The Measurement of Dialogue: From a Case Study of the Workshop Using World Café as a Collective Dialogue Method

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Abstract

In this paper, we will present the results and implications of analyses of the dialogue process and its consequences by conducting a case study of a workshop by using the World Café as a collective dialogue method. The workshop addresses a new way of working in a Japanese company after the earthquake on March 11, 2011. We investigated both dialogue processes quantitatively and qualitatively, the level of recognition of the workshop theme, and participants' actions and their effects after the workshop. The results indicate that the more active the quantitative dialogue process is, the more positively the participants feel about the quality of the dialogue process and the more actions the participant takes. To understand the dialogue process in a workshop could be useful for practitioners and researchers to develop a facilitation method or supporting system that could promote better dialogues leading to better actions and effects.

1. Introduction

In the information age that have been rapidly spreading in the latter part of the 20th century, it is no doubt that complexity has been increasingly permeating almost every aspect of our lives across organizations such as countries, companies, non governmental organizations, non-profit organizations, and so on [12]. In such era of massive complexity, the whole system approach begins to attract much attention as a method of fundamental issue exploration. The whole systems approach is a method of transforming any business into a thriving organization by aligning internal systems with external forces and engaging the hearts and minds of every person [1]. This approach is a practical method for all stakeholders in order to collectively make decisions and take actions for achieving profound changes. There are several methods for the whole systems approach, such as the World Café [5], Appreciative Inquiry [16], Open Space Technology [13], and Future Search [15]. Even though whole systems approaches have become widespread, practitioners and researchers focus on the art of skills training and the applications of the approach [7, 12]. Less research has

been done to measure the effects of the approach [8] in order to understand the mechanism and to improve a method or develop a supporting system based on this approach.

In this paper, we focus on the whole systems approach as a collective dialogue method that is appropriate for the era of massive complexity under information age. In order to consider the possibility of this approach, as a measurement point, we focus on dialogue, which is a shared inquiry within and between people [3, 9, 12] that can be observed as interactions in all of this approach. We conducted a case study of a workshop by using the World Café [5] as a method of this approach, investigated the dialogue process and the results in the workshop, and examined the possibility of a dialogue lens as for exploring the mechanism of this approach.

2. Related works

2.1. Dialogue lens as a measurement point of a whole systems approach

As Bunker and Alban indicated in their introduction to the special issue on large group intervention, practitioners were just beginning to work with and create new methods for gathering whole systems in one place to plan and make decisions twelve years ago and still [6]. Since then, while there have been many reports on the success of the whole systems approach [1] within organizational settings, research on these methods and approaches mostly can be classified as qualitative case studies [14], or proposals of background theories concerning these methods and approach [6, 7, 12]. Fularton and Paermo conducted a progressive research consisting of a comparative and qualitative evaluation of the World Café as a method of a large group method and large group facilitation in an educational institution. They conducted an evaluation survey to the participants attending both types of workshop and found that the Word Café was superior to large group facilitation in increasing participant's knowledge and understanding. They indicated that future research should quantitatively evaluate the evidence of the usefulness of these methods in addition to the qualitative research [8].

Interactions comprise essential and observable component

of collaboration among the participants of a meeting or workshop by using these methods. In describing the most desirable form of interactions, most researchers and even practitioners specifically refer to the notion of dialogue [3, 9, 12], which is defined as a shared inquiry, a way of thinking and reflecting together [9]. Tsuokas conducted progressive research on the creation of new knowledge by focusing on dialogical process and found that dialogue leads to self-distanciation, in which individuals distance from their customary and unreflective ways of acting as practitioner. It leads to new distinctions through three processes of conceptual change (conceptual combination, conceptual expansion, and conceptual reframing), which, when intersubjectively accepted, constitute new knowledge [14]. While dialogue is regarded as an essential and observable component in a setting that uses a large group method/intervention or whole systems approach, very little research on the dialogue process and its effects has been conducted. In order to understand the process and effects of these methods or approach, we should focus on the dialogue process from both the quantitative and qualitative viewpoints.

2.2. Measurement of the results of collective intelligence and wisdom.

We focus on the whole systems approach as a social technology for cultivating collective intelligence and wisdom [6, 12]. In a workshop by using a whole systems approach as a social technology, participants would finally take actions based on their commitments through dialogical process. Even though the goal of the workshop should be to get the results such as organizational change and innovation, less research on the evaluation of the long-term consequence caused by the actions has been conducted [8]. We should focus not only the short-term results within the workshop but also the mid- or long-term results after the workshop.

