Discourse Analysis and Role Adoption in a Community of Practice

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Abstract

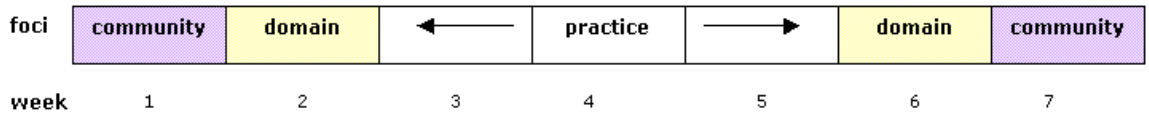
This paper describes a discourse analysis project which studied learning through engagement in a seven-week online workshop. The workshop was an immersive community of practice-based experience, cultivating learning in a largely asynchronous environment. The paper identifies a range of theoretical frameworks currently available for online discourse analysis, and documents the processes involved in using the selected framework to examine higher phase learning in the online workshop. The paper also describes the contemporaneous development of a framework which analyses the roles adopted by participants in their discourse. The paper reports on the relationships of the levels of social interaction and role adoption to self reported aspects of meaningful learning.

Introduction and Overview of the Foundations of Communities of Practice Workshop

The Foundations of Communities of Practice workshop [http://www.cpsquare.org/edu/foundations/] is an offering of CPSquare, [http://www.cpsquare.org/] the Community of Practice (CoP) for practitioners working in the field in Community of Practice development. The workshop and the team engaged in this current research are a part of the research story that needs to be told to contextualize this research.

The workshop represents seven weeks of intense activity for: 20-40 participants, 3 facilitators, 4 mentors (past participants), 3 guest speakers (leaders in the field), and 3-4 'network analyzers' (the researchers writing this paper). The workshop is mediated through a Web interface developed in *WebCrossing*. The intake of the workshop is global and in recognition of the time zone issues, the mainstay of the community is asynchronous discussion with a lesser use of instant messaging, teleconference and chat. While participants at different stages and tasks in the seven week program will use other technologies (teleconference, email, messengers), most discussion is carried out within the Web interface. It is an immersive experience where participants are encouraged to learn about communities of practice by engaging with others in tasks seeing themselves as part of a community of practice.

The workshop is developed around the Wenger et al (2002) Structural model of communities of practice. This model is made up of the *Community*, the social fabric; the *Domain,* the common ground or topic: and the *Practice*; the repertoire of the community. The activity of the workshop flows to and from the community aspect through the domain and practice.



Participants spend the first community week in socialization activities and familiarizing themselves with the interface and software. They then move into the Domain phase which involves a week of wide ranging discussions

joined by Etienne Wenger, the thought leader in the workshop. The practical period lasts three weeks where participants share stories, pose problem cases to solve together and work in project teams. They then return to more conceptual discussion of what they have learned in the domain and end the workshop in a week of final social activity and planning of ways to stay together. The workshop balances the theoretical, practical and social aspects of learning about community while immersing the participants in a community of practice-based environment.

The workshop offers a wide variety of working groups, communication tools and roles for the participants to experience as part of the community of practice emulation. Over the 7 weeks participants engage in: whole group discussions (20-30 members), limited number domain table discussions (10 members), households (friendship groups of 4), and project teams (3-8 participants). Communication is carried out over a choice of tools ranging from: web-based asynchronous discussions, instant messaging, chat, teleconferencing, email, other tools adopted by groups, and sometimes face-to-face (if participants share a locale).

Roles in the workshop are designated for the leaders, mentors and facilitators who work and or volunteer in the workshop. Participants are also able to adopt roles through the various activities and dialogues of the workshop. Participants can observe and work in the various community roles: legitimate peripheral participant, active participant, facilitator, mentor, and thought leader.

