



Title Personal Knowledge Development in Online
Learning Environments:
A Personal Value Perspective

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PERSONAL KNOWLEDGE DEVELOPMENT IN
ONLINE LEARNING ENVIRONMENTS:
A PERSONAL VALUE PERSPECTIVE

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PhD

2010

UNIVERSITY OF BEDFORDSHIRE

Personal Knowledge Development in
Online Learning Environments:
A Personal Value Perspective

by

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A thesis submitted to the University of Bedfordshire,
in partial fulfilment of the requirements for the degree of
Doctor of Philosophy

October 2010

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Abstract

This thesis investigates personal knowledge development in online learning environments and the impact that personal values have on it. Personal knowledge development was investigated from the perspective of Nonaka's SECI model of organisational knowledge creation. This model served as the basis for an adapted model that conceptualises personal knowledge development in online learning at the individual level. The personal value types of the Schwartz Value Survey and the Portrait Values Questionnaire were adopted to measure personal values and their impact on personal knowledge development in online learning environments.

Three data collection approaches were used. First, an exploratory study was conducted which elicited online learners' experiences of their personal knowledge development in online learning; this study used online discussion forums for data collection. Second, a Delphi study was carried out. Experts were asked which of the ten individual-level value types by Schwartz are likely to be particularly relevant in the context of online learning. Third, an online survey was created. Its aim was to measure the impact that personal values and background variables, such as gender and age, have on personal knowledge development in online learning. A measurement instrument was devised that measures three of the SECI modes, namely Externalisation, Combination and Internalisation. This instrument measures the magnitude of online learners' Externalisation and Combination activities as well as their level of Internalisation, i.e. the outcomes of personal knowledge development.

Results of the exploratory study show that there are widely diverging experiences of personal knowledge development in online learning. The literature review suggests that the cultural situatedness of an online learning environment is an important influencing factor on personal knowledge development. The results of the Delphi study suggest that Self-Direction, Stimulation, and Achievement are particularly relevant value types in the context investigated here. Finally, the online survey confirms this view, as all three value

types were found to be positively correlated with Externalisation, Combination, and Internalisation, with the exception of the Achievement-Combination relationship.

A modified version of the SECI model is proposed, which extends the applicability of the original SECI model from the organisational to the individual level. It is argued that this model is suitable to describe personal knowledge development in the context of online learning. The study also contributes to closing the gap in research on the impact of personal values in the context investigated in this study. Moreover, a measurement instrument was created that can be used to measure Externalisation and Combination, i.e. personal knowledge development processes, and Internalisation, i.e. personal knowledge development outcomes.

For my parents

Table of Contents

Abstract	ii
Table of Contents	v
List of Tables	x
List of Figures	xi
List of Abbreviations	xii
Acknowledgements	xiii
1 Introduction	1
1.1 Background and Rationale.....	1
1.1.1 The Importance of Knowledge Management and Knowledge Creation.....	1
1.1.2 Personal Knowledge Development and Learning: The Impact of Culture and Values.....	3
1.1.3 Cultural Situatedness.....	4
1.1.4 Gaps in Research on the Intersection of Knowledge Management, Culture and Learning.....	6
1.2 Aims and Objectives.....	7
1.3 Potential Contribution to Knowledge.....	9
1.4 Research Process.....	10
1.5 Structure of the Thesis.....	11
2 Knowledge, the SECI Model and Online Learning	13
2.1 The Concept of Knowledge.....	13
2.1.1 Definitions and Characteristics of Knowledge.....	13
2.1.2 The 'Personal' in Knowledge and Knowledge Management.....	15
2.2 Tacit and Explicit Knowledge.....	16
2.2.1 Tacit Knowledge and Tacit Knowing.....	16
2.2.2 The Continuum of Tacit, Implicit, and Explicit Knowledge.....	19
2.2.3 Dealing with Different Types of Knowledge in Knowledge Management and Online Learning.....	21
2.3 Knowledge Creation and Nonaka's SECI Model.....	23
2.3.1 Knowledge Creation and Learning.....	23
2.3.2 Description of the SECI Model: The Four Modes.....	24
2.3.3 <i>Ba</i> – Places for Knowledge Creation.....	27
2.3.4 Knowledge Assets.....	29
2.3.5 The Main Elements of the SECI Model.....	31
2.3.6 Criticism of the SECI Model.....	31
2.4 Learning and Online Learning.....	34

2.4.1	The Relationship of Knowledge and Learning.....	34
2.4.2	Learning and Approaches to Learning	34
2.4.3	Online Learning in a Diverse World and the Learners' View	37
2.5	Online Learning: Values, Context, Community, and Relevance	38
2.5.1	Cultural Values and Context in Learning	38
2.5.2	Learning Community and Educational Context	39
2.5.3	Communities of Inquiry and the Need for Relevance	40
2.6	Summary.....	42
3	Culture, Values and the Schwartz Value Survey	43
3.1	Culture: Definition and Levels.....	43
3.2	Values	45
3.3	The Impact of Culture and Values on Learning and Online Learning	46
3.3.1	The Impact of Culture and Values on Learning	46
3.3.2	The Impact of Culture and Values on Online Learning.....	48
3.4	The Impact of Culture on the Internet.....	50
3.5	The Schwartz Value Survey	52
3.5.1	Characteristics of the Schwartz Value Survey.....	52
3.5.2	Measurement and Structure of the SVS Value Types.....	53
3.6	Summary.....	56
4	Cultural Situatedness: Knowledge, SECI, Values, and Online Learning	57
4.1	Knowledge and Cultural Context	57
4.2	The SECI Model in a Cultural Context.....	60
4.3	The Impact of Personal Values on the SECI Model	63
4.4	Application of the SECI Model: General Issues.....	63
4.5	Application of the SECI Model in Online Learning.....	64
4.5.1	Rationale for Employing the SECI Model Instead of a Learning Model	64
4.5.2	Knowledge Creation Models in Online Learning Based on SECI.....	67
4.5.3	The Applicability and Need for Adapting SECI in the Context of Online Learning	72
4.6	Cultural Situatedness: A Summary and Examples.....	75
4.7	Summary.....	78
5	Research Methodology	80
5.1	Philosophies in Research Methodology	80
5.2	General Research Approach	82
5.3	Ontological and Epistemological Assumptions and Research Approaches	84
5.4	Sampling and Data Collection	86
5.5	Data Analysis: An Overview	88
5.6	Reliability, Validity, and Other Issues in Research	89
5.7	Ethical Considerations	90
5.8	The Role of the Socialisation Mode in the Context of Online Learning.....	91

5.9	Overview of Research and Initial Research Model.....	94
6	Learners' Experiences and Personal Values: An Exploratory Study.....	97
6.1	Before the Exploratory Study: Shift from National-Cultural Values to Individual-Level Values.....	97
6.2	Background and Objectives of the Exploratory Study.....	98
6.3	Methodology of the Exploratory Study.....	99
6.4	Data Analysis and Results of the Exploratory Study.....	102
6.5	Lessons Learned and Impact on Subsequent Data Collection.....	114
7	Relevance of SVS Values in Online Learning: A Delphi Study.....	116
7.1	Background and Objectives of the Delphi Study.....	116
7.2	Methodology of the Delphi Study.....	117
7.3	Data Analysis and Results of the Delphi Study.....	118
7.4	Summary and Lessons Learned.....	130
8	Personal Values and Cultural Situatedness in PKD: An Online Survey.....	131
8.1	Background, Objectives and Hypotheses of the Online Survey.....	131
8.1.1	Background and Objectives.....	131
8.1.2	Hypotheses.....	133
8.2	Methodology of the Survey.....	134
8.2.1	Sampling and Data Collection.....	134
8.2.2	Overview of the Questions of the Online Survey.....	136
8.3	Normality and Data Transformation.....	139
8.4	Measures of Correlation.....	140
8.5	The Use of Formative Indicators for Externalisation and Combination.....	141
8.6	Reliability.....	143
8.7	Validity.....	145
8.8	Descriptive Statistics of Demographic and Background Variables.....	147
8.8.1	Comparison of Characteristics of Data Sets with Different Sample Sizes.....	147
8.8.2	Cultural Background and Gender Distribution of the Sample.....	148
8.8.3	Descriptive Statistics for Externalisation, Combination, and Internalisation.....	149
8.9	Relationships between Externalisation, Combination and Internalisation Items and Their Aggregates.....	160
8.10	Personal Values and ECI Modes.....	163
8.11	An Adaptation of the SECI Model for PKD in Online Learning: The EC-I Model.....	167
8.12	Personal Values and Cultural Situatedness and Their Effect on PKD in OLEs: The VCS-ECI Framework.....	169
8.13	Impact of Background and Demographic Variables on PKD as Represented by the ECI Modes.....	172
8.13.1	The Impact of Gender on PKD.....	172
8.13.2	The Impact of Age on PKD.....	173
8.13.3	The Impact of National-Cultural Background on PKD.....	174

8.13.4	The Impact of the Level of IT Skills on PKD	175
8.13.5	The Impact of Academic Discipline on PKD	175
8.13.6	The Effect of the Background Variables on PKD in OLEs: Summary of Results	177
8.14	Fostering of, and Barriers to, PKD in Online Learning: Open-Ended Questions	177
8.14.1	Fostering PKD in Online Learning	178
8.14.2	Barriers to PKD in Online Learning.....	180
8.15	Saliency and Impact of Personal Values	182
9	Conclusion	184
9.1	Rationale and Overview of Research	184
9.2	Personal Knowledge Development and Personal Values: The Learners' View	185
9.3	Relevance of the SVS Value Types in Online Learning	186
9.4	Impact of Personal Values and Other Factors on Personal Knowledge Development in Online Learning	187
9.5	Taking Culture into Account in the SECI Model When Examining PKD in Online Learning.....	188
9.6	Contribution to Knowledge.....	188
9.7	Implications for Learners, Tutors and Designers in Online Learning	190
9.7.1	Implications for Learners	190
9.7.2	Implications for Tutors and Online Designers.....	191
9.8	Limitations of the Study	192
9.9	Suggestions for Further Research.....	193
9.10	Concluding Remarks	195
	Appendices	196
	Appendix A.1: Exploratory Study: Discussion Forum Questions	197
	Appendix A.2: Exploratory Study: Follow-Up E-Mail	202
	Appendix A.3: Exploratory Study: Answers.....	203
	Appendix B.1: Delphi Study: Background and Form	218
	Appendix B.2: Delphi Study: Results.....	225
	Appendix C.1: Survey: Cover Letter and Follow-Ups	230
	Appendix C.2: Survey: Questions	243
	Appendix C.3: Survey: 'Fostering PKD' and 'Hindering PKD'.....	248
	Appendix D.1: ECKM 2007: Knowledge Development and Culture	261
	Appendix D.2: ECKM 2008: Trial Application of the SVS.....	270
	Appendix D.3: ECKM 2009: Delphi Study: Relevance of Personal Values	279

Appendix D.4: Impact of Culture on the Application of the SECI Model.....	287
References	303

List of Tables

Table 1.1: Structure of the thesis	12
Table 2.1: Comparison of data – information – knowledge (based on Probst, Raub & Romhardt, 2003, and Davenport & Prusak, 1998)	14
Table 3.1: Individual-level value types of the SVS (based on Schwartz <i>et al.</i> , 2001, p. 521).....	54
Table 4.1: Adaptation of the SECI modes and corresponding <i>ba</i>	74
Table 5.1: Overview of research phases.....	85
Table 7.1: Value types and relevance to PKD in online learning.....	119
Table 7.2: Hierarchical order of the SVS value types: Pan-cultural average and PKD in OLEs.....	121
Table 8.1: Relationships between questions and hypotheses.....	138
Table 8.2: Variance inflation factors for Externalisation and Combination items.....	142
Table 8.3: Cronbach alpha for the ECI modes.....	145
Table 8.4: Means and standard deviations for Externalisation, Combination and Internalisation items.....	150
Table 8.5: Interrelationships between Externalisation items and their aggregate	160
Table 8.6: Interrelationships between Combination items and their aggregate.....	161
Table 8.7: Interrelationships between Internalisation items and their aggregate	162
Table 8.8: Interrelationships of the ECI modes – correlation coefficients.....	163
Table 8.9: Personal values and Externalisation items	164
Table 8.10: Personal values and Combination items.....	164
Table 8.11: Personal values and Internalisation items	165
Table 8.12: Personal values and aggregates of Externalisation, Combination, and Internalisation	165
Table 8.13: Ranks – Impact of gender on ECI modes	172
Table 8.14: Test statistics – Impact of gender on ECI modes	173
Table 8.15: Correlations for age and ECI modes.....	173
Table 8.16: Ranks for the meta-Western and meta-Eastern regions for the ECI modes	174
Table 8.17: Test statistics for the ECI modes with 'meta region' as grouping variable.....	175
Table 8.18: Correlations for level of IT skills and ECI modes	175
Table 8.19: Impact of academic discipline on the ECI modes – Mean ranks	176
Table 8.20: Test statistics for impact of academic discipline on the ECI modes	176

List of Figures

Figure 1.1: Concepts involved in the research and their relationships	8
Figure 1.2: Research process	11
Figure 2.1: Level of awareness of tacit, implicit and explicit knowledge (taken from Bennet & Bennet, 2008, p. 77)	21
Figure 2.2: SECI modes and corresponding <i>ba</i> (based on Nonaka & Konno, 1998, p. 46)	29
Figure 3.1: Structure of relations among the individual-level SVS value types (taken from Burgess, 2005, p. 111)	55
Figure 4.1: ESCIE model - adapted from the SECI model for use in online learning (taken from Bryceson, 2007a, p. 203)	68
Figure 4.2: SECI process framework for e-learning (taken from Naeve <i>et al.</i> , 2008, p. 18)	70
Figure 4.3: Online learning tools and processes in the SECI model (taken from Chatti <i>et al.</i> , 2007, p. 2)	71
Figure 5.1: Initial research model	96
Figure 6.1: NVivo nodes: Forum questions	103
Figure 6.2: NVivo nodes: Free nodes -1-	103
Figure 6.3: NVivo nodes: Free nodes -2-	104
Figure 6.4: NVivo nodes: Communication	105
Figure 6.5: NVivo nodes: Interactivity	105
Figure 6.6: NVivo nodes: Means of interaction, files, flexibility, technical aspects and design	106
Figure 6.7: Research model after exploratory study	113
Figure 7.1: Framework after Delphi study	129
Figure 8.1: Cultural background of the sample	149
Figure 8.2: Frequency distribution for 'posting in discussion forums'	151
Figure 8.3: Frequency distribution for 'contributing to a blog'	151
Figure 8.4: Frequency distribution for 'contributing to a wiki'	152
Figure 8.5: Frequency distribution for 'taking part in Instant Messaging'	152
Figure 8.6: Frequency distribution for 'taking part in online chats'	153
Figure 8.7: Frequency distribution for 'using search engines'	154
Figure 8.8: Frequency distribution for 'different types of functions'	154
Figure 8.9: Frequency distribution for 'getting to know other learners' opinions'	155
Figure 8.10: Frequency distribution for 'sharing information with other learners'	155
Figure 8.11: Frequency distribution for 'working together with other learners'	156
Figure 8.12: Frequency distribution for 'applying knowledge'	157
Figure 8.13: Frequency distribution for 'self-assessment helping to learn'	157
Figure 8.14: Frequency distribution for 'acquiring new knowledge'	158
Figure 8.15: Frequency distribution for 'improving skills'	158
Figure 8.16: Frequency distribution for 'having learned a lot'	159
Figure 8.17: The EC-I model: A model of PKD in online learning	169
Figure 8.18: The VCS-ECI framework of PKD in OLEs	171

List of Abbreviations

CSCL	Computer-supported cooperative learning
EC-I	Externalisation/Combination – Internalisation
ECI	Externalisation – Combination – Internalisation
eMBA	Executive Master of Business Administration
IT	Information technology
JISC	Joint Information Systems Committee
MIMA	Meaning in Mediated Action
OLE	Online learning environment
PDF	Portable document format
PKD	Personal knowledge development
PVQ	Portrait Values Questionnaire
RVS	Rokeach Value Survey
SECI	Socialisation – Externalisation – Combination – Internalisation
SPSS	Statistical Package for the Social Sciences
SVS	Schwartz Value Survey
VCS-ECI	Values/Cultural situatedness – Externalisation/Combination/Internalisation
ZPD	Zone of proximal development

Acknowledgements

Many people provided support, guidance, expertise, help, and encouragement in the course of this research project. Thank you to all of them. In particular, I would like to thank:

Prof Yanqing Duan for her constant support and expertise, not only when it came to matters relating to the thesis, but also for moral support and encouragement, as well as her willingness to integrate me into the world of wider academia.

Prof Brian Mathews for the many chats that we had and particularly for his help when it came to statistical analysis. Talks with him often led to rethinks of my research approach – this always brought the study forward.

Prof John Edwards for his expertise and for making me take on new perspectives that helped me see new opportunities in the subject matter.

Prof Shalom H. Schwartz, who was very generous with his time in discussing all aspects related to his Schwartz Value Survey and the Portrait Values Questionnaire. I am thankful for his first-hand advice on using these tools.

Prof Peter Franklin and Dr George Simons, for answering questions about the treatment of the concept of culture in research.

Members of staff at the Learning Resources Centre at the University of Bedfordshire, for their quick and friendly help in supplying me with the literature I needed.

Everyone at the Research Graduate School, for making the research project run smoothly from an administrative point of view.

The University of Bedfordshire Business School, which provided a generous bursary without which I could not have undertaken this study.

Colleagues across the University of Bedfordshire, for always having an open ear for questions and for being generous with their time.

Colleagues at conferences who provided suggestions and from whose work I have learned.

Fellow doctoral students who not only shared the office but also some of the pain with me, and who became friends.

Last but not least, a thank you to my friends who offered help, and in particular a thank you to my parents who have always supported me.

1 Introduction

This chapter gives an overview of the research and of the structure of the thesis. First, it describes the background and rationale of the study. Second, it states the aims and objectives. Third, the potential contribution to knowledge of this research is described. Fourth, an overview of the research process is given. Finally, the structure of the thesis itself is laid out.