3. Research setting

We selected the World Café [5] as a facilitation method for a whole systems approach. From the experimental viewpoint, the facilitator of the World Café can proceed without needing much intervention, meaning that facilitation does not require specific skills or experience.

3.1. Site

3.1.1. Background. We investigated a case which was workshops used the World Café in a large manufacturing company. The purpose was to make workers explore creative and energy-saving actions among themselves, which we call a "creative-eco work style", and to commit to certain actions. Pursuant to the Electricity Business Act

established after the earthquake on March 11, 2011, in Japan, large electricity customers were obligated to reduce their electricity usage by 15% from the previous year in order to minimize the risk of blackouts the following summer. A department of this company decided to conduct workshops in order to transform their work style to a creative-eco work style that would enable them to save another 15% in electricity usage in addition to the 15% mandated by the Act, and also make their workers more creative. The goal of the workshop was not only to commit to actions through dialogue but also obtain the results of the actions.

3.1.2. Workshop design and participants. We conducted three independent sessions with 41 participants randomly selected from among 161 employees in the department. Each session lasted approximately an hour and 45 minutes. Table 1 shows the number of participants, the number of tables used, and the number of participants at each table in each session.

Table 1. The attributes of each session.

Session ID	# of participants	# of tables	# of participants at each table
1	13	4	4, 3, 3, 3
2	12	3	4, 4, 4
3	16	4	4, 4, 4, 4
Total	41	11	-

The same facilitator hosted all three sessions using the same process, which was based on ordinary World Café processes [5]. The theme of the session was "creative-eco work style." Before the World Café session, in order to make participants consider each topic related to the theme equally, the facilitator conducted one-minute, one-way talks, called check-ins (five minutes), during which each participant introduced a unique energy-saving activity that they knew of. After a five minutes introduction that explained the workshop theme and process, in order to encourage participants to generate reflections on the theme, the facilitator asked participants to spend five minutes silently considering and writing down their initial thoughts about the creative-eco work style. Then they began the body of the World Café session. The session consisted of three rounds of 25 minutes each. After the first round, three participants, except for a table host, moved to another table. The table host summarized the previous dialogue to the new members in 2 to 3 minutes; then the new group carried on a dialogue on the same theme. After conducting three rounds, the participants moved on to a reflection session, during which each participant spent five minutes silently writing a description of their final commitment to saving energy. The facilitator grouped the participants by commitment and let them share their commitments in detail in each group for 10 minutes.

3.2. Measure

This section illustrates how we measured the following four viewpoints: observations of the dialogue process (quantitative dialogue process observations), assessments of the dialogue process (qualitative dialogue process assessments), level of participants' recognition of the workshop theme (recognition of theme), and participants' actions and their effects after the workshop (results of actions).

3.2.1. Quantitative dialogue process observations. To observe the dialogue process during the World Café, we placed a 360 panoramic video camera (SONY, bloggie) on each table in order to record upper body motion as an indicator of communicative action. The facilitator explained the experiment, including the extent of data usage we were observing. We covered the 360 panoramic video cameras with paper in order to encourage participants to focus on the dialogue. We manually coded the data for each of the 10 seconds intervals from the coding scheme, programming it to identify factors such as utterance, facial expression, and gesture. Figure 1 is a screen shot captured by the 360 panoramic video camera. Table 2 presents the coding scheme. We indicated a score of "1" if we observed an element of the coding scheme, added up the number of observations for each participant
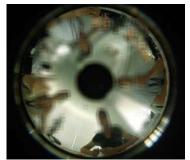

Figure 1. Screen shot of video captured by 360 panoramic video camera.

Table 2. The coding scheme for quantitative dialogue process measurement.

Category	Definition of categories
Backward tilting	Whether or not a participant explicitly leaned against the backrest of a chair
Forward tilting	Whether or not a participant explicitly put his/her elbow on the table
Utterance	Whether or not a participant said something (only estimated by motion of mouthing)
Nod	Whether or not a participant explicitly nodded
Smile	Whether or not a participant explicitly smiled
Tilt one's head to one side	Whether or not a participant explicitly titled his/her head to the left or right side, which mostly implies skepticism in Japanese culture
Gesture	Whether or not a participant explicitly made any gesture outside of other coding categories
Pen	Whether or not a participant wrote something on a shared paper with a pen

for a total score, calculated the average total normalized scores for each round, which were then divided by the total score for each category according to the duration of each round.