There is anecdotal evidence that the workshop does develop strong ties between people even in the short intensive time they spend together. The two most active areas of CoP discussion in the workshop are the *Domain Inquiry*, sets of round table discussions with the thought leader, and the *Practice Lab* where small teams of participants work together to develop a product to address an issue of concern to CoP developers. These were the areas of most readily accessible online discussions and areas that participants in past workshops had in feedback reported the highest levels of learning.

Discourse analysis, learning and participant roles in co-constructing knowledge online

The team of people who carried out the research described in this paper is representative of both the distributed and collaborative nature of community and the workshop itself. The team members were originally brought together in the Communities of Practice workshop in 2002. As online facilitators themselves, the team members were keen to explore discourse analysis and how it can be effectively facilitated for most meaningful learning. An ad-hoc research group developed and a meeting place established in Groove [http://www.groove.net] (peer-to-peer client application). The team members are academics, researchers, facilitation consultants and academic developers in educational institutions and private consultancy.

This paper describes the research work carried out by the discourse analysis team in the May 2004 workshop. The research reported in this paper represents the first explorations of the group's agenda; to explore online conversations and their relationship to individual and group learning.

Research questions ask the following about discourse in this community-based online learning environment:

1. In what ways do conversations exhibiting higher phase interaction relate to self-reported meaningful learning?

2. How are the areas of perceived greatest learning related to opportunity for role adoption by participants in online community of practice-based environments?

Research methods

In investigating these research questions, the methodology took an exploratory approach largely based on online social discourse analysis. The research progressed through six key steps.

Step One: Selection and development of discourse analysis instruments.

The authors of this study considered several contextual factors in reviewing different content analysis models, including the ability of the model to reflect stages of interaction, and ease-of-use and inter-rater reliability issues for the researchers. Information was gathered and arrayed on the Gunawardena, Lowe, and Anderson five phase constructivist model (1997); the Henri five dimensions model (1992); the Garrison five stage critical thinking model (1992), a precursor to his practical inquiry model (TEIR—triggering event, exploration, integration, and resolution); and the Mason indicators of critical thinking (1991). Additionally, Brookfield's five-phase model of

critical thinking of adult education (1986) was reviewed and included in the content analysis model matrix. In addition to the considerations noted previously, the availability of the Gunawardena et al Interaction Analysis model and supportive documentation on how to use it, led to its selection by researchers.

Step Two: Invitation to Participants

Permission from participants to analyze their postings was obtained by individually emailing an information sheet to all participants, requesting permission to study and analyze their conversations. A transparent and reciprocal approach to the research was achieved through setting up a personal space within the online environment where researchers outlined the aims, procedures, difficulties encountered and insights gained in conducting the study as it progressed. These open reflections enabled participants to gain insight into the research on their discourse, and provided them with an opportunity to question, debate or interact with the researchers for the duration of the research.

Step Three: Analysis of the discourse according to the phases of learning.

The Gunawardena et al (1997) Interaction Analysis model used to analyze the phases of learning outlines five phases of knowledge co-construction that occur during (online) debate. These include: Sharing/ Comparing, Exploration of Dissonance, Negotiation/Co-construction, Testing Tentative Constructions, and Statement/Applications of Newly-Constructed Knowledge. The messages chosen for analysis were all those in the Domain Inquiry (DI) area.

The messages were coded individually by the four raters and then agreement was negotiated for posts where there was less accord. Obtaining inter-rater reliability was a protracted process. It is interesting to note at a meta-level that the coding process that the researchers underwent paralleled the very Interaction Analysis model of constructing knowledge they were using. At the first Phase the researchers shared and compared their coding of the message. This led to Phase II dissonance where areas of disagreement between raters were identified. Phase III involved negotiation and clarification of each rater's understanding of the terms of the Interaction Analysis model and hence co-constructing knowledge of the model. While this process was extremely time-consuming and frustrating, and it highlighted the significant difficulties with inter-rater reliability outlined in the literature (Rourke, Anderson, Garrison, Archer, 2001), the process did provide evidence of the validity of the model as a tool to analyze social construction of knowledge.

