KNOWLEDGE SHARING : A CASE STUDY AMONG PARENTS OF SPECIAL CHILDREN

RUZANNA ABDULLAH

A thesis submitted in partial fulfillment of the
requirements for the award of the degree of
Master of Science (IT – Management)

Faculty of Computer Science and Information Systems
Universiti Teknologi Malaysia

OCTOBER 2008

ACKNOWLEDGMENT

There are many people who have directly and indirectly helped me in successfully completing this study. Thank you very much to Assoc. Prof. Wardah Zainal Abidin who has been a very helpful supervisor whom always guide and inspire me throughout the study. Special thank also goes to both my parents, Mr. Abdullah Abbas and Mrs. Patimah Che Dat for their love and support endlessly in all ways. To my elder brother and younger sisters, thank you for your helping hands.

I would like to express my sincere appreciation to teachers who have kindly accepted my request to be interviewed in SK Bukit Cina, SK Seri Bandar and NASOM. Thank you very much for the useful information. To all members in myspecialchildren.com, thank you for spending some times to answer my questionnaire and for the nice and warm chatting that we had online. I would also thank my course mates for their brilliant ideas and views.

Thank you very much to all whom had involved directly and indirectly in helping me to completely present this study.

ABSTRACT

The purpose of this study is to analyze the current practice of knowledge sharing among offline and online community of practice pertaining to the special children areas focusing on mental disabilities. The study focused on how knowledge sharing is carried specifically out among parents and generally among teachers and doctors of these children. The concept of knowledge sharing as one of the component in knowledge management was discussed thoroughly on the processes involved, the developed framework, and the factors that encourage and hinder people to or from participating and contributing to the knowledge sharing activity. From the author's findings, knowledge sharing activities did occur actively in the online community of practice compared to offline community due to several factors; time and geographical boundaries, low income and low information technology literacy. The concept of community of practice was further analyzed through the practice of several e-groups. The knowledge sharing activities were evaluated based on the SECI model proposed by Nonaka and Takeuchi (1995). The results of the study show that knowledge sharing activities did contribute towards the development of the special children in many ways. From the discourse analysis conducted in one e-group on two selected discussion topics, the results show that inquiry and storytelling are the common nature of discourse and the common type of discourse is experiential dialogue. The study found out that the leader in community of practice play a very important role to maintain the interest of the community to remain engaged in the dialogue and to sustain the existence of the community. The result of the study has led to the development of one e-group prototype where the features available in the prototype are based from the gathered users' requirement and are coherence with the processes in the SECI model.

ABSTRAK

Tujuan kajian ini dijalankan adalah untuk menganalisa praktis semasa perkongsian maklumat komuniti praktis di dalam dan di luar talian yang berkaitan dengan kanak – kanak istimewa khususnya masalah mental. Fokus kajian adalah terhadap bagaimana perkongsian maklumat dipraktikkan oleh khususnya ibu bapa dan amnya oleh guru dan doktor kanak – kanak istimewa ini. Konsep perkongsian maklumat yang merupakan salah satu komponen pengurusan maklumat telah dibincangkan dengan mendalam menerusi proses – proses yang terlibat, rangkakerja yang dibangunkan, dan faktor – faktor yang menggalakkan dan menghalang orang kepada dan daripada menyertai dan menyumbang kepada aktiviti perkongsian maklumat. Hasil kajian menunjukkan aktiviti perkongsian maklumat berlaku aktif dalam komuniti praktis dalam talian berbanding komuniti praktis luar talian disebabkan oleh beberapa faktor; kekangan masa dan geografi, pendapatan rendah dan pengetahuan teknologi maklumat rendah. Konsep komuniti praktis dianalisa lebih lanjut melalui praktis beberapa e-kumpulan. Aktiviti perkongsian maklumat telah dinilai berdasarkan model SECI yang telah diperkenalkan oleh Nonaka dan Takeuchi (1995). Keputusan kajian menunjukkan bahawa aktiviti perkongsian maklumat telah membantu perkembangan kanak – kanak istimewa dalam pelbagai cara. Daripada analisis wacana yang dijalankan dalam satu e-kumpulan berkaitan dua tajuk diskusi, kajian menunjukkan bahawa pertanyaan dan penceritaan merupakan asal kebiasaan wacana dan dialog pengalaman merupakan jenis kebiasaan wacana. Kajian mendapati ketua dalam sesebuah komuniti praktis memainkan peranan penting untuk mempertahankan minat komuniti untuk terlibat dalam dialog dan mempertahankan kelangsungan komuniti. Hasil kajian telah membawa kepada pembangunan sebuah prototaip e-kumpulan di mana fungsi – fungsi yang terdapat dalam prototaip adalah berdasarkan kepada permintaan pengguna dan berpadanan dengan proses – proses dalam model SECI.