3.2.2. Qualitative dialogue process assessments. We conducted a questionnaire in order to investigate the level of the participants' recognition of the workshop theme (the creative-eco work style) and their assessments of the dialogue process. Although many studies have been conducted on theories and practical dialogue applications, little is known about how to evaluate it as a process. In order to investigate the qualitative characteristics of the dialogues process, we referred to a "core theory of success" as a model of successful dialogue shown in Figure 2, which is a reinforcing cycle described by a system dynamics [10]. In this model, as the quality of relationships rises, the quality of thinking improves, leading to an increase in the quality of actions and results. Achieving high quality results has a positive effect on the quality of relationships, creating a reinforcing this cycle. We composed 31 questions on the basis of this model and conducted a factor analysis in order to extract factors as rating scales. As Table 3 shows, we extracted five factors, interpreted the meaning of factors, and confirmed that each one mostly corresponds to each quality in the model. Note that both third and fifth factors corresponded to quality of thinking. While third factor could be interpreted as internal feeling or participants' recognition of collective thinking, fifth factor could be interpreted as external conditions, such as visual aids for collective thinking. After eliminating two questions with less than a 0.4 factor loading, we finally calculated factor scores for each factor and for each person using 29 questions.
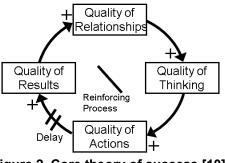

Figure 2. Core theory of success [10].

3.2.3. Recognition and ownership of the theme. We conducted a questionnaire to participants, including qualitative dialogue process assessments, just after the session in order to investigate the level of recognition and sense of ownership they felt toward the workshop theme. The questionnaire included two types of questions using a five-point Likert scale (1 = strongly disagree; 2 = disagree; 3 = somewhat agree; 4 = agree; 5 = strongly agree):

Table 3. Results of factor analysis, Cronbach's alpha of a factor, and the type of quality in the model.

Question	Factor ID					Interpretation of factor	A type of quality
	1	2	3	4	5		
You had higher quality thoughts and ideas than usual.	**.892**	-.086	.178	-.148	.048	Active and collective participation	Actions
You had more thoughts and ideas than usual.	**.855**	.287	-.352	-.107	.070		
You considered a wider variety of thoughts and ideas than usual.	**.851**	.061	.181	-.353	.057		
You agreed that the participants collectively had higher quality thoughts and ideas through dialogue with each other than when each participant thought independently.	**.712**	.096	-.013	.227	-.060		
You had thoughts and ideas as a result of others' thoughts and ideas.	**.688**	.115	-.01	.127	-.170		
Listening to others' thoughts and ideas made you consider an issue from a more advanced viewpoint.	**.682**	-.376	.021	.409	-.143		
You had higher quality thoughts and ideas in the session than in an ordinary meeting.	**.450**	.338	.106	.204	.114		
You did not hesitate to talk about your thoughts and ideas without taking others' into account.	.121	**.865**	-.202	-.176	.005	Safe and creative thinking environment	Thinking
You were not nervous about participation.	.039	**.822**	-.111	.119	.071		
You felt that you are the right person to have a dialogue with about the theme.	.381	**.636**	.022	-.136	-.087		
You agree with that all participants tried to contribute to the session through active participation.	-.073	**.609**	.024	.334	-.128		
You agree that participants built good relationships through the session.	-.021	**.509**	.058	.368	.054		
The facilitator was flexible about time management according to the status of the session.	-.174	**.504**	.024	.033	.490		
The delivery of the session was effective in terms of time management.	-.253	**.494**	.307	.244	-.019		
Participants knew each other very well through the session.	.141	**.420**	-.144	.326	-.069		
You emphasized the final output shared in the harvest session.	.022	-.271	**.946**	.016	.065	Positive feeling of the results	Results
You understand the final output shared in the harvest session.	-.032	-.101	**.930**	-.001	.080		
You agree that the facilitator did not make any unreasonable requests in the session.	-.078	.029	**.696**	.145	-.115		
You were interested in the theme of the session.	.392	.287	**.592**	-.101	-.141		
You agree that the theme was critical for the current situation of your company.	.211	.382	**.553**	-.099	.030		
You agree that the selection of the participants was appropriate for the theme.	-.190	.371	-.212	**.697**	-.031	Appropriate participants	Relationship
You agree that the diversity of participants was enough to create a variety of thoughts and ideas.	.385	-.182	-.319	**.696**	.044		
You agree that the thoughts and ideas in the session should be re-coded in order to reuse them in future.	-.179	-.032	.226	**.680**	.080		
You built new relationships with the thoughts of others in the session.	-.100	.267	.26	**.656**	-.236		
You agree that the session had various methods of creating new thoughts and ideas.	.246	-.122	.248	**.479**	.304		
You built relationships of mutual trust with other participants.	.017	.338	.111	**.463**	.168		
You agree that participants shared their thoughts and ideas visually, including those regarding their relationships.	.029	-.200	.081	.003	**.901**	Visualization of thinking process and results	Thinking
You agree that the thoughts and ideas were quickly visualized in order to be shared among participants.	-.240	.126	-.03	-.101	**.836**		
You agree that the sessions provided various methods for thinking and considering ideas from different viewpoints.	.249	.060	-.078	.274	**.745**		
Cronbach's alpha	.896	.845	.877	.805	.812		