In addition to coding with the Gunawardena Interaction Analysis framework, the researchers also studied messages to identify whether posters were simulating formal Thought Leader or Facilitator behaviours in their messages. There was however little consistency among researchers on how to rate the posts, and it was realized that other key roles found in a CoP (such as Mentor) were not being identified in this process. Therefore, the researchers began looking for an easy-to-apply comprehensive framework for evaluating posts in terms of informal support behaviours exhibited by posters.

Step Four: Analysis of the discourse in terms of the role of poster

As stated earlier, researchers were interested in how behaviours manifested in the dialogue might relate to the level of learning of participants. Specifically and in keeping conceptually with the communities of practice model, the researchers were eager to understand whether examples of indepth and meaningful learning might be linked to informal support roles that participants adopted within the formal discussion. The researchers hoped to find support for the premise that learning within the community would be favourably affected by participants adopting behaviours associated with thought leader, facilitator, and mentor roles (Preece, 2000). The importance of this potential finding to CoPs would suggest that fostering early orientation to roles and the provision of opportunities for role experimentation could provide an environment for meaningful learning by participants. Such activity might also serve to further cultivate the community and increase the educational value of the community to the members. The team set out to understand what roles were foundational to communities of practice. The role analysis finally developed for use in this research (Appendix 2) was based on the research work of Fontaine (2001) who delineated the key roles and respective activities in effective communities of practice.

With the roles framework, messages by each poster were coded as follows:

Thought Leader (exhibits leadership with respect to the domain aspect of the CoP and shares a well-seasoned and integrated knowledge of the area);

Facilitator (offers leadership with respect to the community aspect of the CoP and facilitates interaction within the community, building ties between people and knowledge);

Mentor (who offers leadership with respect to the practice aspect of the CoP and offers support, guidance and assistance to peers from personal experience); and

Participants (who post messages or respond to issues raised in discussion through sharing information or asking questions).

While the roles framework also included *Legitimate Peripheral Participant*, and the researchers recognize the LPP role as significant to communities of practice, once LPPs post, they function as participants at least part of the time. To understand the learning that occurs for legitimate peripheral participants who are described in the literature as 'vicarious learners' or 'lurkers,' (J. Brace-Govan, 2003), the follow-up surveys (Step 6) became the primary vehicle for learning more about the LPPs' self-reported depth and value of learning.

Step Five: Survey of participants

Participants were surveyed at the close of the seven week workshop, to identify their perceptions of the learning that occurred within the workshop. This aspect of the research also asked questions relating to knowledge building both personal and social, and the extent to which learning can be seen as a social process of collaborative knowledge building (Stahl, 2000; Brown & Campione, 1994). Comparisons were made between the phases of interaction as coded above, the roles adopted by participants in their postings, and the areas of greatest personal learning as reported by participants.

Step Six: Follow-up Survey / Interview with key participants

One of the research questions in this study was to investigate the ways in which conversations exhibiting higher phase interaction related to self-reported meaningful learning. Nine participants who rated the Domain Inquiry highly in terms of their personal learning were asked to respond to an emailed survey which asked them to reflect on their participation and learning in the Domain Inquiry. They were given copies of the Gunawardena scale, the definitions of the roles, copies of the workshop dialogue and the rating of their personal discussions in terms of level and role.

Participants were asked to reflect on the following aspects of their participation in the Domain Inquiry:

- What made the discussions meaningful for them
- Whether they were aware of participating at different *levels* and if so what triggered more in-depth conversations
- Whether they were conscious of playing different *roles* in the conversations
- Whether they felt that knowing at the start of the workshop more about levels of learning and roles of participating would result in their being able to adopt more roles and engage in more in-depth levels of discourse.

Limitations of the study

This study analyses the content of observable, text-based discourse which occurs throughout the seven-week online workshop.