1.1 Background and Rationale

1.1.1 The Importance of Knowledge Management and Knowledge Creation

Knowledge and the ability to create new knowledge, share it and use it is of paramount importance for individuals to develop their knowledge and engage in lifelong learning, as well as for allowing organisations to survive in an increasingly competitive global marketplace (Nonaka & Toyama, 2003). In addition to sharing and applying already existing knowledge, one of the key activities individuals have to engage in is the creation and development of knowledge.

Knowledge creation as a concept has often been used in an organisational context (e.g. Datta & Acar, 2010; Tolstoy, 2009). In addition to that, it is also linked to learning at the individual level (e.g. Akbar, 2003; Muukkonen & Lakkala, 2009; Paavola, Lipponen & Hakkarainen, 2004) and also to learning in virtual environments (Minocha & Roberts, 2008). Knowledge creation models have tried to take into account the context in which knowledge creation takes place as well as the focus of research or practice. For example, Yang, Fang & Lin (2010) propose a model to investigate strategies of organisational knowledge creation.

Knowledge creation has often been described using the SECI model (Socialisation – Externalisation – Combination – Internalisation), first developed by Nonaka in 1991, and expanded and adapted further by, for example, Nonaka (1994), Nonaka & Takeuchi (1995), von Krogh, Ichijo & Nonaka (2000), and Takeuchi & Nonaka (2004). The SECI model has achieved a paradigmatic status as a knowledge creation model (cf. Gourlay, 2006a).

The SECI model describes four modes of knowledge conversion through a continuous interaction between explicit knowledge (codifiable knowledge) and tacit knowledge (knowledge closely linked to an individual's mind). The four SECI modes are embedded in a shared space or context, the so-called *ba* (Nonaka & Konno, 1998). The modes have been used to conceptualise knowledge creation in organisations through the conversion of knowledge, starting at the level of an individual, moving on to group level and finally to organisational level. However, the individual as the main 'carrier' of knowledge has often been sidelined in both research and practice in the area of knowledge creation. It is argued here that it is essential to

understand how individuals engage in knowledge development, i.e. how their knowledge base changes and develops.

Technology-enhanced learning is frequently delivered through the Internet and related web technologies, i.e. online learning environments (OLEs). These OLEs are relatively new contexts for knowledge development and therefore comparatively underresearched. The research presented here starts to address this gap. The context for knowledge development investigated in this study is online learning, which is defined and delineated here as follows:

Online learning encompasses all learning activities, such as online discussions, using blogs, collaborating on wikis, accessing videos, audio files, quizzes, text material, etc., that take place in an Internet-based environment. The course can be either fully online or in conjunction with face-to-face teaching.

As this research stems from the knowledge management paradigm and not from the learning paradigm and because the knowledge-management-embedded SECI model is used to investigate it, a substantial part of the methodology and theoretical frameworks used in this study come from the field of knowledge management. Terminologically, it is therefore suggested to use 'knowledge development' here because it is a more suitable term as it emphasises the procedural character of learning processes, i.e. changes in the state of knowledge, by which already existing knowledge is developed further, i.e. changed and enriched. Knowledge development is thus not only about what constitutes *new* knowledge for an individual but also about already existing knowledge and knowledge which is modified, adapted, changed, interpreted differently, applied differently, evaluated differently, etc.

The term 'knowledge development' has already been used in the literature, particularly in the area of nursing (e.g. Kulbok, Gates, Vicenzi & Schultz, 1999; Roy & Jones, 2007), but also in relation to knowledge management (e.g. Adenfelt & Lagerström, 2006; de Clercq & Dimov, 2008; Johnson, 2007; Rosendaal, 2006; Skyrme, 1999), skill development (Lyons, 2005), and developing knowledge through engaging in research (Lind, 2008). However, the term is not used consistently. For example, 'knowledge development' has been used to denote skills development/learning of individuals. Newton & Newton (2009) use the term in the title of their paper without defining it, although they seem to equate it with 'skills development'. Similarly, Kind (2009) also introduces 'knowledge development' and applies it to teachers' subject matter knowledge, albeit also without defining it. Bogner & Bansal (2007) introduced the term "'new knowledge development' to refer to the larger, complex capability by which existing knowledge resources and learning capabilities are combined to produce new knowledge" (p. 167). Matricano (2010) later argued that Bogner & Bansal's (2007) concept of 'new knowledge development' is a key means for organisations to create competitive advantage.

Miller (1994, 1999, 2005) advocated the need for a notion of 'personal knowledge development' in the context of education. Through this focus on *personal*, the individual learner and her needs and characteristics are brought to the fore. Therefore, in order to emphasise the highly personal and contextualised nature of knowledge development in OLEs, for the study reported here the adjective 'personal' was added to the term 'knowledge development'. Since the main area of

interest are developments in the state of knowledge and how knowledge is developed within the knowledge conversion modes of the SECI model, the choice of the term represents that focus well. Therefore, in the context of online learning as seen as from a SECI perspective, personal knowledge development is more encompassing and broader than Bogner & Bansal's (2007) definition. The definition of personal knowledge development (PKD) used here is as follows:

Personal knowledge development in online learning environments encompasses idiosyncratic and individualised processes and phases of creating new knowledge, evaluating and modifying knowledge, sharing knowledge, and finally applying knowledge in real-life situations and contexts.

Section 2.1.2 provides a brief discussion of previous uses of the concepts of PKD, personal knowledge management, and related concepts.

1.1.2 Personal Knowledge Development and Learning: The Impact of Culture and Values

In the context of knowledge management and learning, the national level of culture has been explored in a wide variety of studies (e.g. Ardichvili, Maurer, Li, Wentling & Stuedemann, 2006; Bhagat, Kedia, Harveston & Triandis, 2002; Carr-Chellman, 2005; Michailova & Hutchings, 2006; Yamazaki, 2005). On an epistemological level, Nisbett, Peng, Choi & Norenzayan (2001) argue that the differences that exist among cultures have an influence on theories of knowledge and on what can be labelled as knowledge (Nisbett, 2003). However, the impact of individual-level values, i.e. personal values, on knowledge-related concepts is still insufficiently analysed.

Since one's cultural values and assumptions constitute one's behaviour in general and, thus, also one's learning in particular (Hofstede, 1986), it is important to look at value differences and their impact on PKD in online learning. Hills (2003) supports this, arguing that "diversity of culture in the broadest sense will alter people's attitudes to learning and the methods of learning" (p. 64). In order to define culture in the context of the research reported here, the following definition by Hofstede (Hofstede & Hofstede, 2005) is used: [culture is] "the collective programming of the mind that distinguishes the members of one group or category of people from others" (p. 4).

In research to date, a substantial number of cultural value dimensions have been used to investigate the impact of national culture on learning (Hofstede, 1986). They have generally been used as indicators of culture and have been identified at various levels. Hofstede & Hofstede (2005) distinguish between six levels of culture, namely: national, regional/ethnic/religious/linguistic, gender, generation, social class and organisational or corporate. Taking the multi-level character of culture into account, Hills (2003) points out that cultural diversity should not only be based on national cultural differences but also on other differences. These 'other differences' are arguably highly individualised, which suggests that one should look at personal values at an individual level rather than focusing too strongly on national cultural dimensions when investigating PKD in online learning. In a number of research

areas, culture and cultural values have been identified as influencing behaviour but have mostly been investigated at a national level (e.g. Ang & Massingham, 2007; Hofstede, 1994) or sometimes at an organisational level (e.g. Alavi, Kayworth & Leidner, 2006; Lopez-Nicolas & Meroño-Cerdán, 2009).

Predicting the *relative* importance of different layers of culture on behaviour within a theoretical framework is relatively recent, Karahanna, Evaristo & Srite (2005), according to their own statement, being the first. However, they argue that the culture of the individual is not a different layer *per se*, but a product of several layers, such as national, professional and group (Karahanna, Evaristo & Srite, 2005). In the study presented here, this 'product of several layers' is being investigated.

Personal values, i.e. individual-level values, have been found to be associated with a large number of different behaviours (see Roccas & Sagiv, 2010, p. 33, for a listing of studies). Despite the large number of studies investigating the relationship of values and behaviour, the cultural context as a whole and its influence on the values-behaviour relationship has very rarely been examined (cf. Roccas & Sagiv, 2010). Although the impact of cultural factors on knowledge management has been well identified in the literature, "[f]uture research needs to focus on exploring the interrelations of the identified cultural factors and their respective impact on knowledge management" (Zheng, 2009, p. 224).

Given this focus on the culture of the individual, a set of individual-level dimensions as opposed to cultural-level dimensions such as Hofstede's (Hofstede, 1994) is used here, namely Schwartz' individual-level value types of the Schwartz Value Survey (SVS) (e.g. Schwartz, 1992; Schwartz & Bilsky, 1987, 1990). The advantage of this value set is that it conceives of individual values as both the product of a shared culture and a product of an individual's experience (Schwartz, 1994a). It not only identifies the values as such, but specifies a circular structure of relations among, and oppositions between, them (Schwartz, Melech, Lehmann, Burgess, Harris & Owens, 2001). The SVS has been validated in many studies and has been found to be applicable across cultures (Schwartz, 1992; Smith & Schwartz, 1997), as the set of values was derived from "an analysis of universal requirements with which all individuals and societies must cope" (Schwartz *et al.*, 2001, p. 521).

1.1.3 Cultural Situatedness

When designing OLEs, the concept of culture is rarely considered (cf. Edmundson, 2007). It is suggested here that national culture only accounts for some variations in behaviour and that it is essential to take into account other levels of culture and values as well, rather than merely national cultural values (e.g. Hofstede, 1994). Johnston & Johal (1999) argue that the Internet – and thus also OLEs – has a culture of its own and is therefore not culture-free. Therefore, not only has culture an effect on PKD, but the medium in which PKD takes place is also embedded in and constituted by culture.

It is essential to take into account the 'cultural situatedness' of this medium when one examines PKD in OLEs, as this set of variables co-determines PKD, and therefore has to be managed for online learning to be effective. For the purposes of this research and in the context of PKD in online learning, 'cultural situatedness' is defined as follows:

The notion of 'cultural situatedness' denotes the contextualised and situated character of PKD in online learning. Aspects that may have an impact on PKD in online learning are, among others: culture at its various levels (e.g. national, organisational, individual), instructional design of an OLE, learning styles and approaches, nature of interaction and communication in an OLE, etc.

Cultural situatedness is closely linked to the concept of context, which Degler & Battle (2000) defined as the whole of all relevant conditions and other influences that make a particular situation unique and comprehensible. Augier, Shariq & Vendelø (2001) suggested that context is an individual construct and that the interpretation of an individual learner of the PKD context is likely to differ from other learners, as the context is not static but emerging. The study reported here contributes to a further understanding of the role of context for PKD in OLEs.

In addition to the cultural situatedness of OLEs, one has to take into account the cultural situatedness of knowledge management in general and of SECI as a knowledge creation model in particular. Zhu (2004) suggests that knowledge management is not a universal concept, but argues instead that it is essential to jointly construct and share cross-cultural contexts for knowledge management to be successful. He posits that knowledge management "will benefit not from a universal concept, but from an interactionist strategy that facilitates the construction, connection and sharing of cross-cultural contexts, through which cultural differences and diversity are important sources for [knowledge management] competence rather than obstacles to be overcome" (p. 67). Thus, knowledge development as one particular aspect within a knowledge management framework is likely to be influenced by a given context – this context is shaped not only by culture but also by the personal value set of an individual.

Glisby & Holden (2003) posit that Nonaka's SECI model (Nonaka & Takeuchi, 1995) is not universally applicable because it stems from a particular – Japanese – context. Weir & Hutchings (2005) also acknowledge that SECI is not universally applicable, but also claim that SECI is relevant to knowledge management across cultures. This is further supported by Vygotsky (1978) who argues that learning is not a solely internal process, but that culture and context are strong factors that impact on both learning processes and outcomes. Therefore, as SECI is a model of knowledge creation and conversion, it is argued that culture, individual-level value orientations and context have an impact on the characteristics and processes of the four SECI modes. The impact of the SVS value types on PKD in online learning as conceptualised by the SECI model is at the centre of the research presented here.

1.1.4 Gaps in Research on the Intersection of Knowledge Management, Culture and Learning

According to Ford & Chan (2003), there is a gap in research on the triad of knowledge management, culture and online learning. It is argued here that PKD in online learning is dependent on all three concepts: knowledge creation via SECI as a subset of knowledge management, personal values as a proxy of culture, and online learning which provides the context of PKD in this study.

Regarding knowledge creation as a subset of knowledge management, the SECI model is rooted at the organisational level and conceptualises knowledge as being aggregated, starting at the individual level, moving on to the group level, and ending up at the organisational level; this upward spiral moving from individual to organisation is explained in more detail in section 2.3.2. It is argued that – since knowledge cannot be shared or managed by organisations but only by people within them (Nonaka & Takeuchi, 1995) – one should look at the knowledge development of individuals – at an individual level.

Regarding culture and personal values, in addition to pursuing a deeper understanding of the impact of culture and personal values on PKD in online learning, it is important to investigate how knowledge conversion as described by the SECI model (e.g. Nonaka, 1991; Nonaka & Takeuchi, 1995) is facilitated in the context of online learning, as this area still suffers from limited research (cf. Martin-Niemi & Greatbanks, 2010). In particular, the ability of OLEs to facilitate *ba*, the enabling context and place of knowledge conversion, is underresearched (Martin-Niemi & Greatbanks, 2010). This study contributes to filling this gap.

Furthermore, whereas learning approaches have been investigated from the point of view of personal values, gender and other background variables (for a brief review, see Lietz & Matthews, 2010), accounts of learning experiences of the learners themselves and the ‘learner voice’ have only rarely been reported (Sharpe, Benfield, Lessner & deCicco, 2005). However, more recently, this scarcity of research on the ‘learner’s voice’ has been recognised by the Joint Information Systems Committee (JISC), and there is currently a shift towards student-centred research (e.g. Creanor, Trinder, Gowan & Howells, 2006). The research reported here adds to this relatively recent shift of focus towards learner-centred research.

1.2 Aims and Objectives

The study described here investigates PKD in OLEs from a personal value perspective using the Schwartz Value Survey (SVS) (Schwartz, 1992, 1994a). The model used as a theoretical framework through which PKD is being conceptualised is Nonaka's SECI model (e.g. Nonaka, 1994; Nonaka & Takeuchi, 1995; Nonaka & Toyama, 2003; Takeuchi & Nonaka, 2004).

The two general research questions are:

1. To what degree do personal values have an impact on PKD in online learning and what other factors have an impact as well?
2. Can a knowledge creation and conversion model such as SECI be modified and applied in a useful way to examine PKD in the context of online learning at the level of an *individual*?

The specific objectives of this study are:

1. To investigate the personal experiences of learners of their own PKD in OLEs, and how this links to their personal values
2. To investigate which of the personal values of the SVS are particularly relevant to PKD in OLEs
3. To investigate to what extent the personal values identified through Objective 2 impact on PKD in OLEs
4. To investigate how a knowledge creation model such as SECI can be applied and, if necessary, adapted, to investigate PKD in OLEs

Objective 1 is investigated first by an exploratory study in which online learners were asked about their own personal experiences of PKD in online learning. Second, Objective 1 is further investigated by an online survey which is presented in chapter 8.

Objective 2 is investigated by a Delphi study. In that study, experts from the three main topic areas of this research – knowledge management, online learning, and personal values – were asked which of the ten individual-level value types of the SVS are *particularly relevant* to PKD in the context of online learning.

Objective 3 is investigated via a web-based survey examining the relationship of the SVS value types and PKD within the SECI model in online learning.

Objective 4 is met by combining the insights drawn from Objectives 1, 2 and 3, and by synthesising previous theoretical and empirical literature on the topics of the SECI model, personal values, and online learning.

Figure 1.1 shows the main concepts involved in the research and how they relate to each other: Knowledge development of the individual is the dependent variable. The independent variables are the SVS value types and how they affect PKD as conceptualised by the SECI model. Finally, OLEs constitute the context in which all of this is embedded.

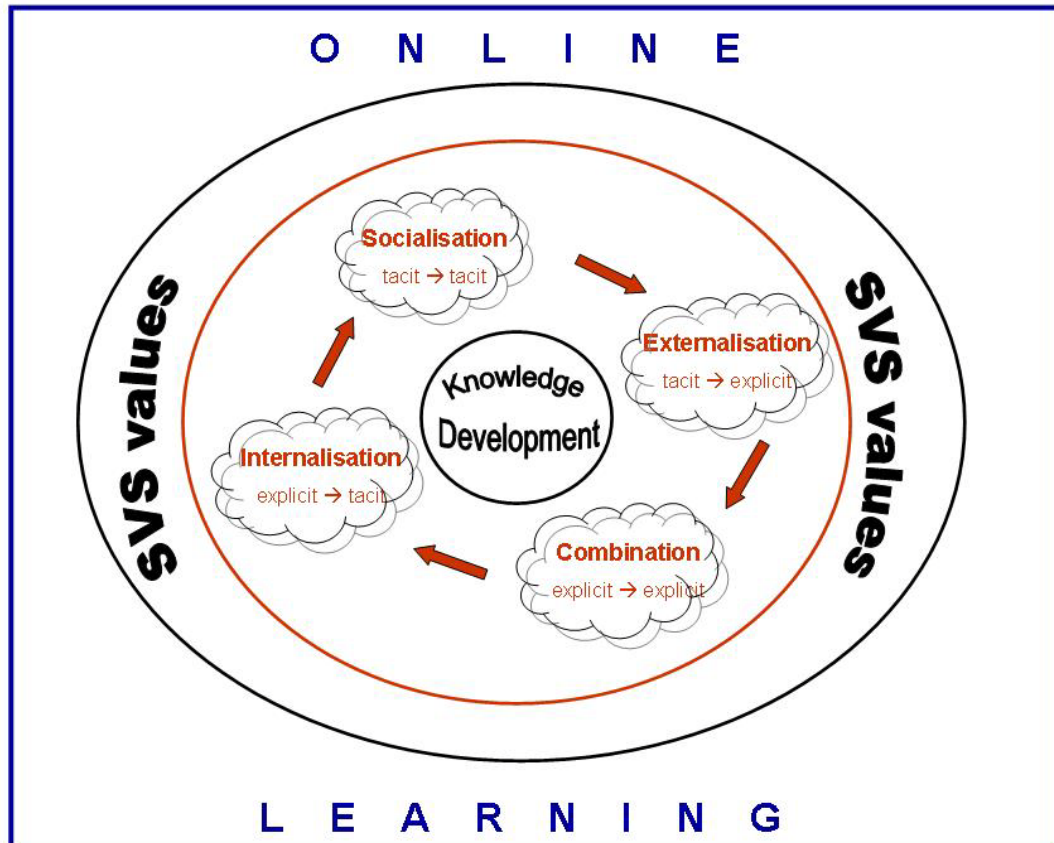


Figure 1.1: Concepts involved in the research and their relationships

1.3 Potential Contribution to Knowledge

This section briefly lists the *potential* contribution to knowledge that this study could make, as it was conceived towards the beginning of the research project. The *actual* contribution to knowledge is discussed in the Conclusion.