The level of recognition of the workshop theme
- Were you interested in the "creative-eco work style"?
- Did you understand the importance and necessity of the "creative-eco work style"?
- Did you empathize with the importance and necessity of the "creative-eco work style"?

The level of ownership toward the workshop theme
- Did you seriously consider what you should do in order to achieve the goal of a "creative-eco work style"?

3.2.4. Results of actions. We conducted another questionnaire three weeks after the workshop in order to investigate the effect of their behavior, such as the extent of their electricity saving and the degree of the change in creativity. The questions were as follows:
- How much energy did you save by taking action on the basis of the commitment you made in the workshop? (Wh/week)   Please refer to the following instructions for calculations and examples.

(1 = under 10 Wh; 2 = 10 Wh; 3 = 50 Wh; 4 = 100 Wh; 5 = 200 Wh; 6 = 500 Wh; 7 = 1,000 Wh; 8 = 1,500 Wh; 9 = 2,000 Wh; 10 = over 2,000 Wh)
- How would you evaluate the change in your creativity while you were taking action on the basis of the commitment you made in the workshop?
(1 = clearly lower; 2 = lower; 3 = no change; 4 = higher; 5 = clearly higher)
Note that we gave detailed instructions for estimating the amount of energy saving and examples of energy saved.

4. Models

We explored the first model by using each measurement variable, which we regarded as a latent variable of structural equation modeling [4] in reference to the time ordering of measurements: the quantitative dialogue processes observation that were observed in the session, the qualitative dialogue process assessments, the recognition of the theme

(which was evaluated just after the session), and the results of actions (which were reported by the participants three weeks after the session). The first model we hypothesized is the following: if more active participants attended the session, they would have a positive feeling toward the recognition of the quality of the dialogue process and workshop theme. This would lead to more effective action toward the fulfillment of their commitments.

5. Results

Tables 4 to 7 show the descriptive statistics for each variables: the quantitative dialogue process observation, factor scores for the model of the qualitative dialogue process assessments, the recognition and ownership of the theme, and the results of actions.

Table 4. Descriptive statistics for the quantitative dialogue process observation.

	N	Min	Max	Mean	SD
Backward tilting	40	.0	4883.7	1410.1	1526.5
Forward tilting	40	26.9	8640.0	5739.8	2376.7
Utterance	40	664.5	6090.1	2917.9	1307.1
Nod	40	643.5	8073.8	3803.3	1840.8
Smile	40	479.9	4488.1	2252.4	1054.3
Tilt head to one side	40	.0	776.6	99.1	169.8
Gesture	40	116.7	3299.5	1457.8	786.2
Pen	40	.0	2709.6	484.0	664.5

Table 5. Descriptive statistics for factor scores of qualitative dialogue process assessments.

Factor	N	Min	Max	Mean	SD
Active and collective participation	40	1.4	4.0	2.70	.67
Safe and creative thinking	40	2.6	5.0	3.94	.65
Positive feeling toward the results	40	1.0	5.0	3.31	.85
Appropriate participation	40	1.3	3.8	2.88	.58
Visualization	40	1.3	4.3	2.65	.75

Table6. Descriptive statistics for the recognition and ownership of the theme.