Although the workshop is largely text-based and observable by all parties in the workshop, one component of the workshop is voice-based: teleconferences which bring together all participants at three points during the seven-week period. Data from voice-based interactions remain outside the scope of the present study.

In addition, a proportion of the interaction which is text-based is not captured within the web site, nor is it observable by parties beyond the individuals concerned. These are conversations that occur via instant messaging, email, and through the use of other collaborative technologies. The instant messaging facility enables members to make private, brief, synchronous contact with others participants. Participants' email addresses are listed in the workshop's Community Directory, enabling private asynchronous communication if participants if wish to use this. Some participants bring with them to the workshop an existing high level of technology literacy, introducing further web-based collaborative technologies which allow them to work with workshop colleagues in preferred ways (for example, doing collaborative 'real-time' editing).

Conversations which occurred privately via instant message or email, or which used other technologies were not analysed in the current study. Nor have the authors attempted to record or collect data from teleconference

conversations. It is interesting however to note that evidence of such conversations is occasionally seen in the discourse studied, reminding us that we may at times be seeing segments of the co-construction of knowledge.

One final limitation to the current study is the fact that some learning may be occurring without text- or voice-based dialogue: learning may be occurring through solitary reading and reflection. The authors investigated this phenomenon in the survey completed by participants at the conclusion of the workshop.

Findings

In Domain Inquiry (DI) Week Two, participants were divided into two discussion Tables. Discussion at each table was initiated by the workshop leader (thought leader), with participants responding to questions about cultivating communities of practice, and their transformative potential. Also taking part at each table discussion were workshop mentors (participants from previous workshops) and workshop facilitators. As part of the discussions, participants also posed their own questions and raised issues relating to cultivating communities of practice.

Gunawardena Phases of Interaction

In both Tables, the majority of posts for the group and individuals occurred in the lower phases of interaction according to the Gunawardena framework (86% of 71 posts at phases I and II in Table 1,87% of 62 posts at phases I and II in Table 2). This is not an unexpected finding, in a class where most participants were working together for the first time and after only seven days duration. It indicated that initial interaction focused on sharing/comparing information and exploring dissonance or inconsistency among ideas. This is characteristic of the early stages of a constructivist learning experience where co-creation of knowledge and negotiation of meaning is important (Gunawardena, 1997). The workshop leader was highly visible in each table discussion in Week Two, generating 42% of all posts at Table 1, and 48% of all posts at Table 2. In line with his dual facilitation and thought leader role within the discussion, his posts occurred mostly within phases I and II.

After an intervening three-week period on other practical team tasks, the Week Six Domain Inquiry (DI) enabled participants to share what they had learned. Week Six posts by everyone taking part (participants, thought leader, facilitator, mentors) exhibited a greater proportion of mid to high range phases of interaction (46% of 112 posts at phases III and IV). This is consistent with later stages of constructivist learning where knowledge or ways of thinking change as a result of interaction and reflection, and new personal constructions of knowledge are being made. As with Week Two discussions, the workshop leader was again quite visible in the discussions, contributing 43% of all posts in Week Six, across phases I, II, and III.

Role Behaviours

In both weeks of the DI, participants adopted a range of role behaviours (AP, active participant; F, facilitator; M, mentor; TL, thought leader). In Week Two, 29% of posts by participants (excluding the workshop leader, mentors, and facilitators) were coded as F, M, or TL adopted roles (being 33% at Table 1 and 25% at Table 2). In Week Six, 31% of posts by participants (excluding the workshop leader, mentors, and facilitators) were coded as F, M, or TL adopted roles. Thus the proportion of participants interacting in roles beyond the base level of Active Participant stayed relatively constant over the two DI weeks, while the proportion of higher phase posts by participants increased between weeks two and six.