The potential contribution to knowledge of this study consists of:

- Insights into how personal values manifest themselves in PKD in OLEs
- Insights into which of the personal values of the SVS affect PKD in OLEs and to what extent
- Insights into how the SECI model can be applied and, if necessary, adapted to investigate PKD in OLEs

It is suggested that the various values of a given value set – the SVS in this case – are likely to differ in salience and relevance across contexts. Therefore, one of the potential contributions to knowledge of the research presented here is to design a theoretical framework that can be used to assess the salience and relevance of values in a particular context. However, since the influencing variables are likely to be highly dynamic and changeable, making predictions is problematic because PKD is by definition closely linked to an individual and her characteristics, thus making generalisations difficult.

Furthermore, a conceptual framework showing the relationships between some of the variables involved, for example, SVS values, SECI modes, cultural situatedness, and *ba*, could be developed. The thesis also discusses the applicability of the SECI model in the context of PKD in OLEs and investigates whether it can be applied at the level of an individual rather than at the level of organisational knowledge creation. Detailed information on SECI and the spiral of knowledge creation encompassing individual, group, and organisation can be found in section 2.3.2ff.

Finally, on a level regarding the actual practice of online learning, tutors who use OLEs and design courses can be made aware of the importance of personal values for PKD and how other aspects may also have an impact on PKD. This can lead to the improvement of the instructional design of online learning and make it more effective and valuable.

1.4 Research Process

At the beginning of the research process and in the initial stages of reviewing the literature, Hofstede's (1994) *national* cultural set of value dimensions was considered to be employed. However, it became clear that the national level of culture was likely to be too 'catch-all' and would not sufficiently discriminate between the individual learners' characteristics and their PKD approaches.

In total, the research process consists of three phases of data collection. First, an exploratory study was conducted. This involved two different multicultural student groups using OLEs. The students were asked to fill in the Portrait Values Questionnaire (PVQ) (Schwartz *et al.*, 2001), a data collection tool for the SVS value types, and take part in discussions in asynchronous forums in the respective OLEs of the courses. The focus was on how the online learners themselves experience their own PKD in OLEs. The objective of the exploratory study was to investigate potential relationships between one's perceived PKD and one's personal score on the SVS value types. The results of the exploratory study were somewhat inconsistent and it was not possible to link the results to PKD as examined through the SECI model. Furthermore, the small number of participants did not allow for a statistical analysis of how a score on the personal values affects PKD in online learning.

Second, a Delphi study was conducted. Its objective was to find out the *relative* importance of the ten SVS value types for PKD in the context of online learning. As a result of the experts' opinions on this matter, three value types were considered to be particularly relevant in said context, namely Self-Direction, Stimulation, and Achievement. As these three value types in particular were regarded as being *particularly relevant* to PKD in online learning, only these three value types were kept as variables in the research design.

Finally, an Internet-based survey was conducted. It focused on linking scores on Self-Direction, Stimulation, and Achievement with PKD processes and the actual change of the state of knowledge of the learners. Other independent variables include gender, age, national cultural background, level of skills in using information technology (IT), and academic discipline studied.

Both the literature review conducted and the empirical data obtained were then synthesised to generate a theoretical framework of PKD in OLEs from the point of view of the EC-I model (Externalisation/Combination – Internalisation). This EC-I model was adapted from, and is based on, the SECI model. In addition to the EC-I model, one of the main outcomes based on the literature review is the awareness for the need to take the cultural situatedness of PKD in online learning into account. Finally, a theoretical framework of PKD in online learning was also proposed. Figure 1.2 below illustrates the research process and how the individual phases of data collection are linked with each other and how they led to the outcomes of this study. The literature review informed both the empirical research phases and also the discussion of the impact of personal values, cultural situatedness and background variables on PKD in online learning; it also informed the adaptation of the new EC-I model and the new VCS-ECI

framework. The Delphi study is informed by the literature review, and in turn influences the design and content of the online survey. The exploratory study also informs the online survey.

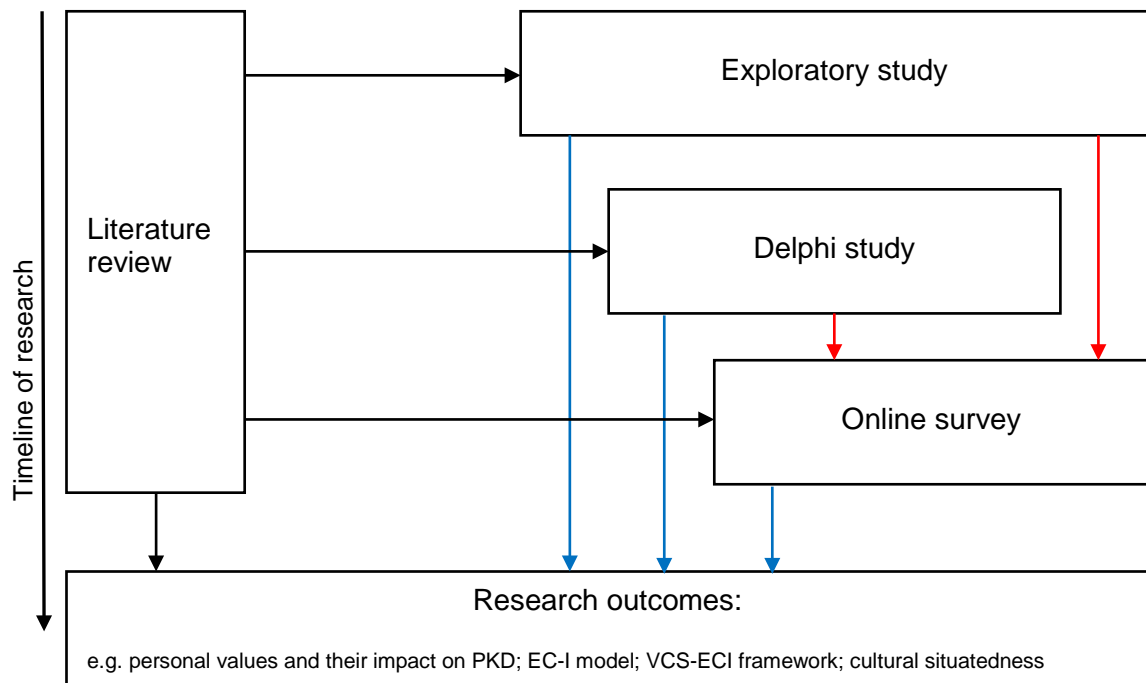


Figure 1.2: Research process

1.5 Structure of the Thesis

The thesis consists of nine chapters. After the Introduction, chapters 2, 3 and 4 constitute the literature review. In Chapter 2, the concept of knowledge and Nonaka's (1994) SECI model is discussed. Furthermore, the concepts of learning in general and online learning in particular are introduced. Chapter 3 then outlines the concepts of culture and values and the Schwartz Value Survey (Schwartz, 1992). Chapter 4 discusses the interrelations among the various topics. In particular, it emphasises the notion of cultural situatedness of PKD in online learning and discusses the applicability and the need for adapting the SECI model to make it suitable for the context of online learning. Chapter 5 deals with some overarching issues of research methodology and provides an overview of the research and the initial research model. The interdependency of the three phases of data collection is the reason that one separate chapter is dedicated to each of the three studies. In other words, Chapters 6, 7 and 8 discuss the methodology and results of the exploratory study, the Delphi study, and the online survey, respectively. Finally, Chapter 9 presents the conclusion by summarising the outcomes of the research and the original contribution to knowledge. It then discusses practical implications for learners, tutors and designers in online learning, addresses the limitations of the study, and provides suggestions for further research. Table 1.1 shows the structure of the thesis.

Table 1.1: Structure of the thesis

Chapter	Title of chapter	Type of chapter contents
Chapter 1	Introduction	Exposition of research
Chapters 2, 3 and 4	Knowledge, the SECI Model and Online Learning	Literature review (three parts)
	Culture, Values and the Schwartz Value Survey	
	Cultural Situatedness: Knowledge, SECI, Values, and Online Learning	
Chapters 5, 6, 7 and 8	Research Methodology	Introduction to methodology and all three phases of data collection and analysis (four parts)
	Learners' Experiences and Personal Values: An Exploratory Study	
	Relevance of SVS Values in Online Learning: A Delphi Study	
	Personal Values and Cultural Situatedness in PKD: An Online Survey	
Chapter 9	Conclusion	Summary and conclusion

Finally, the appendices include additional materials further illustrating the exploratory study (Appendix A.1 to A.3), the Delphi study (Appendix B.1 and B.2), and the online survey (Appendix C.1 to C.3). Appendix D.1 to D.4 reproduce three conference papers and a book chapter; these publications are either directly based on this research or deal with some aspects closely related to it.

2 Knowledge, the SECI Model and Online Learning

First, this chapter defines and discusses the concept of knowledge, which is at the core of the presented research. The contextualised and culturally situated nature of knowledge and the importance of taking a personal perspective on knowledge and knowledge creation are also pointed out. Then, the distinction between tacit and explicit knowledge will be introduced, as these concepts are central to Nonaka's SECI model, which will then be discussed in-depth. A section on the relationship of knowledge and learning then emphasises the linkage between knowledge creation and learning. After that, learning in general will be introduced and some crucial aspects that impact on online learning will be discussed, for example the roles of the concepts of personal values, context, community and relevance.

2.1 The Concept of Knowledge

2.1.1 Definitions and Characteristics of Knowledge

Davenport & Prusak (1998, p. 5) offer the following definition of knowledge, from an organisational point of view:

“Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms.”

Similarly, Davenport, de Long & Beers (1998) define knowledge as “information combined with experience, context, interpretation, and reflection” (p. 43), and as a “high-value form of information that is ready to apply to decisions and actions” (p. 43). Two issues are interesting here: One, knowledge is closely linked to a particular situation, i.e. *context*, and a certain perspective, i.e. a *personal* view of things, is necessary so that information can turn into knowledge. Two, knowledge is only knowledge if it can be applied, i.e. made use of, in a particular situation. This suggests that knowledge is deeply embedded in a particular context without which knowledge would be mere information.

There are a potentially endless number of factors that make up a context and only some of these factors may be examined in any one study. In the study reported here, personal values and their impact on PKD in online learning constitutes one of these determining factors of said context. In addition to personal values, a small number of other contextual factors will also be examined so that a tentative theoretical framework of PKD in online learning can be established which acts as a starting point to describe PKD in online learning in more detail. Knowledge management researchers have been regarding context as a crucial aspect for knowledge

management, as knowledge is created in a particular context and is likely to be understood differently in a different context or when knowledge is separated from its context (Ahn, Lee, Cho & Park, 2005).

Knowledge can also be defined by delineating it from ‘data’ and ‘information’. Probst, Raub & Romhardt (2000, 2003) conceptualise signs, data, information and knowledge as a hierarchy of concepts starting with signs that become data through syntax used in conjunction with a given set of signs. Adding a context to these data then leads to information, while the last aggregation to knowledge takes place via the combination and interpretation of information. However, they do not regard data, information, and knowledge as discrete but as having no strict and mutually exclusive boundaries (Probst, Raub & Romhardt, 2003). This suggests that knowledge must be defined as precisely as possible so that it becomes clear whether a piece of research deals with knowledge or with information.

Similarly, knowledge can also be defined in terms of information and the “capability to interpret data and information through a process of giving meaning to these data and information; and an attitude aimed at wanting to do so” (uit Beijerse, 1999, p. 101). Blair (2002) also points to the non-contextualised nature of data and contrasts this with the highly contextualised nature of the concept of knowledge. Table 2.1, based on Probst, Raub & Romhardt (2003) and Davenport & Prusak (1998), gives an overview of the characteristics of data, information, and knowledge.

Table 2.1: Comparison of data – information – knowledge (based on Probst, Raub & Romhardt, 2003, and Davenport & Prusak, 1998)

	Data	Information	Knowledge
Based on: Probst, Raub & Romhardt (2003)	unstructured	—	structured
	isolated		rooted/embedded
	context-independent		context-dependent
	low level of influencing behaviour		high level of influencing behaviour
	signs		cognitive patterns
	distinction		mastery/capability
Based on: Davenport & Prusak (1998)	discrete facts	data interpreted in a particular context	information with added insight, experience, interpretation

The multitude of different – and often diverging – definitions of knowledge is also due to the different frames of reference and different phenomena that are being researched in the literature on knowledge management. Definitions are conventions that serve certain purposes (Schneider, 2007). This leaves room for various, albeit similar, definitions, depending on what is being investigated.

Due to space restrictions, this thesis cannot provide a thorough discussion of the vast amount of literature dealing with the philosophical, epistemological and conceptual issues of knowledge. However, the reader is referred to the interesting and illuminating conversation between Schneider (2007, 2009) and Geiger & Schreyögg (2009), with an additional commentary on their dialogue by Nicolini (2009); for a detailed discussion of 130 definitions of data, information, and knowledge see Zins (2007).

In addition to the concept of knowledge, Gardner (1993) discussed the related concept of intelligence, suggesting that there are multiple intelligences of which probably only two – verbal/linguistic and, to a lesser degree, interpersonal – can sensibly be investigated in the context of online learning. Likewise, also due to restrictions of space, the concept of intelligence cannot be discussed further.

2.1.2 The ‘Personal’ in Knowledge and Knowledge Management

Wright (2005) suggests that interest in *personal* knowledge management within the field of knowledge management has recently been growing. Pauleen (2009), in his introduction to a special issue on personal knowledge management of the *Online Information Review*, also points out that this is relatively underresearched but that it is an important field which merits more research.

Similarly, Edwards, Ababneh, Hall & Shaw (2009) state that most theorising about knowledge management has been done at the level of an organisation. However, the organisation as such is unlikely to successfully manage the knowledge of its members, and thus knowledge management should be conceived of at the level of individual members of the organisation. Therefore, personal knowledge management is increasingly important to address the management of knowledge and to enhance the effectiveness of knowledge workers (Edwards *et al.*, 2009).

Arguing in favour of a focus on the individual in knowledge management, Skyrme (1999) identified several knowledge networking activities, e.g. self-awareness, effective communication, developing networks, effective use of technology, managing personal workspaces and continuously engaging in personal development. Here, managing knowledge and related activities are not primarily conceptualised at the level of the organisation but at the level of each individual knowledge worker.

Proposing a model of personal knowledge management, Wright (2005) identifies four sets of competencies: cognitive, information, social, and learning and development. It is argued here that caution should be applied when investigating information competencies, which Wright

(2005) describes as accessing, searching, storing, organising and assessing information resources. Whereas this is certainly an important aspect of personal knowledge management, focusing solely on information competencies should be called personal information management rather than personal knowledge management. In addition to these three sets of competencies, Wright (2005) emphasises the individual, social and organisational context and its importance for personal knowledge management. This distinction between competencies and context suggests that a set of competencies is not enough to predict the level of success of personal knowledge management, but that context is likely to mediate and/or impact on the state and level of these competencies.

Miller (1994, 1999, 2005) advocated the need for a notion of 'personal knowledge development' in the context of education. He argues that the terms 'individual knowledge management' or 'personal knowledge management' may be used, but that he prefers 'personal knowledge development' (Miller, 2005). He emphasises the importance of the concept of personal knowledge development through even recommending that the US-American Departments of Education and Labor should be merged into a 'department of knowledge development' (Miller, 1994, 2005). According to him, personal knowledge development should be applied at all levels of education so that learners always have their own personal knowledge development systems in operation during their lifetime (Miller, 2005). Rather than dealing with completely new knowledge that has not existed before, Miller (2006) argues that the term 'development' is suitable to be used because knowledge builds on knowledge that one already possesses. Developing knowledge is therefore a change of one's knowledge base, but any such changes are dependent on the individual knowledge bases of learners rather than of knowledge *per se*, i.e. as a thing unrelated to a knower.

In this section, it was shown that the importance of the individual regarding knowledge management and knowledge development has only relatively recently attracted more attention. However, it is essential to take into account the individual and her 'knowledge background' and other personal characteristics – if this is not done, knowledge development processes are likely to follow a one-size-fits-all approach which makes PKD less effective. This focus on the individual and the need to take into account her context, background, prior knowledge, etc. plays an essential part throughout the whole research process.

2.2 Tacit and Explicit Knowledge

In order to understand properly the functioning of the SECI model it is essential to know where these two types of knowledge come from, what they mean and, in particular, how they are used by Nonaka & Takeuchi (1995) in the context of SECI.

2.2.1 Tacit Knowledge and Tacit Knowing

Polanyi preferred the term 'knowing' over 'knowledge'. He suggests that all knowledge has a tacit component and that a bipolar dichotomy of tacit knowledge versus explicit knowledge is not

a useful way to conceptualise knowledge (Polanyi, 1958, 1966). Arguably the most widely cited extract from Polanyi (1966) is: “*we can know more than we can tell*” (p. 4, italics in the original). Some part of one’s knowledge may thus remain in the unconscious.

