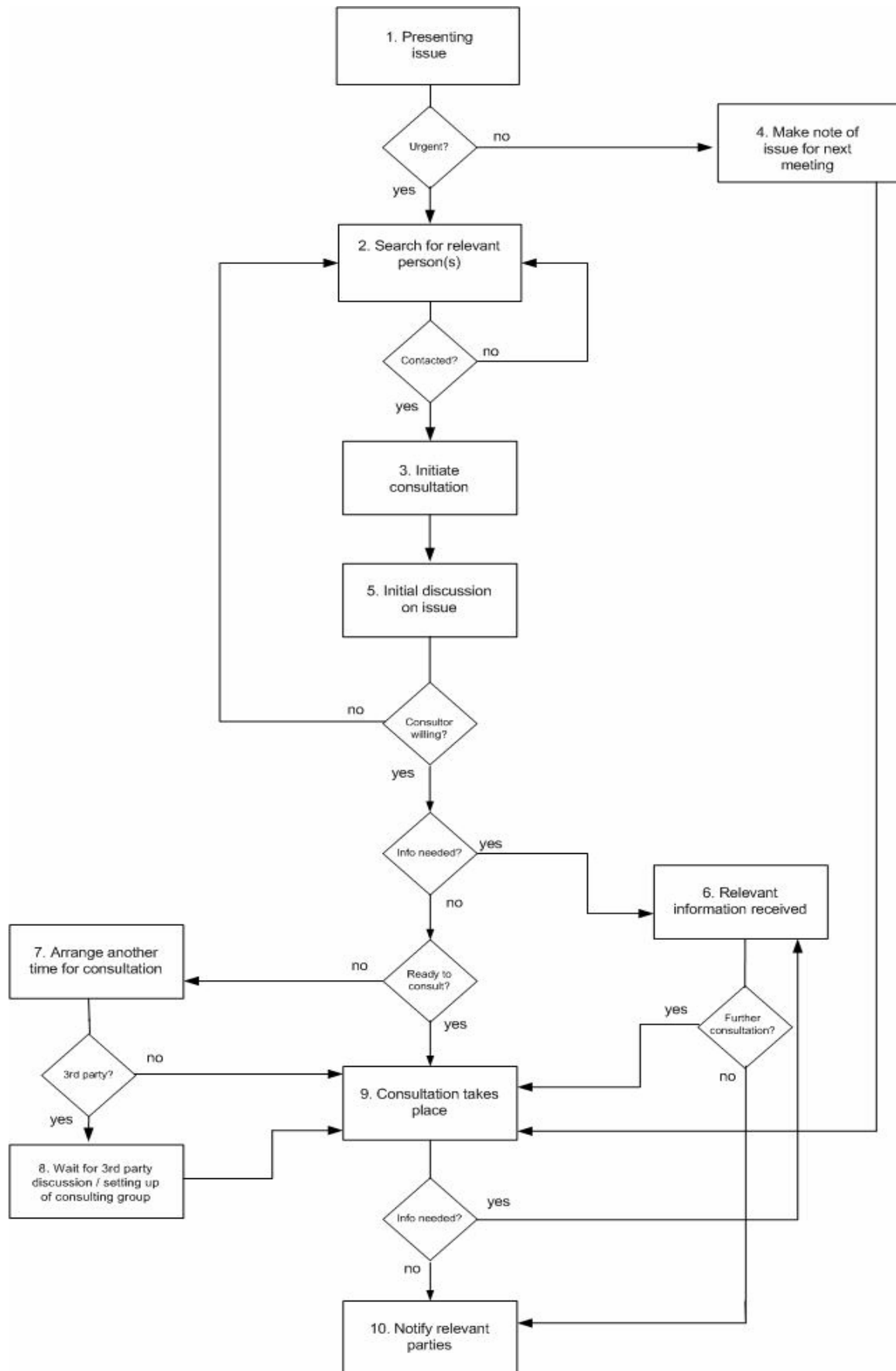


Figure 1: The Peer Consulting Process – A Consultee's Perspective

Step	Description
1: Presenting issue	The consultee is presented with an issue that they need advice on. After considering the issue, they identify the need for consultation with peers
2: Search for relevant person(s)	If consultee immediately knows whom to contact, this step may involve searching for their correct contact details, work hours/days etc. If they do not know who they need to contact, this step involves either asking around their office, ringing around peers at other offices, or sending a group/individual email.
3: Initiate consultation	When the relevant person(s) are identified the consultee attempts to make contact with the relevant consultor, and the consultation is initiated.
4. Make note of the issue for the next meeting	The consultee makes note of a non-urgent issue, to then be raised at the next relevant scheduled meeting.
5: Initial discussion on issue	An initial discussion takes place to establish the nature of the issue, whether the consultor is the best person to deal with the issue, and whether the issue is worthy of further consultation.
6: Relevant information received	When a consultation requires the consultee to review additional information, it is received here.
7: Arrange another time for consultation	If the consultation cannot take place immediately, another time is scheduled.
8: Wait for 3 <sup>rd</sup> party discussion / setting up of consultation group	The consultee will wait while the consultor has a discussion with a 3 <sup>rd</sup> party to the consultation, or organises a consulting group (these events are described in the consultor process elaboration below).
9: Consultation takes place	An in-depth discussion on the presenting issue takes place between the involved parties to improve the consultee's understanding of the issue faced.
10: Notify relevant parties	Other parties are notified that the issue arose, that understanding/resolution was reached and/or that information was sent to the consultee.

Table 1: An Elaboration of Figure 1

Figure 1 and Table 1 provide an overview of the nature of the peer consulting process within CI from the consultee's perspectives. A similar peer consulting process map from the consultor's perspective was also developed. Due to word limitation, it is not reported in this paper. Much consultation takes place in an ad hoc, informal way between counsellors within the same office. The average frequency and duration of a consultation vary greatly depending on a number of factors including availability of consultee and consultor, urgency of the issue, and what else is going on within Counselling Incorporated.