Gunawardena Interaction Phases and Role Analysis for Nine Participants

The following table arrays data from the learning survey (Step 5) for nine out of the total seventeen participants who rated the Domain Inquiry highly in terms of their personal learning (they rated DI as 4 or 5 out of possible 1-5, with 1 on this scale indicating not very meaningful and 5 indicating very meaningful).

		Participation in DI in Week 2			**Participation in DI in Week 6**		
Participant	DI Rating	No. posts	Interaction levels	Roles adopted	No. posts	Interaction levels	Roles adopted
P5	4	3	ph 1 x 1 ph III x 2	P x 2 M x 1	1	ph III x 3	P x 1
P16	4	8	ph 1 x 4 ph II x 4	P x 5 M x 1 TL x 2	0	0	0
P9	4	0	0	0	0	0	0
P8	5	3	ph 1 x 1 ph II x 2	P x 3	3	ph 1 x 1 ph II x 2	P x 3
P14	5	4	ph II x 1 ph III x 2 ph IV x 1	P x 2 M x 1 TL x 1	0	0	0
P10	5	3	ph II x 1 ph III x 2	P x 1 M x 1 TL x 1	4	ph I x 1 ph II x 2 ph III x 1	P x 2 M x 1 TL x 1
P12	5	2	ph I x 1 ph III x 1	P x 1 TL x 1	0	0	0
P11	5	11	ph I x 4 ph II x 6 ph III x 1	P x 7 TL x 4	1	ph II x 1	P x 1
P17	5	5	ph I x 3 ph II x 2	P x 5	7	ph II x 2 ph III x 3	P x 3 M x 3 F X 1

Of the nine people who rated the DI discussion as very meaningful, five posted messages at higher phases of interaction (III and/or IV) in Week Two, and three posted messages at higher phases of interaction (III and/or IV) in Week Six. Over the two weeks, the nine high DI raters also adopted a range of roles in their posts, exhibiting characteristics of thought leadership, mentorship, facilitation, as well as active participation. Six of the nine high DI raters adopted roles beyond that of Active Participant in Week Two. In Week Six, fewer of these individuals took an active part in the discussion (five of the nine people posted messages), and of these five, two adopted roles beyond that of Active Participant (Week Six). It is interesting that despite this decrease in active participation in the discussion, these individuals still reported their DI experience as either 'meaningful' (4 on scale of 1-5) or 'very meaningful' (5 on scale of 1-5). Of additional interest is the fact that one participant who rated the DI highly did not contribute any postings; it is inferred that her learning occurred entirely through reading (Legitimate Peripheral Participation). Also notable is that all but one* of the workshop participants who posted higher phase messages (phase III and above) in the DI, rated the Domain Inquiry highly in terms of their personal learning during the workshop (*one of the participants who posted a significant number of higher phase messages was unable to complete the learning survey).

Insights gained from Follow-up Survey

The follow-up survey (Step 6) was emailed to the nine participants who rated the DI discussion as very meaningful several months after the workshop. This delay could have contributed to the low return rate, where only four participants responded to this survey. The responses however do provide some insight and more importantly pose more questions for our ongoing research.

In response to the first general question on what made the discussion meaningful, the respondents commented on their intrinsic interest in the topic and the value of ' wrestling with concepts', 'clarifying' and 'helping others wrestle' through the concepts, 'supporting' and 'being supported' by others, and sharing personal and practical experiences. Two of the respondents highlighted the value for them of learning through 'lurking'.

In terms of *levels of learning*, all four respondents felt that the interaction with others was the trigger to more in-depth conversations, and they were not necessarily conscious of changes in depth of learning.

> *In depth conversation came from the dialogic (is this a word?) nature of the discussion – when group members responded to particular points that others had mentioned and continued to explore particular points that others had made* (P12)

> *More in-depth conversation was probably triggered by a desire to clarify or bridge understanding* (P10)

> *No I wasn't conscious of changes in depth of conversation …. My responses and possibly greater depth of conversation were triggered by the responses from others* (P8)

> *My own knowledge triggered more in depth discussion, when I knew more about a topic, or sounded intriguing, that was the reason for going deeper for me*. (P16)

Similarly none of the respondents were conscious of playing different *roles* at the time of the conversations but were in agreement on the adopted roles identified for them by the research, when interviewed. They commented on adapting as the situation needed, e.g. sharing their own experiences or reacting to something someone has said.