The focus on knowing instead of knowledge points out the procedural and dynamic character of knowing and ‘how to know’, while also emphasising the personal nature and embeddedness of knowing: “All knowing is personal knowing – participation through indwelling” (Polanyi & Prosch, 1975, p. 44). It is suggested here that this statement forms a dilemma: on the one hand, knowing is personal, i.e. highly subjective, and on the other hand, knowing is ‘participation through indwelling’, i.e. taking part in a shared context, which by definition must be intersubjective.

Many researchers and practitioners in knowledge management have not noticed Polanyi’s focus on tacit *knowing*, i.e. a process of knowing and not knowledge as a tangible thing (cf. Gourlay, 2002). Gourlay (2002) stresses this further by pointing out that Polanyi used the term ‘tacit knowing’ about five times more often than ‘tacit knowledge’. It is argued here that the process of knowing and the constant exchange and conversion of explicit and tacit knowledge which is at the centre of this investigation – the term ‘personal knowledge *development*’, i.e. a process that is in flux and constantly changing and evolving, is therefore a pertinent one to describe such processes. Bhatt (2000) uses the term ‘knowledge development’ as well, suggesting the phases of knowledge creation, knowledge adoption, knowledge distribution, and knowledge review and revision, basing a knowledge development cycle directly on the SECI model. Bhatt (2000) also suggests that at the individual level, knowledge creation and knowledge adoption are sufficient to compose a knowledge development cycle. Another conceptualisation of knowledge development is given by Maheswaran (2006) who states that knowledge development consists of knowledge creation and knowledge extension. Knowledge creation is about “bringing in new paradigms and new ways of evaluating evidence” (p. 321), whereas knowledge extension is about “presenting views that advance our existing knowledge and framework in incremental ways” (p. 321).

In contrast, Nonaka (1991) defines tacit knowledge as highly personal, hard to formalise and, as a consequence, difficult to communicate, transfer or share. He suggests that tacit knowledge is deeply linked and only relevant in a specific context (Nonaka, 1991). As culture is one of the prime determinants of context, tacit knowledge itself is shaped by culture as well, be it the national cultural background of the employees or the organisational culture of the firm. He goes on to say that tacit knowledge consists of both technical skills/know-how and of taken-for-granted mental models and beliefs (Nonaka, 1991). Tacit knowledge can be regarded as that which the practicing expert knows, but it is very difficult to describe. Heuristics or rules of thumb can be used to at least partially describe the expert’s expertise or knowledge (Blair, 2002).

Weggeman (1999), in a German-language publication, used the following formula to define knowledge: $W=I \times EFE$, where W =Wissen (Knowledge), I =Information (Information), E =Erfahrung (Experience), F =Fertigkeit (Skills), and E =Einstellung (Attitude). He explains the formula in

German (Weggeman, 1999, p. 41), but an English translation is provided here by this researcher:

Knowledge (W) is a personal capacity that is regarded as the product of Information (I), Experience (E), Skills (F), and Attitude (E), that is at the disposal of an individual at a given point in time.

Information is conceptualised here as explicit knowledge, whereas Experience, Skills, and Attitude together make up tacit knowledge.

Tacit knowledge is considered to be a “cultural, emotional, and cognitive background, of which we are only marginally aware” (Stenmark, 2001, p. 10). Nonaka & Konno (1998) argue that there are two dimensions of tacit knowledge: a technical dimension which involves personal skills and is referred to as know-how, and a cognitive dimension which “consists of beliefs, ideals, values, schemata, and mental models which are deeply ingrained in us and which we often take for granted” (p. 42).

Grant (2007) conducted a literature review on how the concept of tacit knowing in Polanyi (1958) has been used in journal articles in the field of knowledge management. He found evidence that suggests that 42% of the authors of papers dealing with the notion of tacit knowledge were unlikely to have read Polanyi’s (1958) original work. It is true that authors often use the term tacit knowledge instead of tacit knowing and regard it as a direct opposite of explicit knowledge – an either/or distinction. In the text of this thesis, ‘tacit knowledge’ is used as a term, but without implying that it only applies to knowledge-as-thing, but that it equally applies to the process of tacit knowing.

Castillo (2002) suggests that psychologists have successfully quantified tacit knowledge by measuring ‘practical intelligence’ (cf. Sternberg, 1997) as a proxy. However, researchers in the area of management often fail to properly quantify tacit knowledge (Castillo, 2002). The elusiveness and fuzziness of the concept of tacit knowledge has led researchers to add more and more layers of meaning to the concept so that it reflects better the various research strands of the individual researchers (Castillo, 2002). However, these evermore broad definitions make the idea of tacit knowledge less and less significant, prompting Castillo (2002) to devise a typology of tacit knowledge encompassing four types: nonepistemic, sociocultural, semantic, and sagacious tacit knowledge.

One, nonepistemic tacit knowledge is the result of tacit learning, consists of inarticulate forms of knowledge such as gut feelings and is tacit knowledge of which the individual is unaware and which she can thus not make explicit. This type is extremely difficult to measure because participants in a survey etc. who are not aware of that knowledge cannot report it. Two, sociocultural knowledge is knowledge that belongs to a social or cultural system rather than to an individual. As the research reported here deals with the knowledge development of individuals and their personal tacit knowledge, sociocultural tacit knowledge is not part of this study. Three, semantic tacit knowledge are “instances of verbalizable knowledge that, either because of special symbolism and/or possibly distinctive behavior peculiar to the job, make it

unnecessary to mention such knowledge” (Castillo, 2002, p. 51); the specialised communication of scientists is one example of semantic tacit knowledge as one knows the full implicit meaning of words or other abstract expressions without the need to make them explicit. This type of tacit knowledge can potentially be investigated. Fourth, sagacious tacit knowledge is linked to a spontaneous awareness of the solution of a problem and enables certain experts or wise people to see the truth when most people could not. This type of tacit knowledge is extremely difficult to measure, as it requires that the researcher is able to perceive that sagacious knowledge which is expressed by an expert. To sum up, the research presented here focuses on semantic tacit knowledge.

2.2.2 The Continuum of Tacit, Implicit, and Explicit Knowledge

First, the concept of explicit knowledge will now be discussed. According to Nonaka (1991), explicit knowledge is knowledge that can be expressed, codified, stored in databases or as text in books or articles, transferred, shared and managed by knowledge management tools.

Explicit knowledge is often the most prevalent form of knowledge in Western cultures (Nonaka & Konno, 1998). On the other hand, some Eastern cultures – Japan being a widely cited example (Nonaka & Konno, 1998) – see knowledge as primarily tacit, difficult to express, highly personal, and thus difficult to communicate or transfer. Thus, tacit knowledge is rooted in the actions and real-life experiences of an individual.

Divergent opinions exist on whether tacit knowledge is something at an individual level or at both an individual and group level. Nonaka & Takeuchi (1995) argue it is a personal form of knowledge, but that shared tacit knowledge is also possible. Similarly, Baumard (1999) says that tacit knowledge can be both personal and collective. However, von Krogh & Roos (1995) argue that tacit knowledge is wholly individual and personal. This provides evidence that, even if some tacit knowledge can be shared, it is likely to be highly personal and therefore the individual and personal side of knowledge development is crucial. There are also different opinions as to whether tacit knowledge can be made explicit, with Baumard (1999) and von Krogh & Roos (1995) saying that it cannot and Nonaka & Takeuchi (1995) saying that it can be made explicit, although this is likely to be difficult. This author suggests that tacit knowledge can indeed be made explicit, but this requires effort, trial-and-error from the part of the person trying to make her tacit knowledge explicit, and there will be ambiguity, different levels of understanding, even misunderstandings, and personal re-interpretations and re-conceptualisations of tacit knowledge from the part of the recipient. It is suggested here that the more divergent the frames of reference are and the less overlapping the shared context is the more divergent interpretations of tacit knowledge there will be. Tacit knowledge from the sender A will therefore become somewhat modified and adapted tacit knowledge for recipient B, but may even cease to be knowledge altogether when the mental models and contexts of the sender and receiver are too divergent.

It is important to note that Nonaka (1991) does not regard tacit and explicit knowledge as opposed, separate and mutually exclusive, but as mutually complementary entities. In other

words, knowledge is neither completely and fully tacit nor completely and fully explicit, but exists alongside a continuum (Nonaka & von Krogh, 2009). Knowledge at the far explicit side of the continuum might therefore be called information rather than knowledge as it does not require a particular context and situation to be given meaning. For example, a verbalised account of the specifications of a machine may be called information even if there is no concrete context or *ba* present. If these specifications are read by an engineer, made sense of and used to assemble this machine, we do have a concrete context and the information becomes knowledge. Therefore, when applying the SECI model or when modelling knowledge creation and conversion processes using the model, one should be aware that in some situations or contexts, there is a strong emphasis on the explicit end of the knowledge type continuum, whereas in other contexts the emphasis is on the tacit end.

In addition to explicit and tacit knowledge, some researchers have used the term 'implicit' knowledge, either using this as a quasi-synonym of tacit knowledge or arguing in favour of conceptualising tacit and implicit knowledge differently. Frappaolo (2008) says that tacit knowledge cannot be made explicit at all – which is a different view to Nonaka and colleagues – but that there is a middle ground between tacit knowledge and explicit knowledge, namely implicit knowledge. He argues that, in an organisational context, interviewing and storytelling are promising vehicles to make some of the tacit knowledge move into the realm of implicit knowledge, from where it can then be made explicit (Frappaolo, 2008). This distinction between tacit and implicit knowledge can be very helpful for an organisation to determine which part of the knowledge of its members is tacit, i.e. not capable of being made explicit, and which part is implicit, i.e. which can be made explicit, albeit requiring considerable effort.

Other researchers have conceptualised the tacit-implicit-explicit continuum differently. Bennet & Bennet (2008) note that boundaries between tacit and implicit knowledge are dynamic and differences between these two types of knowledge are difficult to describe. People have the least awareness of tacit knowledge. Tacit knowledge consists of spiritual knowledge, intuitive knowledge, affective knowledge, and embodied knowledge. Interestingly, spiritual knowledge in terms of Bennet & Bennet (2008) has a direct link to the concepts of values and context discussed throughout this thesis:

“Spiritual knowledge may be the guiding purpose, vision and values behind the creation and application of tacit knowledge. It may also be the road to moving information to knowledge and knowledge to wisdom, i.e. purpose, vision and values are excellent guidelines.” (p. 80)

Tacit knowledge cannot be expressed, but, it is argued here, it influences the perception of both implicit and explicit knowledge; in other words, one could conceptualise tacit knowledge as one constituting factor of the context in which knowledge creation occurs and which in turn shapes implicit and explicit knowledge. Then, regarding implicit knowledge, Bennet & Bennet (2008) suggest that this knowledge is not readily accessible but can be recalled by triggering events such as being asked questions or through dialogue or reflection, although expressing it even then is difficult and not always possible. Finally, explicit knowledge is knowledge that can be

readily expressed, often in words; they even equate it with information. Figure 2.1 (taken from Bennet & Bennet, 2008, p. 77) gives an overview of the characteristics of tacit, implicit and explicit knowledge as well as locating them on a continuum of level of awareness.

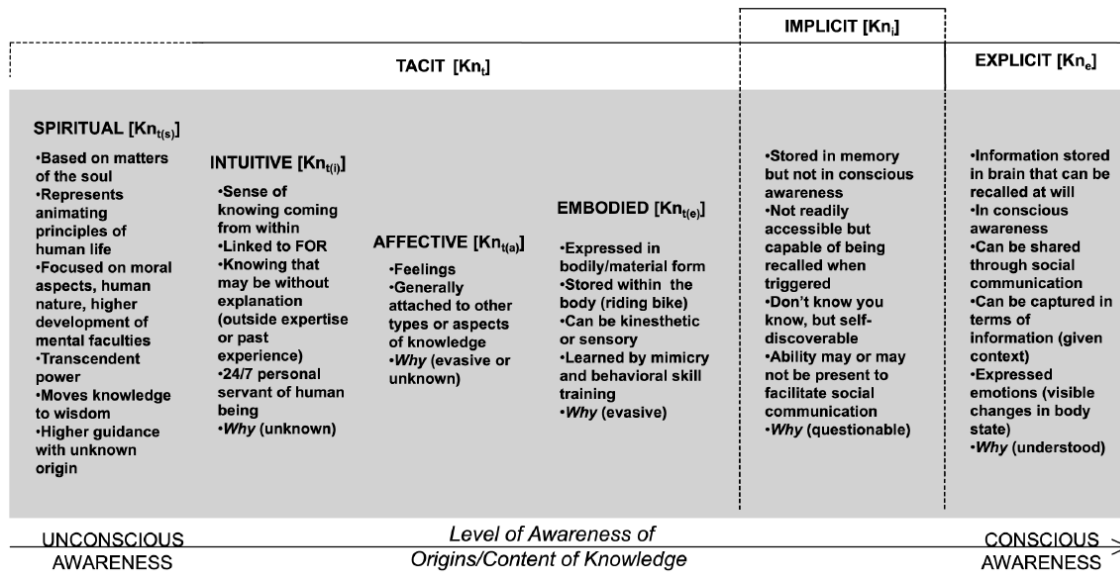


Figure 2.1: Level of awareness of tacit, implicit and explicit knowledge (taken from Bennet & Bennet, 2008, p. 77)

2.2.3 Dealing with Different Types of Knowledge in Knowledge Management and Online Learning

Hicks, Dattero & Galup (2007) developed the ‘Explicit Islands in a Tacit Sea’ metaphor. They conceptualise data, information, and explicit knowledge as three separate islands that are surrounded by the sea; the sea represents tacit knowledge. The sea or tacit knowledge surrounds the islands, representing that tacit knowledge is necessary to create and maintain data, information, and knowledge. To show the links between data, information, and explicit knowledge, these islands are linked via bridges. The shore represents the interaction of tacit knowledge and data, information, and explicit knowledge, emphasising Nonaka’s (1994) notion that knowledge is created through the interaction of tacit and explicit knowledge.

Lehner (2008) argues in favour of a more conscious and detailed focus on tacit knowledge management and suggests that knowledge management activities dealing with tacit knowledge must not be accidental or taking place at random. However, it is argued here that activities and actions that are too restrictive or that pre-determine how to deal with tacit knowledge can be counter-productive, as tacit knowledge cannot thrive and develop in rigid systems.

Through a review of the literature, McAdam, Mason & McCrory (2007) identified a number of sub-types or epitomes of tacit knowledge which make the concept of tacit knowledge easier to operationalise in a business setting. They list the following epitomes of tacit knowledge: intuition, skills, insight, know-how, beliefs, mental models, and practical intelligence (McAdam,

Mason & McCrory, 2007). When businesses use these epitomes as categories to explore their 'tacit knowledge inventory' it will be easier for them to grasp and detect this tacit knowledge.

Tsoukas (2003) strongly recommends not trying to mechanically convert and 'translate' tacit knowledge into explicit knowledge but argues in favour of fostering social interaction as a means of 'accessing' tacit knowledge. Although Nonaka & Takeuchi (1995) argue in favour of a conversion of tacit and explicit knowledge so that knowledge creation can take place, Tsoukas' (2003) emphasis on interpersonal interaction as a facilitator of making tacit knowledge at least partly explicit is to be welcomed. To put it another way: "New knowledge comes about not when the tacit becomes explicit, but when our skilled performance is punctuated in new ways through social interaction" (Tsoukas, 2003, p. 410).

Externalising tacit knowledge is often difficult in technology-enhanced environments because direct interaction in such systems is either sparse or less personal than in a face-to-face environment, as contextual cues can be few and if they do exist, they can be ambiguous and therefore easily misinterpreted (Walther, 1995). However, attempts to codify knowledge and thus make it explicit can be misplaced (Connell, Klein & Powell, 2003) and therefore counter-productive. It is thus important to attain the most appropriate balance between tacit and explicit knowledge to make PKD in OLEs as effective as possible.

One can also distinguish between 'knowing *that*', as explicit and codified propositions which can be modelled in knowledge management systems, and 'knowing *how*', as the tacit dimension of knowledge which is embedded in practice (Duguid, 2005), and which is therefore strongly dependent on context. Duguid (2005) suggests that codification of 'knowing *that*' is powerful but needs 'knowing *how*' to release its potential. For PKD in online learning, this means that learning resources of an OLE, i.e. the basis for codified knowledge and 'knowing *that*', is not enough for a true development of knowledge and skills, both of which require a more tacit, situated and contextualised 'knowing *how*' aspect.

In this chapter so far, it was shown that all knowing is personal and directly linked to an individual, again pointing out the importance of the *personal* in PKD. In addition to that, it was argued that tacit knowledge should be considered as a cultural, emotional, and cognitive background, which influences how an individual develops his personal knowledge; it is this background or context that therefore strongly influences PKD in OLEs. One aspect that is likely to influence this context are the personal values of a learner, something that the research presented here examined in depth. It is argued here that a generalised one-size-fits-all approach to PKD in OLEs falls short of maximising the effectiveness of PKD in OLEs. Knowledge should therefore not be regarded as a commodity or thing detached from everything else and existing *per se*, but as something that is valuable only if it is relevant to a) an individual learner in b) a meaningful context. Furthermore, we have seen that intuition, skills, insight, know-how, beliefs, mental models, and practical intelligence are epitomes of tacit knowledge. This tacit knowledge is therefore highly personal and, as a consequence, the individual and her context have to be taken into account in any description of the conversion of knowledge from tacitness to explicitness. This tacit-explicit conversion is conceptualised in Nonaka's SECI

model, which acts as the framework by which PKD is explained, and which will be discussed in the following section.

2.3 Knowledge Creation and Nonaka's SECI Model

2.3.1 Knowledge Creation and Learning

Knowledge creation and learning are conceptually related: learning can be defined as “the process through which knowledge is created” (Mitchell & Boyle, 2010, p. 76). However, no agreement has yet been reached regarding the precise relationship or differentiation between knowledge creation and learning (Akbar, 2003). Furthermore, he also argues that knowledge creation is inadequately integrated with learning, ignoring the relationship between knowledge and action. This problem of defining and delineating knowledge creation makes research difficult (Dröge, Claycomb & Germain, 2003).