The mapping of the peer consulting process was a necessary first step in addressing the previously stated research question. Following this, the researchers addressed the potential of the supporting role of ICT. The Theory of Media Synchronicity (Dennis and Valacich 1999) was selected as the guiding framework to suggest the ways that different media could support the peer consulting process. This theory was selected as it extends other communications and media theories by combining actual communications tasks inherent to the peer consulting process with individual media characteristics and richness. Recently, this theory has been successfully applied in studies to identify media functionalities and map these to communications tasks and processes (see for example Maruping and Agarwal 2004, Carlson and George 2004). The following section outlines this Theory and its application in this research.

### Media selection and online knowledge sharing

In this section, we will provide a brief description of the Theory of Media Synchronicity (Dennis and Valacich 1999) and how it may be applied when considering media selection for a proposed online peer consulting system for CI.

### Theory of Media Synchronicity

It has been proposed that different communication media have different characteristics in terms of their richness (Dennis and Valacich 1999). Refining this idea Dennis and Valacich (1999) propose the theory of media synchronicity, which suggests that task objectives are composed of two primary processes – *conveyance* and *convergence*. Conveyance is concerned with communicating information, while convergence involves reaching a consensus. They propose media have a set of capabilities that play a dominant role in addressing these communication processes, which are *immediacy of feedback*, *symbol variety*, *parallelism*, *rehearsability*, and *reprocessability*.

*Immediacy of feedback* is the extent to which a medium enables users to give rapid feedback on the communication they receive. *Symbol variety* is the number of ways in which the information can be communicated e.g. verbal vs. non-verbal cues. *Parallelism* refers to the number of simultaneous conversations that can exist at one time. *Rehearsability* is the extent to which the media enables the sender to rehearse the message before sending. Finally, *Reprocessability* is the extent to which a message can be re-examined or processed again within the context of the communication event. Table 2 uses these five characteristics and presents the capabilities of several common media.

	<b>Feedback</b>	<b>Symbol variety</b>	<b>Parallelism</b>	<b>Rehearsability</b>	<b>Reprocessability</b>
<b>Face-to-face</b>	High	Low-high	Low	Low	Low
<b>Video conference</b>	Medium-high	Low-high	Low	Low	Low
<b>Telephone</b>	Medium	Low	Low	Low	Low
<b>Written mail</b>	Low	Low-medium	High	High	High
<b>Voice mail</b>	Low	Low	Low	Low-medium	High
<b>Electronic mail</b>	Low-medium	Low-high	Medium	High	High
<b>Online chat</b>	Medium	Low-medium	Medium	Low-medium	Low-medium
<b>Asynchronous groupware</b>	Low	Low-high	High	High	High
<b>Synchronous groupware</b>	Low-medium	Low-high	High	Medium-high	High