Finally, the respondents were asked to reflect on whether knowing about roles and levels of learning would enable them to change roles and engage in deeper levels of discussion. The respondents were divided in their views on this, which ranged from seeing no value in knowing what their roles were as it might result in feeling more self-conscious and even 'inhibit contribution', to being very valuable if done at the right time.

> *I think that the value of this would be very positive but that, as with many things in life, timing is everything – doing this too early might interfere with the direct experience of the conversations….. (doing it later would enable them to) become more conscious of the roles that they were adopting and could adopt to enhance conversation – kind of like looking at it all through a new 'lens' and getting the chance to experiment."* (P12)

Two respondents felt that knowing about *roles* per se and their related behaviours in the early stages of the workshop would be valuable rather than a rating of their own behaviours. It might validate the participants trying on roles if they were more consciously aware of them.

> *Certain words trigger certain thinking. When you sign up for a 'workshop' you adopt the participant role. It is difficult to break ingrained patterns. It would be good to understand to understand the whole concept at the outset and practise bits throughout the workshop. We don't want to predefine people's roles but they could emerge through these simple rules.* (P16)

Use of Discourse Analysis Models

Gunawardena Phases of Interaction Framework

The researchers recognized early in the coding process that the Gunawardena Interaction Analysis model, used alone, would not capture the full measure of messages posted in the Domain Inquiry discussions. There was an aspect of purpose or intent in the postings that was not clearly captured in this framework. Accordingly the decision was taken to supplement the Gunawardena model with an investigation of this intention through the roles undertaken by participants. Further, the researchers realized through actively using the Gunawardena model, that although the model appeared to suit this particular context, in practice it was not sufficiently well-attuned to the context. The workshop Domain Inquiry is an open-ended and free-form dialog and is less readily analysed by frameworks based on a goal orientation debate style interactions.

Roles Framework Construction

The first model required three different examples of role behaviours before a post would be rated other than Active Participant. The raters found it difficult to reconcile their independently conducted analysis because in practice, they did not agree on the descriptions of role behaviours. A wide majority of posts were rated as Active Participant, however, by the three raters in analysing test dialogue in DI week 2 of the workshop.

The researchers clarified the language, aiming to describe more readily observable behaviours, and reduced the number of examples observed in each post to one example. The consequence: the independently ranked messages achieved much higher inter-rater reliability before reconciliation and the number of role behaviours for facilitator, thought leader, and mentor increased for DI in weeks 2 and 6. But the lower threshold for detecting role behaviours in posts may have lost its ability to measure change in behaviour between the two dialogue periods. The criteria, of exhibiting only one single role behaviour in a post, may prove to not be sensitive enough to effectively measure role change in behaviours between week 2 and week 6 of the DI dialogue. Experience suggests that models and analysis frameworks must be carefully constructed and tested and refined repeatedly to achieve inter-rater reliability and to serve as true measures of change.

Questions for Future Research

The number of individuals taking part in this workshop was too low to draw clear conclusions except that there is promise in conducting the same kind of research with the same or a different discourse analysis model and refined roles framework for use with larger groups of participants. The authors continue to believe based on this preliminary research that there is a strong relationship between self-reported learning and levels of interaction, and between learning and the roles adopted by participants in their postings. Further, that there is a positive correlation between all three aspects: learning, level of interaction, and role adopted by the participant.

While there were no conclusive answers offered in this study to the question of whether participants felt that knowledge of their roles and levels of learning enhanced their discussion, many more questions were raised for ongoing research in this area. Some of the tensions and issues that arose that would require further investigation include the following.