Learning processes can be seen as a reaction of the mind to cognitive conflicts (see Piaget, 1977), i.e. an incongruence between a person's current state of knowledge and the information available elsewhere (Kimmerle, Cress & Held, 2010). To solve such a conflict, an equilibrium is needed, of which *assimilation* and *accommodation* are two types:

“People may *assimilate* information, which means, just adding new information to their existing prior knowledge. Or they may *accommodate* their prior knowledge to new information (re-arrange, re-organise, re-define their existing knowledge). In both cases people will have to internalise information from their environment in some way.” (Kimmerle, Cress & Held, 2010, p. 36)

This shows that information heavily impacts on the state of knowledge, thus being an important factor for the development of knowledge. If learning occurs by either assimilating or accommodating information, then learning can be defined as the process of changing the state of one's knowledge or, in other words, learning directly triggers or impacts on knowledge development.

Given that the focus of this research is on the development of knowledge from the point of view of the SECI model, i.e. a model rooted in knowledge management and therefore requiring definitions and conceptualisations that stem from knowledge management rather than learning, it is emphasised here that both the terminology and the theories employed in this research should be embedded in the discipline of knowledge management but cross-references to learning are likely to be numerous. Kimmerle, Cress & Held (2010) support this, as they suggest that Nonaka's theory deals with the development of innovative knowledge, whereas knowledge building deals with how knowledge is developed collaboratively.

2.3.2 Description of the SECI Model: The Four Modes

Nonaka and colleagues' SECI model has been widely used in both research and practice regarding knowledge creation; Gourlay (2006a) saying that it has even achieved a paradigmatic status. The model was first proposed in the early 1990s (Nonaka, 1991) and has since been modified and extended by, for example, Nonaka (1994), Nonaka & Takeuchi (1995), Nonaka, Takeuchi & Umemoto (1996), Nonaka & Konno (1998), Nonaka, Toyama & Konno (2000), Nonaka, Toyama & Byosière (2001), Nonaka & Toyama (2003), Takeuchi & Nonaka (2004), Nonaka, von Krogh & Voelpel (2006), Nonaka, Toyama & Hirata (2008), and Nonaka & von Krogh (2009).

SECI describes four modes of knowledge creation through a continuous interaction between explicit and tacit knowledge. Socialisation is defined as a "process of sharing experiences and thereby creating tacit knowledge such as shared mental models and technical skills" (Nonaka & Takeuchi, 1995, p. 62). After this conversion process from tacit knowledge to tacit knowledge, this tacit knowledge is being made explicit in the Externalisation mode. This mode "is typically seen in the process of concept creation and is triggered by dialogue or collective reflection" (Nonaka & Takeuchi, 1995, p. 64). This explicit knowledge is then combined with other explicit knowledge in the Combination mode. Finally, that explicit knowledge is then converted into tacit knowledge in the Internalisation mode, which is closely related to learning by doing.

Nonaka & Toyama (2003) claim that the movement through the SECI modes is not a circle but a spiral: the continuous interaction between tacit and explicit knowledge (i.e. the epistemological dimension) is amplified in the course of going through the SECI modes, moving up the ontological levels of individual, group, and finally organisation. As this study deals with individual-level PKD and therefore only one ontological level, the concept of a spiral is not warranted in this context. The four modes are now explained in more detail:

Socialisation:

Socialisation is defined as a "process of sharing experiences and thereby creating tacit knowledge such as shared mental models and technical skills" (Nonaka & Takeuchi, 1995, p. 62). In this mode, knowledge is acquired mainly by observation, imitation and learning by doing, similar to an apprenticeship (Nickols, 2000). Let us take the example of learning how to ride a bicycle. It is essential for the learner to observe how somebody rides a bicycle. That gives the learner an initial idea how to do it herself. This is the conversion process from tacit knowledge to tacit knowledge. Socialisation is regarded by Nonaka & Toyama (2003) as the point where knowledge creation starts.

Nonaka & Toyama (2003) also stress that successful Socialisation is fostered by 'indwelling' and 'living in' the world, which in turn suggests that the context in which knowledge creation and PKD occurs has to be actively experienced and made sense of. In the case of OLEs, this active experience is not direct or face-to-face but mediated through the Internet and related OLE technologies; therefore Socialisation as a SECI mode is less relevant in online learning than in face-to-face interaction within an organisation.

Nonaka & Konno (1998) name several factors and characteristics of Socialisation:

- Tacit knowledge is exchanged through joint activities and direct interaction
- Apprenticeship
- Empathise – not necessarily sympathise – with family, friends, colleagues, etc.
- Physical proximity is key
- Sharing personal knowledge and creating a common *ba*

Externalisation:

Externalisation as a knowledge conversion mode is “typically seen in the process of concept creation and is triggered by dialogue or collective reflection” (Nonaka & Takeuchi, 1995, p. 64). The person who already knows how to ride a bike can explain it to the learner via dialogue, for example by explaining the importance of keeping balance. This is the conversion process from tacit knowledge to explicit knowledge.

Nonaka & Konno (1998) say about Externalisation:

- Tacit knowledge is being expressed and translated into an explicit form which can be understood by others
- Externalisation is supported by the articulation of tacit knowledge, i.e. making tacit knowledge explicit. This is done by expressing one’s ideas through images, words, concepts, metaphors, analogies, visual aids, etc. Thus, dialogue is essential for Externalisation
- Translating tacit knowledge into an explicit form requires deductive/inductive reasoning or creative inference

Combination:

Combination as a knowledge conversion mode “involves combining different bodies of explicit knowledge” (Nonaka & Takeuchi, 1995, p. 67). This is done by individuals exchanging and combining this knowledge in the form of documents, etc. Combining texts about how to ride a bike with drawings that illustrates it is one example. This is the conversion process from explicit to explicit knowledge. That combination, editing and processing of explicit knowledge (or information, as this author suggests it should be called) is likely to lead to more complex and systematic knowledge (Nonaka & Toyama, 2003). It is suggested here that tools and procedures borrowed from information management, e.g. querying databases, abstracting, categorizing documents, etc., greatly enhance these Combination activities.

Nonaka & Konno (1998) then go on to explain Combination:

- Conversion of explicit knowledge into more complex sets of explicit knowledge
- Key aspects: communication and diffusion processes, and systemising knowledge

- Three processes: capturing and integrating new explicit knowledge, dissemination of explicit knowledge, editing or processing of explicit knowledge to make it more usable

Internalisation:

Internalisation is defined as the process by which knowledge becomes valuable when it “[knowledge] is internalized in individuals’ tacit knowledge bases through shared mental models or technical know-how” (Nonaka, Toyama & Byosière, 2001, p. 497), and it is closely related to learning by doing (Nonaka & Takeuchi, 1995). Practising riding a bike will give the learner more and more confidence and she will be in control of the bike more and more. Thus, knowledge and skills become embedded into an individual’s mind and are used by her in daily routines in a specific context. This is the conversion process from explicit to tacit knowledge.

Finally, Nonaka & Konno (1998) say about Internalisation:

- An individual must identify the knowledge relevant for herself
- Learning-by-doing, training, exercises are means for Internalisation
- Two dimensions: explicit knowledge has to be embodied in action and practice, embodying explicit knowledge through simulations or experiments to trigger learning-by-doing

Nonaka & Takeuchi (1995) regard knowledge as a “dynamic human process of justifying personal belief toward the ‘truth’” (p. 58) and argue that it is always context-specific. The SECI model can also help to stress the importance of interaction in informal knowledge processes (Hoe, 2006). It is particularly the informal and largely unstructured knowledge processes that are essential for tacit knowledge to be shared.

Although the SECI model was originally designed as a model of organisational knowledge creation involving the individual, a team and the organisation as a whole, it is argued that SECI is also a useful analogy for learning at an individual level. This is because not all of the three ontological dimensions of individual, group, and organisation need to be involved.

In the Socialisation mode, the individual is in direct face-to-face interaction with peers or tutors. Through observation, that individual can develop tacit knowledge of her own through the interaction with the tacit knowledge of peers or tutors. Thus, the co-presence of others is required in this mode, but PKD does not necessarily occur in all individuals involved, although this is possible. Then, in the Externalisation mode, the individual makes her knowledge explicit through dialogue. Again, the co-presence of others is normally assumed, but is not necessary. For example, the making-explicit of knowledge can occur in a private diary or in some reflective notes without being read by anybody else. Thus, it is argued here, the inner reflection that happens within an individual may lead to Externalisation without the need for the existence of others. Then, in the Combination mode, explicit knowledge can be combined with other instances of explicit knowledge. This occurs without the need for the existence of others – the only interaction that needs to take place is the interaction of the individual with at least two instances of explicit knowledge. Finally, in the Internalisation mode, engaging with knowledge

and grappling with a problem can lead to learning-by-doing. Again, no other agents such as peers or tutors need to be present.

It could be shown that, with the exception of the knowledge conversion in the Socialisation mode, the co-presence of others, for example peers and tutors, may be helpful but is not a prerequisite for PKD to occur. However, it must be pointed out that the PKD processes always take place in a particular context which is shaped by all types of communities – fellow learners, tutors, friends, family, colleagues, to name but a few. In other words, the context in which PKD in OLEs is embedded is strongly influenced by others, but the co-presence of others in the PKD processes as they happen is not always required.

2.3.3 *Ba* – Places for Knowledge Creation

The concept of *ba* was originally proposed by the Japanese philosopher Kitaro Nishida (cf. Nishida, 1921 [1990]) and further developed by Hiroshi Shimizu (cf. Shimizu, 1995). The Japanese kanji, i.e. ideographs of Chinese characters used in Japanese writing, for *ba* is 場. It is a two-part kanji composed of 土, meaning earth and ground, and 易, meaning easy and simple. Fayard (2003) also defines the first kanji as ‘ground’, but also as ‘boiling water’ and ‘what is rising’, and the second kanji as ‘to enable’. *Ba* roughly translates as the English word ‘place’ (Nonaka & Konno, 1998). Nonaka and colleagues have subsequently drawn from and adapted this concept for use in their SECI model. They consider *ba* to be “a shared space that serves as a foundation for knowledge creation” (Nonaka & Konno, 1998, p. 40).

They defined it further as “a shared space for emerging relationships. This space can be physical (e.g., office, dispersed business space), virtual (e.g., e-mail, teleconference), mental (e.g., shared experiences, ideas, ideals), or any combination of them” (Nonaka & Konno, 1998, p. 40). According to Nonaka, Toyama & Konno (2000), *ba* is a place of knowledge that can emerge in individuals, teams, meetings, discussion forums, face-to-face contact, etc. *Ba* is also a context which harbours meaning (Nonaka & Konno, 1998).

On the relationship between knowledge and *ba*, Nonaka & Konno (1998, pp. 40-41) say:

“Knowledge is embedded in *ba* (in these shared spaces), where it is then acquired through one’s own experience or reflections on the experiences of others. If knowledge is separated from *ba*, it turns into information, which can then be communicated independently from *ba*. Information resides in media and networks. It is tangible. In contrast, knowledge resides in *ba*. It is intangible.”

Ba is the place and cultural context for learning according to Lave & Wenger’s (1991) notion of ‘situated learning’, thus making it a suitable concept for investigating learning processes. Nonaka & Konno (1998) also argue that *ba* provides “a platform for advancing *individual* [italics by this author] and/or collective knowledge” (p. 40).

The terms of the four *ba* are as follows: Originating *ba* for the Socialisation mode, Interacting *ba* for the Externalisation mode, Cyber *ba* for the Combination mode, and Exercising *ba* for the

Internalisation mode. However, a different term is sometimes used by Nonaka, Toyama & Konno (2000) for the Externalisation mode, namely *Dialoguing ba* instead of *Interacting ba*, and for the Combination mode, namely *Systemising ba* instead of *Cyber ba*. In order to avoid terminological confusion here, the terms *Interacting ba* and *Cyber ba* will be used throughout, following the terminology of the original adaptation of the concept of *ba* for the purpose of elaborating the SECI model as described in Nonaka & Konno (1998). For the purpose of this research, the four *ba* are defined as follows:

1. In the *Originating ba* of the Socialisation mode, tacit knowledge is being shared. It is a context where feelings, emotions and mental models are shared and it relies heavily on direct face-to-face interaction. It is also a place from where trust among peers can develop (Nonaka, Toyama & Byosière, 2001).

Nonaka & Konno (1998) emphasise the following aspects of *Originating ba*:

- Individuals share feelings, emotions, experiences and mental models
 - Barriers between the self and others are removed
 - Care, love, trust and commitment ideally emerge in the *Originating ba*
 - Physical face-to-face experiences are essential in this *ba*
2. In the *Interacting ba* (*Dialoguing ba*) of the Externalisation mode, “individuals’ mental models and skills are converted into common terms and concepts” (Nonaka, Toyama & Byosière, 2001, p. 500) through dialogue and reflection.

Nonaka & Konno (1998) suggest that the *Interacting ba* is more consciously constructed than *Originating ba*.

3. *Cyber ba* (*Systemising ba*) of the Combination mode is virtual rather than set in real time and space and it is where new explicit knowledge is created through combining elements of other explicit knowledge. It can be facilitated by IT and online collaborative environments and particularly involves group-to-group interaction (Nonaka, Toyama & Byosière, 2001).

Pointing out the virtual-style environment of the *Cyber ba*, Nonaka & Konno (1998) state that:

- *Cyber ba* is a place of interaction in the virtual world rather than in real-life and real-time
 - *Cyber ba* is most efficiently supported in collaborative environments using IT, e.g. groupware, databases, OLEs, etc.
4. Finally, *Exercising ba* of the Internalisation mode relies on “continuous learning and self-refinement through on-the-job training or peripheral and active participation” (Nonaka, Toyama & Byosière, 2001, p. 501).

Nonaka & Konno (1998) also underline the hands-on, real-life character of *Exercising ba*:

- *Exercising ba* is the place for focused training with more capable peers

- Not teaching through analysis, but learning by active participation is stressed
- Use of explicit knowledge in real-life situations

Ba exists at many levels, and can be connected to build a greater *ba*, called *basho* (Nonaka & Konno, 1998). Nonaka & Toyama (2003) emphasise the context-specificity of *ba* and argue that it is a place where information is given meaning through interpretation, which can then become knowledge. However, the practical side of incorporating *ba* in a piece of research is made difficult due to the lack of empirical data on *ba*, as the concept is mostly discussed only at the theoretical level (Nonaka, von Krogh & Voelpel, 2006). The measurement tool designed in conjunction with the online survey reported in chapter 8 is a first step towards actually measuring Externalisation, Combination, and Internalisation in the context of online learning; this study therefore does not merely discuss SECI at a theoretical level but also contributes to it at an empirical level. Figure 2.2 (based on Nonaka & Konno, 1998, p. 46) shows the four SECI modes and their corresponding *ba*.

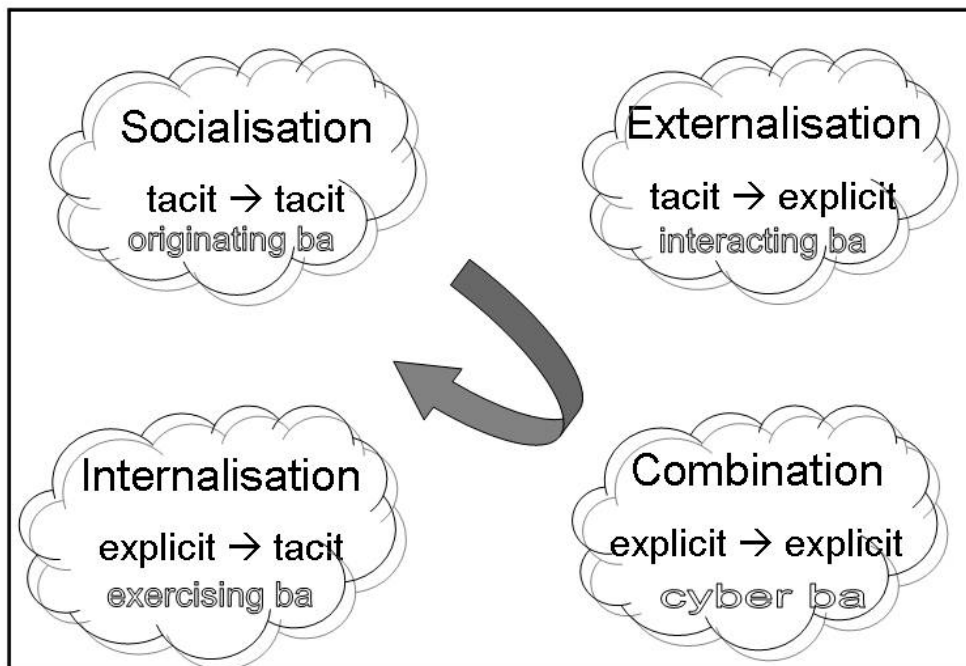


Figure 2.2: SECI modes and corresponding *ba* (based on Nonaka & Konno, 1998, p. 46)

2.3.4 Knowledge Assets

In addition to the level of the four SECI modes and the corresponding *ba*, the model was further expanded and enriched by the concept of knowledge assets. Nonaka, Toyama & Byosière (2001) defined assets as “firm-specific resources that are indispensable to the creation of values for the firm, and many researchers today agree that knowledge is precisely such an asset” (p. 501).

Nonaka, Toyama & Konno (2000) categorise knowledge assets into four groups: experiential knowledge assets, conceptual knowledge assets, systemic knowledge assets, and routine knowledge assets.

Experiential knowledge assets are shared tacit knowledge through joint experiences such as individual skills and know-how. Emotional knowledge such as care, love and trust also fall into the category of experiential knowledge assets, as does energy, passion and tension. These knowledge assets are tacit and thus difficult to grasp or evaluate; this tacitness makes experiential knowledge assets firm-specific (Nonaka, Toyama & Konno, 2000).