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	DECLARATION	**ii**
	ACKNOWLEDGEMENTS	**iii**
	ABSTRACT	**iv**
	ABSTRAK	**v**
	TABLE OF CONTENTS	**vi**
	LIST OF TABLES	**xi**
	LIST OF FIGURES	**xii**
1	**PROJECT OVERVIEW**	**1**
	1.1 Introduction	1
	1.2 Background of Problem	2
	1.3 Statement of the Problem	3
	1.4 Project Objective	4
	1.5 Scope	4
	1.6 Importance of Project	5
	1.7 Chapter Summary	6
2	**LITERATURE REVIEW**	**7**
	2.1 Introduction	7
	2.2 Knowledge	7
	2.2.1 Definition	7
	2.2.2 Types of Knowledge	8

	2.2.3 Knowledge Model	12
	2.2.4 Data, Information, and Knowledge	13
2.3	Knowledge Management	16
	2.3.1 Definition	16
	2.3.2 Classification of Knowledge Management	18
	2.3.3 Knowledge Management Process	18
	2.3.4 Knowledge Management Spectrum	21
2.4	Knowledge Sharing	23
	2.4.1 Definition	23
	2.4.2 Model	23
	2.4.3 Concept of 'Ba'	30
	2.4.4 Technology as an enabler in knowledge sharing.	34
2.5	Community of Practice	35
	2.5.1 Definition	35
	2.5.2 Characteristics	36
	2.5.3 Modes of belonging	37
	2.5.4 Critical Success Factors in Building Community	38
	2.5.5 Virtual Community of Practice	39
2.6	Special Children.	64
2.7	Chapter Summary	66
3	**METHODOLOGY**	**68**
3.1	Introduction	68
3.2	Project Workflow	69
3.3	Methods Use to Collect Data and Information	74
	3.3.1 Qualitative Methodologies	74
	3.3.2 Quantitative methodologies	75
3.4	Working Model for Prototype	76
	3.4.1 Rapid Prototyping	76
	3.4.2 Phases in Rapid Prototyping Model	78
	3.4.3 Rapid Prototyping Strength	80

	3.5	Development Tools	81
		3.5.1 Hardware Requirements	81
		3.5.2 Software Requirements	82
	3.6	Chapter Summary	83
4	**INITIAL FINDINGS**		**84**
	4.1	Introduction	84
	4.2	Interview Analysis	84
	4.3	Questionnaire Analysis	89
	4.4	Chapter Summary	106
5	**DATA ANALYSIS**		**107**
	5.1	Introduction	107
	5.2	Lifecycle of myspecialchildren	107
	5.3	Discourse Analysis	115
		5.3.1 Participant Contribution	117
		5.3.2 Message Length	120
		5.3.3 Nature of Discourse	123
		5.3.4 Type of Discourse	125
	5.4	Chapter Summary	129
6	**SYSTEM DESIGN**		**130**
	6.1	Introduction	130
	6.2	User Requirement Analysis	130
	6.3	Knowledge Sharing Adapted Model	133
	6.4	Application Example	138
	6.5	User Interface Design	140
	6.6	Chapter Summary	157

7	**DESIGN IMPLEMENTATION AND TESTING**		**158**
	7.1	Introduction	158
	7.2	Development Tools	159
		7.2.1 Application Platform	159
		7.2.2 Web Server	160
		7.2.3 Server Side Scripting Language	160
		7.2.4 Database Management System	161
	7.3	Technical Manual	162
	7.4	Testing Plan	165
	7.5	Testing Result	166
		7.5.1 Member	166
		7.5.2 Admin	168
	7.6	Chapter Summary	170
8	**ORGANIZATIONAL STRATEGY**		**171**
	8.1	Introduction	171
	8.2	Organizational Change	172
		8.2.1 Unfreeze	173
		8.2.2 Move	173
		8.2.3 Refreeze	174
	8.3	Conversion Strategy	174
		8.3.1 Conversion Style	176
		8.3.2 Conversion Location	177
		8.3.3 Conversion Modules	178
	8.4	Change Management	178
		8.4.1 Resistance to Change : Causes and Strategies	180
		8.4.2 Change Management Plan	184
	8.5	Expected Organizational Benefits	189
	8.6	Chapter Summary	191