One of the issues raised by participants was the potential to become either *self conscious* or *conscious* if they were given feedback on their level of learning and roles. Becoming *self-conscious* about discussion contributions might inhibit ongoing participation, whereas becoming more aware, self-reflective and *conscious* could augment participation. If the intention in providing this information to participants is to enhance meaningful learning, then further research needs to be done on what the optimal time and method might be to provide this formative feedback to participants.

Another issue raised in this research was the difficulty in selecting the appropriate discourse analysis tool to suit the learning environment. The particular tool used in this research seemed well suited to a debate which required resolution of dissonance, but perhaps did not capture some of the unique qualities of the discourse of a community of practice. Further research on identifying which discourse analysis tools suit different interactive environments would be a valuable contribution to this field, as it evident that there are 'different horses for different discourses'.

Related to the difficulty with selecting a tool was the difficulty (which is often glossed over in similar studies) with establishing inter-rater reliability in using the tool. It would be useful to foreground this and then identify effective procedures and practice when using these subjective tools to maximise validity and reliability.

Finally, an aspect of this research that could be explored more fully relates to the potential of role experimentation in enhancing discussion. Once discussion roles are identified and clarified, participants could have the opportunity of experimenting with these by adopting different roles in the discussion. Further research on the impact of this on participant's learning would be valuable.

The educational importance of this study is that it offers evidence-based insights into constructivist community-based learning in virtual communities. Barab (2003) cautions against getting caught up in the whirlwind of enthusiasm in designing virtual learning communities without sound empirical data. This study provides rich data that can contribute to our understanding of how to encourage and support online communities and what significance role level and type of social interaction has in learning. 'Who' says 'what' in online conversations and why they said it matters, as is evident in this analysis of the discourse and roles of participants. If self-reported meaningful learning is linked to higher phase interactions and adopting a range of roles, then the next steps for researchers, facilitation consultants and academic developers involve focusing on discourse analysis

and roles more explicitly in online communities, bringing these opportunities to the attention of learners. The study also provides a framework for researchers interested in exploring the impact of role adoption on learning outcomes in online communities of practice.

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APPENDIX 1 Interaction analysis model for examining social construction of knowledge in computer conferencing. (Gunawardena, Lowe and Anderson, 1997)

PHASE I: SHARING/COMPARING OF INFORMATION. Stage one operations include:

A.	A statement of observation or opinion	(Ph1/A)
B.	A statement of agreement from one or more other participants	(Ph1/B)
C.	Corroborating examples provided by one or more participants	(Ph1/C)
D.	Asking and answering questions to clarify details of statements	(Ph1/D)
E.	Definition, description, or identification of a problem	(Ph1/E)

PHASE II: THE DISCOVERY AND EXPLORATION OF DISSONANCE OR INCONSISTENCY AMONG IDEAS, CONCEPTS OR STATEMENTS.

(This is the operation at the group level of what Festinger calls cognitive dissonance, defined as an inconsistency between a new observation and the learner's existing framework of knowledge and thinking skills.) Operations which occur at this stage include:

A.	Identifying and stating areas of disagreement	(Ph1I/A)
B.	Asking and answering questions to clarify the source and extent of disagreement	(Ph1I/A)
C.	Restating the participant's position, and possibly advancing arguments or considerations in its support by references to the participant's experience, literature, formal data collected, or proposal of relevant metaphor or analogy to illustrate point of view	(Ph1I/A)

PHASE III: NEGOTIATION OF MEANING/CO-CONSTRUCTION OF KNOWLEDGE

A.	Negotiation or clarification of the meaning of terms	(PhIII/A)
B.	A statement of agreement from one or more other participants	(PhIII/B)
C.	Corroborating examples provided by one or more participants	(PhIII/C)
D.	Asking and answering questions to clarify details of statements	(PhIII/D)
E.	Definition, description, or identification of a problem	(PhIII/E)