Conceptual knowledge assets are “explicit knowledge articulated as concepts through images, symbols, and language” (Nonaka, Toyama & Byosière, 2001, p. 502) such as brand equity, product designs or product concepts. As these knowledge assets have tangible forms, they are easier to grasp than experiential knowledge assets (Nonaka, Toyama & Konno, 2000).

Systemic knowledge assets are explicit knowledge in the form of documents, patents, licenses, manuals, etc., and are therefore transferable relatively easily. Their high degree of explicitness makes them relatively easy to share and manage (Nonaka, Toyama & Konno, 2000).

Finally, Nonaka, Toyama & Byosière (2001) identified so-called routine knowledge assets, which are “tacit knowledge that is routinized and embedded within the actions and practices of an organization” (p. 502). Organisational culture, routines and know-how of the day-to-day work fall into this category. Routine knowledge assets, which are practical in nature, are reinforced through continuous exercises and certain patterns of action, which requires a shared background in which these exercises and actions occur (Nonaka, Toyama & Konno, 2000).

In a piece of empirical research, Chou & He (2004) hypothesised that the various categories of knowledge assets are likely to differ in their interrelations with the four SECI modes. They found that

- a) conceptual knowledge assets have a greater effect on Externalisation than have the other assets,
- b) routine knowledge assets have a greater effect on Socialisation than have the other assets,
- c) experiential knowledge assets do *not* have a greater effect on Internalisation than the other assets, and
- d) systemic knowledge assets do *not* have a greater effect on Combination than the other assets

It is important to keep in mind the concept of knowledge assets and whether this concept should be retained, dropped or adapted for use in the theoretical framework dealing with PKD in online learning which will be proposed later in this thesis.

2.3.5 The Main Elements of the SECI Model

To recap, this section provides a brief overview of the main elements of the SECI model. Nonaka, Toyama & Konno (2000) propose a model of knowledge creation consisting of three elements: (i) the SECI process: knowledge creation through the conversion of tacit and explicit knowledge; (ii) 'ba': the shared context for knowledge creation; and (iii) knowledge assets: the inputs, outputs and moderators of the knowledge-creating process. The knowledge creation process is a spiral that grows out of these three elements.

The three main elements are therefore, in the order of chronological introduction into the SECI model, and, it is suggested here, possibly also in the order of importance:

1. Four SECI modes: Socialisation – Externalisation – Combination – Internalisation
2. *Ba*: Shared space, whether physical, virtual, mental, or any combination of these
3. Knowledge assets: experiential, conceptual, systemic, and routine knowledge assets

Nonaka, von Krogh & Voelpel (2006) provide a detailed and relatively recent review of the main elements of the knowledge creation theory, while also reviewing some work that uses this theory.

2.3.6 Criticism of the SECI Model

This section cannot provide a thorough review of the criticisms made on the SECI model, but some aspects of it will be discussed; for criticism concerning the empirical basis of the model, the reader is referred to Gourlay (2004a). The SECI model is popular and widely used by researchers into knowledge management and knowledge creation, but there are few reports by practitioners of how they applied the model and its four modes. However, this is not necessarily a weakness of the model itself, but suggests that the concepts involved in the model may be difficult to apply and research. It is argued that the strength of the SECI model is that it brings together a wide variety of important concepts in knowledge creation: the two types of knowledge – tacit and explicit –, *ba* as the context of knowledge creation, and the four modes of knowledge conversion. It is also a process model thereby outlining what actually happens in knowledge creation rather than only describing which aspects are involved. This focus on processes is a prerequisite for individuals to understand knowledge development and their own role in it.

The more abstract additions to SECI, such as *ba*, make the model even more challenging to implement and use. There are no ready-made guidelines on how to model concrete processes of knowledge creation and conversion onto one of the four modes of SECI. However, the distinction between tacit and explicit knowledge and the emphasis on the importance of interaction between these two types of knowledge are helpful for organisations as they are encouraged to try to establish an inventory of their knowledge (What tacit and explicit knowledge do we have?) as well as emphasise the importance of the knowledge conversion processes, often involving interpersonal interaction (What happens with our knowledge and how is this reflected by the four modes?).

Lyude (2007) reviews some of the criticism of the SECI model. In terms of the empirical basis of the SECI model, she notes that most of Nonaka's data that formed the basis of his model were originally collected for studies dealing with innovation and information creation rather than knowledge creation, and that the survey used in data collection focused on content and not process, whereas the SECI model is a process model (Lyude, 2007).

Hildreth & Kimble (2002) criticise the Externalisation phase of SECI arguing that, if tacit knowledge cannot be articulated, then it cannot be made explicit, i.e. externalised. They propose a duality of knowledge in which all knowledge is both 'hard' and 'soft' (more explicit rather than tacit and more tacit rather than explicit) at the same time, with a varying degree of hardness and softness (Hildreth & Kimble, 2002). This seems to be a useful way of avoiding the mutual exclusiveness of tacit and explicit knowledge in which the two types of knowledge are seen as being at the extreme ends of a continuum. Tsoukas (2003) argues that they are "not the two ends of a continuum but the two sides of the same coin: even the most explicit kind of knowledge is underlain by tacit knowledge" (p. 425). Furthermore, externalising or making explicit of fully tacit knowledge is by definition not only not possible, but not necessary – as Tsoukas (2003) suggests that it is essential "to find new ways of talking, fresh forms of interacting, and novel ways of distinguishing and connecting" (p. 426) rather than externalise tacit knowledge.

In 2003 Nonaka & Toyama incorporated dialectic thinking into the SECI model. They see "knowledge creation as a dialectical process, in which various contradictions are synthesized through dynamic interactions among individuals, the organization, and the environment" (Nonaka & Toyama, 2003, p. 2). This conceptual addition to the model points further to the importance of context when it comes to applying SECI and to the constituting characteristic of context for knowledge creation. Nonaka & Toyama (2003) themselves note that "the same reality can be viewed differently depending on from which angle (context) one sees it" (p. 3). Furthermore, it is important to note here that knowledge is not created within one's mind totally detached from the environment, but by an individual's "actions and interactions with the environment" (Nonaka & Toyama, 2003, p. 4).

Not only are the knowledge conversion processes described by the SECI model influenced by culture, but the model itself stems from a particular culture and context (Haag, Duan & Mathews, 2008). Culture and other factors are thus important determinants and creators of this context – *ba* is co-created by culture. It is important to note that culture does not need to be a separate aspect of the model, but that the idea of a 'pre-mode' which advocates that members of an organisation or team should first analyse how culture influences knowledge creation and conversion within the particular context they are in. The insights gained by this 'pre-mode' enables one to better understand how the four knowledge conversion modes operate in a particular situation and context and, consequently, how knowledge creation and innovation can be more effectively fostered and facilitated.

Little research has yet been done to validate the SECI model (Gourlay, 2004a), with very little empirical research. Comparing studies that use the SECI model is also made more difficult by

the inconsistency in defining tacit knowledge (Gourlay, 2006b). Gourlay (2004b) argues that tacit knowledge cannot be converted into explicit knowledge, at least not into verbal expressions. It is argued here that this is likely to be true for knowledge at the very far end of the tacit side of the continuum, but that less-tacit knowledge may be externalisable and expressible. Moreover, the continuous nature of the tacitness-explicitness continuum as opposed to a dichotomous distinction is an advantage of the model, because it can thus be used in situations and contexts in which the precise degree of tacitness or explicitness is unknown. However, it is essential to bear in mind that there is no such thing as fully tacit or fully explicit knowledge: what is needed is an awareness of the varying degrees of tacitness and explicitness.

Moreover, when researchers or practitioners use the SECI model, it is imperative that they are clear and unambiguous in how they define knowledge and, particularly, how they distinguish between tacit and explicit knowledge. It is suggested here that the model needs to be used in such a way that it reflects best the circumstances of the situation that the researcher or practitioner wants to address. This can be done by either conceptualising or defining the key concepts of the model differently to how Nonaka and colleagues conceptualised or defined it or by adapting the model to make it more relevant for researcher or practitioner.

Most typologies of knowledge management lean towards the explicit end of knowledge, at the expense of tacit knowledge, the SECI model being one of the few exceptions (Schneider, 2007) as SECI emphasises the significance of tacit knowledge for successful knowledge creation, giving it roughly the same importance as explicit knowledge. As argued in this section, even knowledge at the extreme explicit end is underlain by implicit knowledge, i.e. it is personal, contextualised, linked to a particular situation and of relevance only some of the time. Moreover, knowledge conversion within the SECI model should be regarded from the point of view of knowing-as-process rather than knowledge-as-thing. It is argued here that it is absolutely crucial to conceptualise the SECI model as a model that explains the conversion of tacit and explicit knowledge of different degrees – this is the way forward at a theoretical level but unfortunately makes employing the model more difficult at the empirical level.

2.4 Learning and Online Learning

Given that this study is set within the knowledge management and knowledge creation domain, the concepts of learning, approaches to learning and the cultural situatedness of online learning will be discussed in this section. However, a thorough discussion of learning theories is beyond the scope of this thesis.

2.4.1 The Relationship of Knowledge and Learning

Knowledge management and learning management can be seen as two sides of the same coin (Chatti, Klamma, Jarke, Kamtsiou, Pappa, Kravcik & Naeve, 2006). Both concepts emphasise the dynamic, complex, social, procedural, and context-sensitive character of both knowledge creation and learning (Chatti, Jarke & Frosch-Wilke, 2007). Learning can also be categorised as knowledge acquisition and as participation in a social community, with Paavola, Lipponen & Hakkarainen (2004) identifying a third aspect: learning as knowledge creation. The knowledge acquisition perspective, of which the SECI model is a variant, focuses on knowledge *per se* and on processes of learning within an individual. The participation perspective focuses on the processes of creating new knowledge in a collaborative, socially situated way. Paavola, Lipponen & Hakkarainen (2004) propose a knowledge-creation approach to learning which borrows from these two perspectives, saying that:

“Learning is not conceptualized through processes occurring in individuals’ minds, or through processes of participation in social practices. Learning is understood as a collaborative effort directed toward developing some mediated artifacts, broadly defined as including knowledge, ideas, practices, and material or conceptual artifacts. The interaction among different forms of knowledge or between knowledge and other activities is emphasized as a requirement for this kind of innovativeness in learning and knowledge creation.” (pp. 569-570)

This approach can be seen as situating learning relatively close to the concept of knowledge creation. Nonaka’s SECI model therefore has an important role to play in bringing PKD in OLEs and learning together.

2.4.2 Learning and Approaches to Learning

There has been a myriad of definitions of learning, from a wide variety of academic disciplines and schools of thought. Conole, Dyke, Oliver & Seale (2004) give a good overview using their own categorisation, and also suggest how the various learning models may be applied in the context of e-learning: behaviourism, cognitive, constructivist, activity-based, socially situated learning, experiential learning, and systems theory.

Regarding definitions of learning, Kolb (1984) defines learning as “the process whereby knowledge is created through the transformation of experience” (p. 38). This definition links

learning to knowledge creation. Expanding and concretising Kolb's definition, for the purposes of the reported study, learning is defined as follows:

Learning encompasses the appropriation and incorporation of both implicit and explicit knowledge from the interaction with others or from the interaction with learning materials into one's own mindset, schemas, and knowledge structures.

One learns about processes rather than factual knowledge. The process of social participation occurs in a common environment situated in time and space; in this study, OLEs form this common environment. In Vygotsky's (1978) terms, cognition, and therefore, learning, is mediated by cultural tools and artefacts (de Abreu, 2000). Thus, the learning context quite distinctly affects cognition and learning.

Felder & Brent (2005) argue that the following three categories of diversity have important implications on learning, namely "learning styles (characteristic ways of taking in and processing information), approaches to learning (surface, deep, and strategic), and intellectual development levels (attitudes about the nature of knowledge and how it should be acquired and evaluated)" (p. 57). These attitudes towards knowledge differ from learner to learner and are further evidence of a cultural situatedness not only of learning but also of knowledge, its meaning and relevance.

Learning styles have by some been regarded as being an important determinant of how people learn (e.g. Honey & Mumford, 1982; Kolb, 1984). Learning styles have been described as being individual-based (Kolb, 1984). At the same time, however, commonalities at the national-cultural level have been found (e.g. Barmeyer, 2004; Yamazaki, 2005). Moreover, Hofstede (1986) argued that individuals learn differently and, as a consequence, should be taught differently, using his value dimensions to explain such differences. Yamazaki (2005) used several cultural typologies – some of Hofstede's cultural value dimensions and Markus & Kitayama's (1991) distinction between independent and interdependent self, among others – to investigate potential relationships between certain cultures and one of Kolb's (1984) four learning styles. For example, Jaju, Kwak & Zinkhan (2002) found that US-Americans prefer reflective observation and concrete experience, Indians prefer active experimentation and abstract conceptualisation, and Koreans prefer reflective observation and abstract conceptualisation.

Mestre (2007) calls for a diversity of learning approaches in OLEs so that students can choose those approaches that suit their own learning style best. Therefore, learning styles have to be taken into account both for the conceptual framework and for the design of e-learning systems that are appropriate for a multicultural learner group.

Kennedy (2002) warned of over-generalisations such as the 'typical Chinese learner' when analysing learning style, and argued for recognizing that learning styles are more subtle and complex than they are usually considered to be. He also suggests that changes in the context of learning and the mode of teaching can lead learners to modify their approaches to learning (Kennedy, 2002). In the analysis of the scores on the Chinese Value Survey and the Study Process Questionnaire of Chinese students in Australia, it was found that the scores for some of

the students were changing over time during their stay abroad as they were adapting to a different educational system (Matthews, 2001). These results again point to the situatedness of PKD in OLEs and the strong constitutive role of context for PKD in online learning.

However, more recently, several researchers have been claiming that the evidence of theoretical validity of learning styles widely used today is weak (Coffield, Moseley, Hall & Ecclestone, 2004). However, it was also suggested by Pashler, McDaniel, Rohrer & Bjork (2009) that the lack of support for learning styles does not mean that the same approach to instruction should be used in all contexts, but instead they claim that there is a “great gap from such heterogeneous responses to instructional manipulations [...] to the notion that presently available taxonomies of student types offer any valid help in deciding what kind of instruction to offer each individual” (Pashler *et al.*, 2009, p. 116). In the area of multimedia instruction, a context relatively close to the one in the study reported here, Massa & Mayer (2006) did not find strong support for the hypothesis that verbal learners should be instructed differently to visual learners.

Further criticism of the validity of other sets of learning style has surfaced in the literature. Duff & Duffy (2002) conducted an exploratory and confirmatory factor analysis of the Honey & Mumford (1982) Learning Styles Questionnaire, but did not find evidence for the four learning styles proposed by them. Moreover, they failed to find a consistent relationship between scores on the learning styles and academic performance. This suggests that the impact of learning styles on performance in an OLE could well be very limited; other factors are therefore likely to influence PKD, and the research presented here suggests that personal values may be helpful indicators of how knowledge development processes in online learning are likely to look like for an individual learner and how likely it is for a learner to do well (or not) in an online learning course.

Other research has looked at the relationship between personality and learning styles. Furnham (1992) reports on studies that correlated personality with learning styles and found that measures of personality were consistently correlated with learning styles. Similarly, Jackson & Lawty-Jones (1996), by stating that “learning style is a sub-set of personality and need not be measured independently, unless it is learning style that is of interest in its own right” (p. 293), thus supporting Furnham’s (1992) findings.

It was shown that although learning styles have featured prominently in the literature as a useful way to conceptualise the approach to learning, they may not truly reflect how learners learn. It is also not clear whether learning styles are individual-based or national-cultural-based or indeed both. In order to better understand PKD in OLEs, learning styles do not seem to be the most appropriate approach, because evidence has been found that learners with a certain learning style do not have to be instructed differently to learners with different learning styles. However, it is argued here that it is worthwhile to test whether personal values act as predictor variables for PKD in OLEs.

Finally, different educational systems in various countries presumably also have an impact on PKD and should be taken into account. It is, however, problematic to disentangle and identify

measurable variables that reflect characteristics of said educational systems. It is beyond the scope of this study to investigate the various possible aspects of 'educational systems', but the interested reader is referred to Spencer-Oatey (2007) who discusses issues of e-learning pedagogy and policy, as well as cultural aspects of e-learning in China.

2.4.3 Online Learning in a Diverse World and the Learners' View

Even though the situatedness of both cognition and learning has been identified a long time ago (e.g. Lave & Wenger, 1991), the situatedness of online learning is less well established. Therefore, Selwyn (2010) advocates a critical approach, the main advantage of which "should be seen as the ability to develop a more socially grounded understanding of the 'messy' realities of educational technology 'as it happens'." (pp. 71-72).

Centrally set targets – often set by national governments – regarding the use of technology in the classroom often fail to have a positive impact. Therefore, a plea is made for decentralised decision-making when it comes to setting up strategies and guidelines for online learning initiatives and course design, heavily drawing on the tutors that are directly involved in teaching the students, thus taking the actual context and situatedness into account (Haydn & Barton, 2010).

One attempt to capture the complex and multi-layered nature of online learning as set in a specific context is de Freitas' four-dimensional framework with the categories 'learner specifics', 'pedagogy', 'representation', and 'context' (de Freitas & Oliver, 2006). This model was also used in the design and evaluation of immersive learning experiences in a virtual world (cf. de Freitas, Rebolledo-Mendez, Liarokapis, Magoulas & Poulouvassilis, 2010). Interestingly, one of the four dimensions is context. This suggests a strong dependence of online learning on a variety of contextual variables. As such variables differ from context to context and therefore from course to course, generalisations of how the other three dimensions – learner specifics, pedagogy, and representation – impact on online learning are difficult to be made. It is argued here that, although context is unlikely to 'override' the other three dimensions, it nevertheless has a difficult-to-quantify impact on PKD in OLEs. The research reported here aims to investigate the role of context further and will use personal values as one aspect that influences learner specifics.

The perspectives of the learners on their online learning activities is still largely overlooked in research, and the learner's voice, i.e. the expressions of the users themselves of their experiences is mostly sidelined (Sharpe *et al.*, 2005). Therefore, in order to address this gap, this study focuses on self-reports of the learners' PKD.