9 DISCUSSION AND CONCLUSION 192

9.1 Introduction 192
9.2 Achievement 192
9.3 Constraints and Challenges 194
9.4 Summary/Findings of Contributions 195
9.5 Future Enhancement 195
9.6 Aspiration 196
9.7 Chapter Summary 196

REFERENCES 197

LIST OF TABLES

TABLE NO.	TITLE	PAGE
2.1	Definition of knowledge	8
2.2	Definition of data, information and knowledge	15
2.3	Proposed KM process	18
2.4	KM Spectrum	22
2.4	Offline versus Offline Communities	47
3.1	List of steps, activities, objectives, instrument/methods, deliverable	70
3.2	Hardware requirements	81
3.3	Software requirements	82
5.1	Number of messages, new members and stage in CoP lifecycle according to year	112
5.2	Result of Discourse Analysis for Topic 1	127
5.3	Result of Discourse Analysis for Topic 2	128
6.1	Adapted KS model for representing OCS features	137
7.1	Test items perform by member and the test result	166
7.2	Test items perform by admin and the test result	168
8.1	Causes of resistance to change	181
8.2	Strategies to overcome resistance to change	182
8.3	Cost-Benefit model for potential adopter	186

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
2.1	The general knowledge model	12
2.2	Knowledge-sharing model, adapted from Nonaka and Takeuchi (1995). ‘‘I’’ represents an individual; ‘‘G or O’’ represents a group or organization	26
2.3	Mapping ba concept on SECI model	31
3.1	Project workflow	69
3.2	Rapid Prototyping Model	78
4.1	Knowledge-sharing model, adapted from Nonaka and Takeuchi (1995). ‘‘I’’ represents an individual; ‘‘G or O’’ represents a group or organization	88
4.2	Two examples of e-groups focusing on special children	91
4.3	Post message features in myspecialchildren.com	93
4.4	Part of member list in myspecialchildren.com	94
4.5	List of topic when searching using keyword special children + Malaysia	97
4.6	Captured screen of instant messaging among members	99
4.7	List showing how frequent members respond to each other problem	101
5.1	Lifecycle of a community of practice	108
5.2	Moderator reminder on the usage of e-group	109
5.3	Questions members need to answer before registration is approved	110
5.4	Number of new messages in year 2004	112
5.5	Number of new messages in year 2005	113

5.6	Number of new messages in year 2006	113
5.7	Number of new messages in year 2007	113
5.8	Number of new messages in year 2008	114
5.9	Comparison on number of messages between years	114
5.10	Number of new members per year	114
5.11	Percentage of Participant Contribution(s) in year 2004	119
5.12	Percentage of Participant Contribution(s) in year 2005	120
5.13	Message Length in Topic 1	121
5.14	Message Length in Topic 2	121
5.15	Distributions of the time member replied to messages in Topic 1	122
5.16	Distributions of the time member replied to messages in Topic 2	122
5.17	Nature of Discourse for Topic 1	124
5.18	Nature of Discourse for Topic 2	124
5.19	Messages showing the moderator's interest on Topic 1	125
5.20	Type of Discourse for Topic 1	126
5.21	Type of Discourse for Topic 2	126
6.1	Mapping of Nonaka KS Model and the KM processes for representing generic online community system	136
6.2	Use cases for actor; Parent, Expert, and Admin in OCS System	139
6.3	OCS homepage	140
6.4	OCS registration page	141
6.5	OCS article page	142
6.6	OCS forum page	145
6.7	OCS chat room page	149
6.8	OCS photo gallery page	150
6.9	OCS directory page	152
6.10	OCS members listing page	155
6.11	OCS feedback page	156
7.1	Homepage of SOURCEFORGE.NET	163
7.2	Interface to choose package to download	163
7.3	Interface to choose files compatible with operating system	164
7.4	Interface to run package to download	164
8.1	Kurt Lewin Managing Change Model	172

CHAPTER 1

PROJECT OVERVIEW

1.1 Introduction

This project is conducted to analyze the current practice of knowledge sharing among offline and online community of practice pertaining to the special children areas focusing on mental disabilities such as : developmental delay, hyperactivity, autism, learning disabilities, attention deficit disorder, attention deficit hyperactivity disorder or something similar. The main motivation towards conducting this project is on the assumption that knowledge sharing can help towards the development of this special children.