			N	Min	Max	Mean	SD
Level	of	Interest	40	1	5	3.35	.975
recognition	of	Understanding	40	1	5	3.23	1.000
the theme		Empathy	40	1	5	3.32	.971
Level of ownership			40	1	5	3.38	1.079

Table 7. Descriptive statistics for results of actions.

	N	Min	Max	Mean	SD
Amount of electricity saved	40	0	10	4.65	3.000
Degree of change in creativity	40	0	4	3.27	.716

We applied structural equation modeling [4] using AMOS 19 to explore a more appropriate model for the relationship between latent variables and their indicators as observable variables than the first model (model 1). Figure 3 shows the path diagram and the results of

applying SEM to model 1. The overall SEM model fit for model 1 was not good. The model's Chi-square = 163.191 (df = 85, p = .000), CFI = .732, GFI = .688, AGFI = .560, AIC = 1233.191, and RMSEA = .154. In order to improve model 1, we tried to add a new path and eliminate the path that was not statistically significant in the diagram. Figure 4 shows the final model with moderate scores of fit indices on the basis of the recommended scores. In model 2, the Chi-square = 21.404 (df = 18, p = .260), CFI = .966, GFI = .895, AGFI = .790, AIC = 57.404, and RMSEA = .070. In model 2, the more active a participant's quantitative dialogue process is, the more positively the participant feels about the quality of that process and the more action the participant takes.
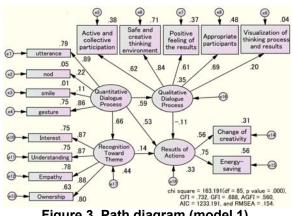

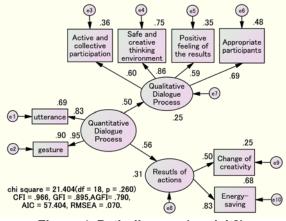
Figure 3. Path diagram (model 1).

Figure 4. Path diagram (model 2).

6. Implications

6.1. Better dialogue leading to better actions and their aftereffects

With regard to the results of the exploration of a better model, model 2 indicates that the more actively a participant engages in quantitative dialogue processes (as shown by the number of utterances and gestures made

during the dialogue), the more the participant will perceive the dialogue process as positive and the more action he or she will take to effect energy saving and change their feelings about their own creativity. Even though this model could not be generalized without conducting other case studies and more detailed analyses, this study could be thought of as the first step in trying to quantitatively and qualitatively analyze the dialogue process itself within the workshop by using the World Café as a whole systems approach and its aftereffects.

6.2. Usefulness of the integration of art, practice, and science of dialogue

Researchers and practitioners in the area of whole systems approach tend to focus on social technologies and skills as art and their applications as practice more than measurements of their dialogical process and their effects as science. Even though we admit the usefulness of both art and practice sides, to observe dialogue process and its result could be also useful even for practitioners. For example, if the facilitators understand the process of dialogue, they can reflect on their facilitation more deeply. If the participants understand the changes in their actions and their effects, they may feel a greater sense of community and engage in collective action in order to achieve better results. The art, practice, and science of dialogue should be integrated for deeper understanding and further development of the whole systems approach.

6.3. Facilitation method and supporting system based on whole systems approach

If we know the status of dialogue processes, it could be used for a facilitator to encourage participants. Even though this study used a 360 panoramic video camera, a variety of other methods for capturing conversations have already been introduced such as a sociometric badge [11]. If the real-time status of dialogue processes could be shown to the facilitator, they could change his or her behaviors by appropriately responding to the participant statuses. For example, the number of utterances and gestures appearing in the model 2 as measured variables could be interpreted as active participation with active body movements, which have a positive effect on both the qualitative dialogue process and the results of actions. The facilitator could include bodily engagement practice in the facilitation process, or encourage equal numbers of utterances among participants.

7. Conclusion

In this paper, we conducted a case study using World Café as a method of collective dialogue method and examined the mechanism of this approach. The result

indicates that the more active a participant's quantitative dialogue process is, the more positively the participant feels about the quality of that process and the more action the participant takes. More case studies are needed using different variables to measure individual characteristics, diversity in a group, and interaction patterns in a group. Even though this paper focused on individual data, future research must conduct analyses of dialogues at tables, the use of social networks, human relationships distributed across each table, and changes in the World Café setting.

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