In a study on what the users themselves think of online learning, Creanor *et al.* (2006) report that not all users of online learning are convinced of its benefits, pointing out that online learning must be used in a way that actually adds something to their learning experience rather than being solely used because it is convenient for the tutors or educational institution. Learners are also pro-active in urging instructors "to avoid a 'l'art pour l'art' approach to the use of technology

in the curriculum” (Brown, 2009, pp. 62-63). One can argue that this scepticism towards using technologies for the sake of ‘just using’ them suggests that some learners are well aware that learning processes of an OLE have to be meaningful and relevant in a given context in order to contribute positively to PKD (Creanor *et al.*, 2006).

2.5 Online Learning: Values, Context, Community, and Relevance

2.5.1 Cultural Values and Context in Learning

Culture and values are some of the most difficult – and elusive – concepts in the social sciences. Establishing the role that cultural values play in online learning is further complicated because they can have both moderating and direct effects on behaviour (Li, Hess, McNab & Yu, 2009). For further discussion of a variety of impacts of the concept of culture on online learning see Edmundson (2007).

Culturally anchored values may predict preferences for a particular learning style well and often better than a crude national cultural segmentation (Mitsis & Foley, 2009). For example, Wang & Reeves (2007) discuss how instructional design is a product of culture and how adapting a particular design to a specific culture can be counter-productive, because different cultures may have conflicting ideas of how an effective instructional design should look like. This dilemma suggests that there should be a focus on the individual learner and her own personal values.

Educational systems, their curricula and the practices of learning and online learning are rooted in different psychologies, as Woodrow (2001, p. 7) states:

“British education has been dominated by Piagetian developmental psychology; American education dominated by the notions of behaviourist psychology; European education underwritten by gestaltian traditions in which grand ideas are the object and end points rather than particular skills.”

These differing paradigms inevitably shape the design of settings for learning, and also how students perceive these environments and how they are expected to engage with them; therefore, OLEs, their instructional design, and the PKD strategies of learners are likely to differ.

Henning (2003) argues that it is important to view online learning processes in the whole learning and cultural context, i.e. taking face-to-face sessions and the local learning paradigms into account. In other words, online learning must not be seen as a stand-alone activity, but has to be regarded as one part of the blended learning context, in the sense of Lave & Wenger’s (1991) notion of ‘situated learning’. However, only some of the variables of those factors that are not embedded directly in the online learning context, such as age and gender, among others, could be investigated in this research.

Socio-cultural theory and the Vygotskian notion of mediational tools and artefacts can have a considerable impact on learning, because:

- context structures people's thinking/learning
- use of new technologies is constrained by socio-cultural variables

This is why particular care must be taken to design OLEs in a culturally appropriate and sensitive way (Warschauer, 1998).

2.5.2 Learning Community and Educational Context

Tu & Yen (2007) argue that socio-cultural learning is a concept that can not only be applied in face-to-face learning environments but also in OLEs. They suggest six critical characteristics for successful socio-cultural learning online: engaging in activities that are meaningful to the learners; a focus on the uniqueness of learners and the need for learner-centredness; process- and development focus through the interaction with other learners, tutors, etc.; relations to the individual, social, and cultural worlds; metacognition reflection, i.e. reflecting on one's learning process; and cultural tools, which encompass instrumental tools (e.g. computer, software), semiotic tools (e.g. text, language), and premeditated or designed tools (e.g. tutor-designed discussion boards, portals) (Tu & Yen, 2007).

Vygotsky (1978) developed the notion of the 'zone of proximal development' (ZPD). The ZPD is defined as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). He differentiates between a person's current expertise and skills and the higher level of potential development when being assisted by more capable peers. Newcomers, therefore, might benefit tremendously when interacting with experts in e-learning communities. As was mentioned before, cultural tools and artefacts determine people's cognition. However, one should not provide users of distributed OLEs with several different interfaces, since this would lead to confusion; that is why users should have a shared (i.e. common) and (at least partly) agreed-upon set of tools and artefacts (Bourges-Waldegg, 1999). Therefore, one has to negotiate and agree upon a specific set of tools (which includes layout, navigational structure, a joint language, etc.) for the OLE. In addition to that, Hung & Chen (2001) point out that rules and processes that work in face-to-face interactions have to be modified in the context of online communities – a new perspective of seeing things must be developed, which will ultimately lead to a culture of its own.

Another point that needs to be raised is that the mind is formed in social interaction, a notion which Vygotsky (1978) labelled 'general genetic law of cultural development'. This interaction takes place in a community. Hung & Chen (2001) provide a handy overview of four dimensions that contribute to a functioning and vibrant community:

- **Situatedness:** in order to be effective, learning should be embedded in rich and meaningful situations that are relevant to the actual work of the employees
- **Commonality:** a sense of belonging and shared interests should be developed, so that members develop a community feeling. It is argued here that this will lead to a joint and unambiguous use of cultural tools and artefacts and will create a common way of communicating
- **Interdependency:** varying needs, expertise and skills will lead participants to make use of other opinions, expertise and resources, which will facilitate creative problem-solving
- **Infrastructure:** specific rules must be set out, and one or more facilitators should support members when technical or interpersonal problems arise

Educational context has been described by Luckin (2008) as a 'learner centric ecology of resources'. This ecology of resources is described as a set of inter-related resources, which also includes people, and the interactions between these elements provide a context that is historically situated and culturally idiosyncratic (Luckin, 2008). She discusses a learner-generated context in which either an individual learner or a group of learners influence, shape or adapt the various resources to create a meaningful context.

Bourges-Waldegg (1999) points out that misunderstandings within computer-supported cooperative work systems occur when the intended meaning of representations – any aspect that conveys meaning, such as words, icons, layout, navigational structure – is deduced differently across different cultures. She and her colleagues developed an approach called Meaning in Mediated Action (MIMA), which has proven a powerful tool for designing websites or other electronic environments that make use of easily identifiable and culturally shared representations. Space restrictions forbid elaborating further on MIMA; instead, the reader is referred to Bourges-Waldegg (1999) and Bourges-Waldegg & Scrivener (1998).

A study by Ho, Kuo & Lin (2010) suggests that both the quality of an OLE and e-learning readiness directly impact on the competency of online learners. They also found that learning outcomes (analogous to Internalisation in the study reported here) are indirectly influenced through competency by OLE quality and e-learning readiness and directly influenced by e-learners' competency (Ho, Kuo & Lin, 2010). This shows the interdependency of both human factors (e.g. e-learning readiness and competency) and technological and media factors (e.g. OLE quality). This whole "set of relations among persons, activity, and world" (Lave & Wenger, 1991, p. 98) has to be taken into account to make OLEs relevant and effective in a given situation.

2.5.3 Communities of Inquiry and the Need for Relevance

Within the so-called community of inquiry framework and in the context of asynchronous communication of educational interactions, Garrison, Anderson & Archer (2000) suggested that learning processes and outcomes are supported by the presence and interaction of three

presences: cognitive, social, and teaching. Cognitive presence is defined as “the extent to which participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication” (Garrison, Anderson & Archer, 2000, p. 4). Social presence refers to “the ability of participants in the Community of Inquiry to project their personal characteristics into the community, thereby presenting themselves to the other participants as ‘real people’” (Garrison, Anderson & Archer, 2000, p. 4). Finally, teaching presence is defined as “the design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes” (Anderson, Rourke, Garrison & Archer, 2001, p. 5). It is not necessary here to discuss these three presences and their impact on PKD in detail. The interested reader is referred to Garrison, Anderson & Archer (2010) for an account of the development and subsequent validation of the community of inquiry framework. Nevertheless, it should be stressed that the identification of a cognitive, social, and teaching presence supports the view of online learning as culturally situated and influenced by a number of aspects at several levels:

- Cognitive presence: construction of meaning at the level of the individual
- Social presence: interaction with others at the level of a group or team
- Teaching presence: design of an OLE and instruction by tutors at level of the OLE

These three presences differ in the importance and salience from one OLE to the next. For example, a more constructivist-orientated OLE may put a stronger emphasis on communication and interaction and therefore social presence, whereas an extensive involvement of the tutor can lead to a stronger teaching presence and potentially a more engaged and active learning. The dynamic interaction and interdependencies of the three presences have an impact on PKD and could be conceptualised as one possible representation and indicator of cultural situatedness. Nagel & Kotzé (2010) argue that all three levels should be at an acceptable level for learning to be successful. This supports the view of cultural situatedness as a set of environmental variables that interact dynamically and differ in salience and importance. At the level of the actual facilitation of an online learning course, this means that tutors have to be aware of these variables and be able to manage them and take them into account.

Efficiency in terms of reduced costs and convenience in terms of freedom to choose whenever and wherever one wants to learn are often mentioned as the primary advantages of online learning over traditional face-to-face teaching (e.g. Carr-Chellman, 2005; Conole & Oliver, 2007). However, an over-reliance on technology-enhanced learning over face-to-face learning is often reported. For example, Brown (2009) asked fourteen students how they think learning environments should be designed in the next two to four years. The two main outcomes were: “(1) too much or unfettered technology is bad and directly hinders learning; and (2) the use of technology should not come at the expense of personal interaction both in and outside the classroom” (Brown, 2009, p. 62). This is a clear plea for not mindlessly substituting valuable face-to-face contact with a more impersonal OLE. All too often, considerations of saving money seems to lead to OLEs that merely act as repositories of information and documents while

interactive groupwork and the direct interaction with the tutor is sacrificed. According to the students involved, a good use of technology in a learning context is “when the technology is well integrated with real-time, personal interactions and is not a replacement for them” (Brown, 2009, p. 62). This integration into the wider context of the course and the fact that students do want integration with face-to-face learning rather than a total replacement is a very important and crucial aspect for both the future acceptance and relevance of online learning. Students seem to be well aware whether an OLE is merely an add-on to the course. They are often not being provided with a rationale – and therefore a reason – why they should engage with the OLE and how using it contributes to their PKD. Making the rationale explicit and reminding students again and again what the aims of the OLE are is often not done sufficiently (Brown, 2009). However, making the rationale of online learning explicit for the learners is essential for PKD to be effective. PKD is more likely to be successful if the content is relevant and the PKD processes are situated in an intersubjective context shared by the group of learners.

2.6 Summary

The concept of knowledge was introduced and defined for the purpose of this study. Its focus is on epistemological and performative knowledge and the processes and outcomes of developing knowledge with the SECI model as an investigative framework.

The distinction between tacit and explicit knowledge was pointed out and the importance of tacit knowing and the tacit element of all knowledge was emphasised. The constant interaction of tacit and explicit knowledge, a concept which is at the centre of Nonaka’s SECI model, was described. The various elements of the SECI model – the four modes, *ba*, and knowledge assets – were discussed and criticism of the empirical and theoretical basis of the model as well as the lack of empirical data was reviewed. It was argued that the SECI model can be used to investigate PKD in OLEs at an individual level rather than at the level of organisational knowledge creation.

It was shown that, because the SECI model stems from the Japanese context in which the tacit element of knowledge is particularly important, the cultural context in which PKD occurs has to be taken into account. Personal values, context, community, and relevance were identified as some of the influencing factors of what is considered to be knowledge and of how learners develop knowledge.

The close relationship between learning and knowledge management was emphasised and the concept of learning and online learning was discussed and it was suggested that learning styles can differ across cultures. Finally, it was emphasised that curricula and PKD processes have to be relevant for a given group of learners.

3 Culture, Values and the Schwartz Value Survey

3.1 Culture: Definition and Levels

To date, a large number of definitions of culture have been identified. Kroeber & Kluckhohn (1952) list more than 160 different definitions. It is beyond the scope of this thesis to discuss these definitions in depth, but to illustrate the complexity and diversity of the concept of culture, some definitions are given here:

Taylor (1871, [1920, p. 1]) is widely regarded to have offered the first definition of culture in anthropology. He writes:

“Culture or Civilization [sic], taken in its wide ethnographic sense, is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society.”

Taylor mentions knowledge as one part of the complex whole of culture. This suggests that the understanding of that concept differs across groups of people; what constitutes knowledge or can be labelled as knowledge also differs accordingly. As a consequence, approaches to developing knowledge are likely to differ as well.

Schein (2010, p. 18, italics in the original) defines culture as:

“a pattern of shared basic assumptions learned by a group as it solved its problems of external adaptation and internal integration, which has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems.”

For this study, culture is defined using the broad and encompassing definition of Hofstede & Hofstede (2005, p. 4), which is widely known and used in research that includes the concept of culture:

[culture is] “the collective programming of the mind that distinguishes the members of one group or category of people from others.”

It is necessary to explain two notions of this definition, namely ‘collective’ and ‘programming of the mind’. ‘Collective’ is a joint and shared experience of life within a particular social context shared with a particular group of people. Such a group of people can be the family, friends, colleagues, acquaintances, people from the same geographical region, people from the same country; other groupings are also possible. ‘Programming of the mind’ can be described as the whole of an individual’s experiences in life that are interrelated and define her personal ideals, moral concepts and how things should be done.

Straub, Loch, Karahanna, Evaristo & Srite (2002) suggest that different levels of culture interact and influence individual behaviour. The salience and importance of the various levels depend on a certain context and on the personal values of the individual (Straub *et al.*, 2002). Hofstede & Hofstede (2005) distinguish six levels, namely: national, regional/ethnic/religious/linguistic, gender, generation, social class and organisational or corporate. However, it is argued here that it is not useful to provide a fixed hierarchy of levels of culture, because these levels are more or less salient depending on the context.

In addition to the dynamism and fluidity which characterises cultures and makes the concept elusive and difficult to research (Kitayama & Cohen, 2007), the issue of causality and how strongly one can really link culture as a source of causality for behaviour is debated (Cohen, 2007). Conceptualisations of culture can differ in various areas, such as epistemology, levels of culture, manifestations of the construct of culture, and appropriate methodology to study it (Detert, Schroeder & Mauriel, 2000) – explicitly stating the research paradigm of cross-cultural studies is therefore essential. It is important to work from an agreed and sufficiently narrow definition of culture otherwise there will be an overlap or amalgamation of conceptualisations, which will make valid comparisons of research difficult.

Culture determines behaviour in all areas of life. Behaviour does not take place in a vacuum, but is contextualised and situated in the concrete life-world of individuals (Lave & Wenger, 1991). There is a considerable number of cultural aspects that have been identified as influencing knowledge management (e.g. Ardichvili *et al.*, 2006; Bhagat, Kedia, Harveston & Triandis, 2002; Carr-Chellman, 2005; Michailova & Hutchings, 2006; Yamazaki, 2005). All of these define culture as national culture. However, it is suggested here that national culture (e.g. Trompenaars & Hampden-Turner, 1997) only accounts for some variations in behaviour across people, and that a more individualised and contextualised notion of culture is desirable. As mentioned above, Hofstede & Hofstede (2005) distinguish between six levels of culture. Arguably all of these, depending on the situation and context, have the potential to determine behaviour to various degrees. In other words, in a particular situation gender differences could have a greater impact on the interaction and communication of people than differences in national culture. In turn, this means that it would be desirable to take into account all levels of culture as they are potentially important. Nevertheless, there appears to be no consensus on the relative impact or importance of the various levels of culture. Therefore, it seems to be counter-productive to provide a rank order as this would prevent having an open-minded and unbiased view of those levels of culture which are deemed to be less important in the hierarchy. Gaining an insight into the *relative* importance of the SVS value types for PKD in OLEs is central to the study reported here.

3.2 Values

The concept of values has been extensively used in researching and comparing behaviour across cultures. Rokeach (1973) states that a value is something that is personally or socially preferable. This distinction between personally preferable and socially preferable suggests that values are both held at an individual level and at a social/group/cultural level – hence the importance of taking into account both the concept of culture and values, rather than focusing on one concept only. The following definition of values by Kluckhohn & Strodtbeck (1961, p. 341) is used for this study:

“Value orientations are complex but definitely patterned (rank-ordered) principles, resulting from the transactional interplay of three analytically distinguishable elements of the evaluative process—the cognitive, the affective, and the directive elements—which give order and direction to the ever-flowing stream of human acts and thoughts as these relate to the solution of “common human problems.””

Values are generally regarded as direct antecedents of beliefs, attitudes and norms, and, through these, as indirectly influencing behaviour (Triandis, 1972). To put it another way, personal values are “desirable goals that guide the way people select actions, evaluate people and events, and explain their actions and evaluations” (Roccas & Sagiv, 2010, p. 31). By being standards that provide a social justification for particular ways of behaving, personal values act as a way to legitimate one’s behaviour (Rokeach, 1973).

Karahanna, Evaristo & Srite (2005) distinguish between values and practices. They suggest that values are relatively stable over time, but that “[p]ractices are learned later through socialization at the workplace after an individual’s values are firmly in place” (p. 6). This may mean that practices are more dynamic and thus change more from one context to the next. It may also mean that the use of OLEs as the providers of context for learning is rather dynamic and changing and thus determines PKD more than personal values do. They argue that practices should reflect values but that this is not necessarily the case. They suggest that “this discontinuity typically occurs when practices dictated by one level of culture [...] are at odds with values comprising another level of culture [...]. In fact, practices are much more related to current environmental conditions” (Karahanna, Evaristo & Srite, 2005, pp. 6-7). One can argue, therefore, that the context in which OLEs operate has a stronger impact on practices than on values.

Hampden-Turner & Trompenaars (1997) criticise that Hofstede (1991) does not measure cultural values independently from outside influences. They argue that – since IBM, the company from which Hofstede drew his sample is headquartered in the USA, – US-American culture is likely to have an effect on subsidiaries that are based outside of the USA. Trompenaars also criticises the predominantly Western way of quantifying culture on bipolar scales such as individualism-collectivism (London Business School, 2002). He is in favour of

reconciling these seemingly opposed dilemmas and he wonders why one cannot be both individualist and collectivist – according to the situation. He argues that “a company only centralises when it is decentralised” and that “one value is always connected with its opposite” (London Business School, 2002, p. 34). It is suggested here that either-or definitions of personal values are not helpful and that they over-simplify real-life situations.