Table 2: Relative Trait Salience of Selected Media (Dennis and Valacich 1999, p. 3)

These media characteristics are important in understanding the effect of media use on the ability to communicate and process information. Within Table 2 some media have a range of capabilities, for example electronic mail has a feedback capability of 'low-medium'. This is because the capability can differ depending on how the email system is structured, or set up, for a particular group undertaking a particular task. Media can be seen to possess different capabilities, each of which is more or less effective in a given situation. It is apparent then, that no one medium has the highest values on all dimensions, and therefore none is the 'richest' or the 'best'. The 'richest' medium is that which best provides the set of capabilities needed by the situation: the individuals, task and social context within which they interact. As stated earlier, Dennis and Valacich (1999) argued that the key to effective media use is the matching of media capabilities to the primary communication processes required to perform a particular task. The key to effective use of media is to match media capabilities to the primary communication process, *conveyance* or *convergence*, required to perform the task.

### Media Synchronicity

Synchronous activity is defined as activity that occurs at the same rate and exactly together. Media synchronicity refers to the extent to which individuals work together on the same activity at the same time, or have a shared focus.

Looking at the ability of the media capabilities to support the communications processes of conveyance and convergence, Dennis and Valacich (1999) drew several conclusions:

- Generally, with conveyance, low media synchronicity is preferred, and with convergence high media synchronicity is preferred
- For group communication processes in which convergence is the goal, the use of media providing high synchronicity (high feedback and low parallelism) will lead to better performance
- For group communication processes in which conveyance is the goal, the use of media providing low media synchronicity (low feedback and high parallelism) will lead to better performance

- A medium symbol variety will only affect performance when a needed symbol set is unavailable
- Use of media that provided higher rehearsability will lead to better performance
- For group communication processes in which conveyance is the goal, use of media providing higher reprocessability will lead to better performance

From this listing it is apparent that groups undertaking synchronous tasks (and to a lesser extent asynchronous tasks) need to choose between a set of media that the group uses at different times when undertaking tasks, dependent on the prominent communications process. Dennis and Valacich (1999) found that most tasks require conveyance *and* convergence, and the media that is best matched to one process is often not ideal for the other. Therefore it was concluded that *media switching* might be most appropriate for groups that are performing synchronous tasks.

#### Complexity, equivocality and media synchronicity

Counsellors in CI often face situations that are highly complex and equivocal. For example, a case may involve members of a family that are located at two different geographical locations. In such a situation, two (or more) counsellors from separate CI regions will work together to offer counselling services to the family. At times, problems or issues are encountered by the counselling staff (such as inadequate reports, disagreement over outcomes etc) that requires the attention of a more senior counsellor. The senior counsellor may need to ascertain the problem/issue faced by the counsellor in their region and then consult with the relevant senior counsellors from the other region(s) in order to resolve the situation at hand. This is a complex situation as it (a) involves multiple persons in different locations, (b) demands a degree of urgency in resolving the situation or at least improving each parties understanding of the situation, and (c) includes sensitive information of people involved in the situation. The example also illustrates the high equivocality of a situation when each counsellor involved will have access to different resources, including information and experiences. This results in the possibility of different interpretations of the presenting problem/ issue and associated information.

When complexity and equivocality are high for a given situation, Dennis and Valacich (1999) advocate high media synchronicity. High media synchronicity is key to the communications process of *convergence*, as discussed in an earlier section. Convergence is therefore the most important communications process for CI and this discussion of media selection. However, conveyance cannot be overlooked here. When seeking advice from a peer, a senior counsellor is usually without essential knowledge or information that they require. Also, at different times within the consultation process senior counsellors and/or counsellors will not have the knowledge or information that they require to continue a consultation or come to a resolution. Therefore, some *conveyancing* will be required in order to ensure that the parties to the consultation have the information needed to make an appropriate choice, or improve understanding of the issue at hand. Key to conveyancing is a communications environment that supports low immediacy of feedback and high parallelism, which provides low media synchronicity.

Assuming that the parties to a consultation have obtained the needed information through conveyance, the primary communications task of convergence, whereby parties attempt to understand the various interpretations of information, will be undertaken. Resolving or attempting to understand a problem situation as those listed above requires peers to agree on a shared meaning of the presenting problem in the current situation, from which appropriate actions can then be based. This needs to occur in a communication environment that supports high immediacy of feedback and low parallelism, necessary for high media synchronicity that is central to the convergence process.