The project will look into details on knowledge sharing concept as one of the component in knowledge management focusing on the processes involved, the developed framework, and the factors that encourage and hinder people to and from contributing to knowledge sharing activity.

In this project, the concept of community of practice which is also known as community of learning (Gherardi and Nicolini, 2000) is analyzed through the

practice of several e-groups as specific purpose designed e-groups can be classified as community of practice. E-groups can be classified as web-based community of practice.

The main outcome of this project will be the result from the study on concept of knowledge sharing and community of practice, what is the current practice of knowledge sharing in today offline and online community of practice, how knowledge sharing can help towards the development of the special children and a prototype of a better e-group in which the features in the e-groups will be based on the result of the study.

1.2 Background of Problem

Special children are different from the normal children. They may be different physically or mentally. Despite of their differences, they deserve the rights to be loved and taken care of. Each day the individual related to these special children (ex: parents, teachers, doctors) will somehow or rather face new challenges in taking care of these special children. Together with the new challenges, sure some of them have found new ways how to tackle the challenges. It would be very useful if the knowledge on how to tackle the problems in one's mind can be shared with another person, where the person can used the knowledge to overcome his/her problem in dealing with the special children.

Knowledge sharing, as one of the powerful knowledge management component, if being studied properly and implemented in the community of practice pertaining to the special children can actually helps towards the development of these children. Knowledge sharing, simply put in words, is a concept that allows

knowledge of one party to be shared with another party, which indirectly led to the creation of a new knowledge. Parents, teachers, and doctors, related to the special children will surely have different experience and knowledge regarding any matters related to these special children. They can actually help and support each other by sharing knowledge. If they cannot help directly with the problem, they can help by referring to another person whom they know can help to solve the problem.

These people (parents, teachers, doctors) actually have a lot experience and ideas in mind. If the intellectual assets of each of the individual can be shared among each other, there is no doubt that the knowledge sharing practice will improve the development of these special children in many aspects.

1.3 Statement of the Problem

The main issues that will be addressed in this project are :

i. What is the current practice of knowledge sharing in offline and online community of practice?
ii. What are the factors that encourage and hinder people from contributing to knowledge sharing activities in community of practice?
iii. How to motivate people to contribute to knowledge sharing activities in community of practice?
iv. How can knowledge sharing contribute towards the development of the special children through the practice of community of practice?
v. What are the features that should be included in an online community of practice specifically the e-groups so that it will be beneficial towards the development of special children?

vi. How information technology can overcome the problem occurred in knowledge sharing of offline community of practice by enabling and supporting online community of practice?

vii. Does knowledge sharing process/activity is implemented in the current e-groups?

1.4 Project Objective

i. To study and analyze the current practice of knowledge sharing among offline and online community of practice pertaining to special children focuses on mental disabilities.

ii. To analyze the nature and type of discourse in knowledge sharing.

iii. To analyze how knowledge sharing can contribute towards the development of the special children.

iv. To develop a working model and test the model via producing an alternative e - groups.

1.5 Scope

i. This project will discuss in details the concept of knowledge sharing as one of the component in knowledge management including its framework, architectures, and processes involved.

ii. This project will discuss in details the concept of community of practice and will analyzed several e-groups as a case study to find out the current practice of knowledge sharing in online community of practice.
iii. A semi-structured interview will be conducted to find out what is the current practice of knowledge sharing in offline community of practice.
iv. The target user for the developed system will be : parent of special children, teacher of special children, and doctors of special children.

1.6 Importance of Project

The project is important towards the development of special children in term of :

i. Improve public awareness on the importance of knowledge sharing towards the development of the special children.
ii. Improve public knowledge on any related matters of special children.
iii. Improve people contribution in knowledge sharing so that the knowledge can be fully utilized and leverage towards the development of special children.
iv. The ability of one's knowledge to be shared among the rest of the members in community of practice will help or give an idea on how to solve certain problem.
v. Improve current practice of knowledge sharing in community of practice.
vi. Knowledge sharing among community of practice will help to solve real problem in real environment.

1.7 Chapter Summary

This chapter gives a thorough description of the project by discussing the overview of the project in the introduction section, discuss the background of the problem and statement of the problem. The chapter also presents the objective of the project, scope and importance of the project.