PHASE IV: TESTING AND MODIFICATION OF PROPOSED SYNTHESIS OR CO-CONSTRUCTION

A.	Testing the proposed synthesis against "received fact" as shared by the participants and /or their culture	(Ph1V/A)
B.	Testing against existing cognitive schema	(Ph1V/B)
C.	Testing against personal experience	(Ph1V/C)
D.	Testing against formal data collected	(Ph1V/D)
E.	Testing against contradictory testimony in the literature	(Ph1V/E)

PHASE V: AGREEMENT STATEMENT (S)/APPLICATIONS OF NEWLY-CONSTRUCTED MEANING

A.	Summarization of agreement(s)	(PhV/A)
B.	Applications of new knowledge	(PhV/B)
C.	Metacognitive statements by the participants illustrating their understanding that their knowledge or ways of thinking (cognitive schema) have changed as a result of the conference interaction	(PhV/C)

Excerpted from: Gunawardena, C., Lowe, C., and Anderson, T. (1997). Analysis of a Global Online Debate and the Development of an Interaction Analysis Model for Examining Social Construction of Knowledge in Computer Conferencing. In Seidman R.H. (Ed). *Journal of Educational Computing Research*. Vol. 17, Number 4.

APPENDIX 2 **Coding of Roles—Patterns of Behaviour** Version 3 (Reeves-Lipscomb, Stuckey, Mentis, & Thomson, 2004)

Thought Leader	**Facilitator**	**Mentor**
A thought leader offers leadership with respect to the domain aspect of the CoP, and shares a well-seasoned and integrated knowledge of the area.	A facilitator offers leadership with respect to the community aspect of the CoP, and facilitates interaction within the community, building ties between people and knowledge.	A mentor offers leadership with respect to the practice aspect of the CoP and offers support, guidance and assistance to peers from personal experience
Criteria for classifying a single post as this role – must show at least ONE of the following behaviours. 1. Informs, educates, provokes and/or provides a unique perspective on issues through insightful comments based on sound personal knowledge 2. Cites resources that support or contradict the issue(s) being tested (demonstrates theoretical knowledge or familiarity with experts' views) 3. Initiates a search for relevant parallels/information/literature to guide discussion 4. Redirects discussion through statements that challenge the prevailing concept(s) 5. Summarizes previous discussion to achieve greater clarity, scope, or depth of conceptual agreement 6. Makes community knowledge transparent through the development of matrices, mind maps, or other translational devices.	*Criteria for classifying a single post as this role – must show at least ONE of the following behaviours.* 1. Encourages interaction of participants 2. Connects participants who have relevant tacit or explicit knowledge with each other 3. Fosters relationships among participants, SMEs, thought leaders, and other facilitators 4. Identifies networking opportunities outside the community 5. Manages social aspects of dialogue (eg actively inviting participation, working to keep conversations flowing and engaging) 6. Acknowledges ideas of participants to build confidence and trigger self awareness	Criteria for classifying a single post as this role – must show at least ONE of the following behaviours. 1. Cites personal experience to support or contradict discussion of issues relating to practice 2. Gives constructive feedback on applying theory in practice 3. Offers encouragement and support on how to function in the practice 4. Offers assistance or inspiration to others toward achieving a goal or solving a practical problem 5. Shares critical and reflective knowledge from experiences in the field 6. Works to assist others in achieving an expressed goal by recommending ways to develop specific skills or effective behaviours.

Active Participants	**Legitimate Peripheral Participants**
As well as meeting all three conditions of Legitimate Peripheral Participation, must also do one of the following behaviours at least ONCE during the workshop. 1. Posts a message 2. Responds to issues raised in discussion through sharing information or asking questions	*Must meet **all three** conditions* 1. Must have signed up as class member 2. Must have introduced self in Introductory Discussion, Opening Circle 3. Must have participated in relevant participant surveys at beginning and end of workshop