#### Media selection

As stated above, Dennis and Valacich (1999) found that most tasks require conveyance and convergence, and the media that is best matched to one process is often not ideal for the other. As evident from the above discussion, the consultation process in which senior counsellors are involved does indeed require conveyance *and* convergence, although convergence is more prominent. Here, some media choices appropriate firstly to conveyance and then convergence within the peer consulting process are specified.

Conveyance requires low media synchronicity, specifically low feedback and high parallelism in media characteristics. Also, high reprocessability is preferable (see Table 2). Appropriate media choices include:

- Written mail
- Electronic mail
- Threaded discussion forums (configuration of media determines usefulness here)
- Online chat (configuration of media determines usefulness here)

Specifically, for senior counsellors within CI undertaking peer consulting a simple website (Internet/intranet) with email capabilities would suffice. Senior counsellors could identify the person(s) with the required expertise

via an online staff directory, contact them via email to assess their willingness and availability and then later in the consultation exchange information or documentation across the Internet/intranet or via email attachment. Threaded discussion forums and online chat facilities are listed here as they could be used for requesting needed information, although it is dependent on their configuration as to whether these technologies could be used for the actual exchange of information.

Convergence requires high media synchronicity; specifically high feedback and low parallelism in media characteristics (see Table 2). Appropriate media choices include:

- Face to face
- Telephone
- Video conference
- Threaded discussion forums (configuration of media determines usefulness here)
- Online chat (configuration of media determines usefulness here)

Although face to face and telephone interactions are somewhat rudimentary, traditional communication channels they are important mediums for peer consulting within CI and it is not suggested that they are abandoned. In addition to these, increased use of video conferencing and the introduction of text and/or voice discussion boards and online chat facilities would begin to overcome the problems of geographical isolation, part-time work hours and the need for travel that senior counsellors face that disrupt the peer consultation process. Video conferencing and online chat fulfil the high feedback and low parallelism requirement of high media synchronicity. These technologies allow parties to a consultation to give rapid feedback on a communication that they receive, and support the 'bi-directional communication' discussed by Dennis and Valacich (1999). With video conferencing and online chat only one conversation can exist at any one time, resulting in low parallelism.

Although these technologies have the characteristic of low parallelism, they do support the one-to-one, one-to-many, and many-to-many requirement of peer consultation within CI. Threaded discussion forums are listed here as a complementary medium to video conferencing and online chat. After a synchronous consultation session, discussions that improve understandings of a particular problem situation, issue, or information could be continued via threaded discussions, thus leading to increased convergence.

In summary, this section describes how Dennis and Valacich's theory of media synchronicity could be used to assist media selection for a proposed online knowledge sharing system.

## CONCLUSION

There has been little research linking the specific steps involved in peer consultation and ICT support. To begin to address this gap, this paper has reported part of a study that examines how ICT can support the process of peer consulting in a distributed environment. The peer consulting process undertaken within CI limited has been mapped out and areas of potential ICT support identified. By beginning to merge these two research streams, this study explores how a peer consultation system can provide the required ICT support and structure to a process that professionals can follow to allow them to effectively exchange knowledge and expertise with peers, regardless of distance.

To guide the selection of particular types of media that could support the peer consulting process, Dennis and Valacich's Theory of Media Synchronicity was chosen. The theory states that media possess different capabilities, each of which is more or less effective for different communications tasks within in a given situation. Therefore, they assert that the best or 'richest' medium is that which most closely provides the *set* of capabilities that a particular situation necessitates.

As discussed above, most communications that take place as part of the peer consulting process within CI will require conveyance *and* convergence, or low *and* high media synchronicity. Therefore, by applying the Theory of Media Synchronicity to a typical peer consulting situation within CI, it is apparent that there is indeed a set of media that can support the various peer consulting activities identified. Therefore, as Dennis and Valacich argued, *switching* between media is likely to be most appropriate.

The next stage of this study will explore in detail *how* media switching occurs within the complex and equivocal communications that take place within actual online peer consulting sessions at CI. The types of media suggested by applying the Theory of Media Synchronicity will be introduced and used by senior counsellors and counsellors with CI. Their experiences of ICT supported peer consulting will be gathered and analysed in order to assess whether Dennis and Valacich's theory of Media Synchronicity is supported.



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