3.3 The Impact of Culture and Values on Learning and Online Learning

This section discusses the impact of culture and values on both learning in general and online learning in particular. Given that the literature on these issues is vast and given that the research reported here stems from the knowledge management domain and puts the SECI model as a knowledge creation model in the centre of investigation, this section can only give a rather general insight into the impact of culture and values on learning and online learning.

3.3.1 The Impact of Culture and Values on Learning

One of the key activities companies have to engage in is the creation of new knowledge through organisational learning (Argyris & Schön, 1978, 1996). Senge (2006) also emphasises the importance for organisations to engage constantly in learning. In addition to organisations, engaging in learning is also essential for individuals, both in their private and in their professional lives.

Some of the possible cultural models needed to describe and to categorise cultures are the value dimensions by Geert Hofstede (Hofstede & Hofstede, 2005), Fons Trompenaars (Trompenaars & Hampden-Turner, 1997), Edward T. Hall's (1976) high context/low context distinction, among others. Although there is some criticism on the dimensions listed above (e.g. Voronov & Singer, 2002), they still form a valuable tool for distinguishing and describing cultures. From these higher order dimensions, one can derive cross-cultural differences that are particularly important for knowledge development processes and outcomes, such as differences in student-teacher interaction due to high power distance versus low power distance (Hofstede, 1986), or different attitudes towards in-groups and out-groups due to the individualism-collectivism dimension (Markus & Kitayama, 1991).

There is a considerable number of cultural aspects that have been identified as influencing knowledge management and learning (e.g. Ardichvili *et al.*, 2006; Bhagat *et al.*, 2002; Carr-Chellman, 2005; Michailova & Hutchings, 2006; Yamazaki, 2005). However, a full discussion of a substantial number of them is beyond the scope of this thesis.

In the design of learning in general and online learning in particular, culture is seldom taken into account as an influencing variable. However, it is argued here that the concept is very important for learning and online learning. Acting as examples to illustrate this, the following three dimensions of culture and values will therefore be discussed here briefly:

- The individualism/collectivism dichotomy (Hofstede & Hofstede, 2005)
- The high-context/low-context dichotomy (Hall, 1976)
- Power distance (Hofstede & Hofstede, 2005)

Arguably the most widely discussed cultural value dimension is individualism-collectivism. Triandis (1995) identified four universal dimensions of this construct, which can be used to investigate possible effects of the individualism-collectivism dimension on PKD in online learning:

- independent versus interdependent self-construal – originally presented by Markus & Kitayama (1991)
- priority of personal goals versus priority of collective goals
- people from individualist cultures focus more on their personal needs, rights and attitudes versus people from collectivist cultures focus more on social norms, duties and obligations
- people from individualist cultures are more oriented towards achieving a task, also at the expense of a harmonious relationship with others versus people from collectivist cultures are more concerned with maintaining harmonious relationships

For example, learners from an individualist culture may want to excel in their course – and show this openly to their peers – whereas learners from a collectivist culture might hold back to not stand out of the crowd (Hofstede, 1986), thus creating a potential for misunderstanding and disharmony.

Hall (1976) describes differences in the use of contextual information in communicative behaviour, which can also be linked to referring to being either a more indirect or more direct way of communicating, respectively. For example, one might expect that learners from a high-context culture such as China might feel more uncomfortable than Westerners when it comes to engaging in discussions with the tutors.

Hofstede (1994) defines power distance as “*the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally*” (p. 28, italics in the original). For example, one can argue that learners from a high power-distance culture such as China will not be very likely to challenge views of their teachers (Hofstede, 1986). However, in many educational contexts in the West debate and discussions are strongly encouraged.

Using the individual-level value types by Schwartz (1992), it was found that personal values differ across three different types of schools, namely private, state, and religious schools, respectively (Hofmann-Towfigh, 2007). For example, it was found that students from religious schools value Tradition more highly than students from the other types, whereas Hedonism was valued more highly by students from both private and state schools (Hofmann-Towfigh, 2007). This finding suggests that the context of learning can have an impact on personal values. It can

thus be argued that culture and personal values influence learning and are in turn influenced by the learning environment.

To sum up, educational systems, their curricula and the practices of learning are rooted in different psychologies (Woodrow, 2001). Culture and personal values, it is argued here, can be regarded as being proxies, i.e. reflectors, of these psychologies and therefore co-determine learning processes and approaches.

3.3.2 The Impact of Culture and Values on Online Learning

National cultural values and cross-cultural differences influence learning and PKD processes (Hofstede, 1986). This presumably also holds true for online learning. Much research has already been done on culture and online learning (e.g. Selinger, 2004; Carr-Chellman, 2005). Feather (1975) also argues that values are predictor variables of learning processes and outcomes, both of which are related to the concept of PKD. Some of this body of research will briefly be discussed in this section. For a more in-depth discussion of a variety of impacts of the concept of culture on online learning see Edmundson (2007).

Research on whether the Internet or global virtual communication and, in the end, online learning, is contributing to a divergence or convergence of national cultural differences is inconsistent (Zahir, Dobing & Hunter, 2002). For example, Johnston & Johal (1999) have ranked the Internet as a “virtual cultural region” using Hofstede’s (Hofstede & Hofstede, 2005) dimensions and concluding that this cultural region is converging. In their research on Internet portals, Zahir, Dobing & Hunter (2002) found both aspects of cross-cultural convergence and divergence. Hofstede (1986) claimed that there are indeed substantial cross-cultural differences in learning – these may or may not be enhanced by OLEs. He lists:

- differences in social positions of teachers and students
- differences in the relevance of the curriculum/content
- differences in profiles of cognitive abilities, and
- differences in expected patterns of teacher/student and student/student interaction

Evidence has been found that culture may influence the reaction of learners to online learning, but this is comparatively underresearched (Sharpe *et al.*, 2005). They mention that online learning courses are developing from merely providing course information towards social constructivist and collaborative environments (Sharpe *et al.*, 2005), with the underlying pedagogies requiring a contextualised and culturally situated approach to online learning design.

A study by Hornik & Tupchiy (2006) found evidence that horizontal individualism, vertical individualism, horizontal collectivism, and vertical collectivism have an impact on the effectiveness of technology-mediated learning. Analogous to Hornik & Tupchiy’s (2006) study, it is argued here that personal values as conceptualised by Schwartz (1992) also have an impact on PKD processes and outcomes in online learning.

In a comparative study of foreign language students involved in distance learning at the Shantou Radio and TV University in China and at the Open University in the UK, Hurd & Xiao (2006) found significant differences in the perspectives of the students on their learning. They also warn of what they call 'cultural imperialism' and a 'West knows best' attitude to learning, particularly in the area of learner autonomy. Hurd & Xiao (2006) also speak out against stereotyping and overgeneralising, and suggest that the ever-increasing heterogeneity of learner characteristics have to be accounted for rather than employing a catch-all approach that pretends that all Chinese exhibit essentially the same learning approaches.

Some authors challenge the overly strong focus on the Western, collaborative and learner-centred, view of learning. Masoumi & Lindström (2009) show that other approaches, drawing from Eastern views of teaching and learning, which have a stronger focus on the teacher as a person of wisdom and respect, can be equally successful in Eastern contexts as Western approaches are in Western contexts. The question is, it is argued here, whether a given OLE is designed to resemble a Western teaching style (e.g. focus on independent, critical thinking and discussions) or an Eastern style (e.g. transfer of information from teacher to students), and what the cultural context of the student cohort is like. For example, if the OLE is designed with a focus on discussions and there are a lot of Eastern students in the course, how is this accounted for? Should the Easterners be encouraged to become debaters? Should the OLE be modified to emphasise discussions less? Should Easterners learn to become a bit more like Westerners? Should Westerners learn to become a bit more like Easterners? Again, a cultural situatedness perspective towards this issue is likely to lead to the most appropriate answers to these questions.

Learning styles, differences in interpersonal communication across cultures and the setup and design of an OLE might have a stronger effect on PKD in OLEs than personal values. Hills (2003) also points out that individual learners respond differently to a particular online learning design. He argues that some of these differences are due to the learners' skills and competencies, but that personality and learning style impact more strongly on individual online learning preferences (Hills, 2003). In other words, different levels of culture have different effects on the learning processes and outcomes, and some levels might be more salient at a particular point in time and in a particular context, thus making the learning online a very fuzzy and un-clear-cut phenomenon to observe and research.

It is also important to be aware that there are cross-cultural differences in experiencing the usability of an online learning system, as, for example, mentioned by Downey, Wentling, Wentling & Wadsworth (2005). If a particular learner considers a given OLE to be easy and intuitively to use, she is more likely to engage more successfully in PKD processes than a learner who has difficulties using the system. In addition to culture, individual characteristics have been found to have an impact on perceived ease of use of online learning systems (Jashapara & Tai, 2006). In research on the effect of Hofstede's national cultural dimensions on usability of an e-learning system, Adeoye & Wentling (2007) found that the overall strength of the relationship between national cultural values and usability was not significant, with the

exception of the effect of uncertainty avoidance on learnability time: higher scores on uncertainty avoidance are likely to mean higher scores for learnability time, which was defined as “the time users took to reach a specified level of proficiency” (Adeoye & Wentling, 2007, p. 126). It is important at this point to emphasise that neither usability nor perceived ease of use of OLEs, which in turn are contributing factors to PKD, can be empirically examined in this study.

Online learning software and virtual learning management systems continue to be designed primarily by US and Western European companies with a ‘Western’ cultural background and values. Since learning is highly situated (Lave & Wenger, 1991) and relevant only in a mutually shared and negotiated context, learners from outside this dominating culture will be less likely to make full sense and use of the learning materials provided. As a consequence, a diversity of learning approaches offered by an OLE (Mestre, 2007) will facilitate PKD in online learning.

To sum up, particular care must be taken to design OLEs in a culturally appropriate and sensitive way (Warschauer, 1998). The various levels of culture and the concept of personal values are important variables that determine the design of PKD processes and, in turn, influence PKD outcomes.

3.4 The Impact of Culture on the Internet

Research has been done in the areas of whether the Internet can be regarded as a ‘virtual cultural region’ with its own demographics and culture (Johnston & Johal, 1999), what cultural differences there are in global corporate websites (Robbins & Stylianou, 2001), cultural differences of Internet portals (Zahir, Dobing & Hunter, 2002), and cultural aspects of website navigation (Luna, Peracchio & de Juan, 2002).

Johnston & Johal’s (1999) paper identifies a specific Internet culture and classifies it in terms of Hofstede’s dimensions. Results from longitudinal studies of the demographics and psychographics of the Internet are analysed to elaborate the cultural norms and values of the Internet. In accordance with the studies listed above, they argued that Hofstede’s dimensions can be applied in order to classify Internet culture. However, they do not explicitly state how they reach their conclusions. Their trains of thought seem to make sense, yet they are not always empirically tested.

Whereas some researchers have argued that the Internet has a homogenising effect and contributes to cultural convergence, others have maintained that the Internet will turn into a multi-cultural and therefore heterogeneous ‘virtual cultural region’ (Zahir, Dobing & Hunter, 2002; Robbins & Stylianou, 2001). Other studies have found that there is a trend towards divergence, that is, cultural differences and artefacts are reflected in websites (e.g. Robbins & Stylianou, 2001). This suggests that peculiarities and characteristics of cultures manifest themselves in websites. Zahir, Dobing & Hunter (2002) explored whether national Internet portals reflect the national cultural norms (divergence) or rather reflect the dominant Anglo-American characteristics of the Internet (convergence). The US-American version of Yahoo! was used as the standard to which other national portals were compared. The findings were

that the basic structure of the national portals resembled that of Yahoo!, whereas there were differences in design (especially colours) and some features of Yahoo! were missing, some were added. It has to be criticised, however, that the sample of the national portals was rather arbitrary, because the researchers simply chose the national portal with the most links. Only one single portal per country was chosen – thus, it was not obvious whether the features of the national portal were representative of that country or showed completely untypical characteristics. The sample size should have been raised in order to increase the reliability of the findings (Bauer & Gaskell, 2000).

In a study on individualism-collectivism and its impact on the content and design of personal homepages, this author investigated whether personal homepages designed by people from countries ranking high on individualism differ from personal homepages designed by people from countries ranking high on collectivism (Haag, 2003a). He found no observable differences in structure and design. It seems that people generally 'imitate' other people's homepages, using tools offered by their Internet providers. People from individualist cultures tended to present themselves in more detail, whereas collectivists emphasised their relationships with family and friends. However, differences were not substantial. Differences in rapport management were also not considerable, but people from collectivist societies seemed to be slightly more preoccupied with their audience. Haag (2003a) suggested that personal homepages should be regarded as a genre of its own with specific characteristics that are mostly universal and only partially influenced by national cultures. Hence, there seems to be a convergence towards a 'personal homepage culture'. Regarding the study presented here, analogous to the findings from Haag (2003a), it can be argued that OLEs are also a 'genre of its own', but with national culture and a variety of other aspects, for example personal values, impacting on PKD in OLEs.

There has also been research on how intercultural miscommunication can occur in computer-mediated communication (St. Amant, 2002). Research on communicative patterns in chat rooms, e-mail and newsgroups has often neglected cultural influences; therefore, it has been argued that culture should be taken into account when analysing online communication and websites (St. Amant, 2002). However, as mentioned above, it is not in the scope of this study to compare the communicative behaviour of interactants from various cultures, as this is not a linguistic analysis but rather focuses on PKD in online learning. However, for a study on impression formation in chat rooms, the interested reader is referred to Haag (2003b).

How should cultural differences be conceptualised? Which models or frameworks should be used? Hofstede's set of dimensions of cultural variability is a widely cited conceptualisation of culture (Robbins & Stylianou, 2001), and his dimension of individualism-collectivism is said to be the most significant difference between national cultures (Triandis, 2001). However, this dimension has also been criticised for not being a valid and reliable tool in explaining cultural differences (Voronov & Singer, 2002).

Robbins & Stylianou (2001) studied cultural differences in global corporate websites. The sample consisted of the 15 largest companies from each of Hofstede's (1980) six clusters

based on cultural similarities. Using Hofstede's six clusters as a framework allows for a varied and representative sample, because websites from different, yet similar countries were put into one group as to give a more authentic and reliable representation of the characteristics of one particular group. The overall findings are similar to Zahir, Dobing & Hunter's (2002) study, namely that international websites are similar to the predominant US-American 'look and feel', but yet there is enough evidence to support Hofstede's clustering into culturally specific groups (Robbins & Stylianou, 2001).

Another paper by the same authors (Robbins & Stylianou, 2003) based on the same study states that website design does not differ much cross-culturally, whereas website content does. These findings, however, are in contrast to Huizingh's (2000) findings. Therefore, further research seems necessary.

Luna, Peracchio & de Juan (2002) conducted a very interesting piece of research. They found that a website design that is culturally specific and resembles values and norms of the local culture leads to an optimal navigation experience (what they call "flow"), which in turn leads to a positive attitude towards the website. This is further evidence of the important role that cultural situatedness plays in creating an effective online environment in which PKD can thrive.

3.5 The Schwartz Value Survey

3.5.1 Characteristics of the Schwartz Value Survey

In the presented research, Schwartz' ten individual-level dimensions of the Schwartz Value Survey (cf. Schwartz, 1992; Schwartz, 1994a, 1994b; Schwartz & Bilsky, 1987, 1990) were used as the means to determine the personal values of online learners. Schwartz' model has been tested in more than 200 samples from more than 70 countries using students, teachers, and representative samples (Roccas & Sagiv, 2010). The SVS has been validated and found to be a near-universal set of human values (Schwartz & Sagiv, 1995; Schwartz *et al.*, 2001; Spini, 2003). In addition to that, 45 of the 56 value items emerged in at least 75% of more than 200 samples (Schwartz, 2006), further pointing to the validity of the constructs. Studies using multidimensional scaling (Fontaine, Poortinga, Delbeke & Schwartz, 2008) and confirmatory factor analysis (Schwartz & Boehnke, 2004) also support the theorised structure of the value types. However, Perrinjaquet, Furrer, Usunier, Cestre & Valette-Florence (2007) fail to confirm the quasi-circumplex structure of the SVS when using confirmatory factor analysis. All in all, there is strong support in the literature regarding the validity of the SVS.

The SVS conceives of individual values as both the product of a shared culture and a product of an individual's experience (Schwartz, 1994a). It not only identifies the values as such, but specifies a circular structure of relations among, and oppositions between, them (Schwartz *et al.*, 2001). Schwartz also identified seven types of national-cultural values and discussed their implications for the workplace (Schwartz, 1999), but as this study examines PKD of individuals, these seven types are not used in this research.

The SVS is predominantly based on the Rokeach Value Survey (RVS) (Rokeach, 1968, 1973). However, further values were added from other cultural traditions so that any country-focus bias could be reduced (Smith, Bond & Kagitcibasi, 2006). The RVS is a tool to measure two sets of values, through rank-ordering a set of 18 terminal values, i.e. desired end states (e.g. an exciting life, national security, wisdom), and through rank-ordering a set of 18 instrumental values, i.e. preferable modes of behaviour (e.g. broad-minded, honest, obedient) (Rokeach, 1973).

Initially, Schwartz used separate samples of students and school teachers from 20 countries, and used multidimensional scaling (Fischer, Vauclair, Fontaine & Schwartz, 2010) and smallest space analysis (cf. Guttman, 1968), a technique similar to factor analysis but without making parametric assumptions about the intervals between points on the rating scales, for the data taken from each country (Smith, Bond & Kagitcibasi, 2006). The output of such a smallest space analysis (cf. Guttman, 1968) is a two-dimensional plot which shows the proximity between the 56 value items that Schwartz identified. Some examples of these 56 value items are: inner harmony (at peace with myself), an exciting life (stimulating experiences), independent (self-reliant, self-sufficient), and enjoying life (enjoying food, sex, leisure, etc.) (Schwartz, 1992). The items were then grouped by Schwartz into one of the ten individual-level value types identified by him; this clustering is a subjective procedure similar to the naming of factors in factor analysis (Smith, Bond & Kagitcibasi, 2006), but guided by a theoretical framework. In Schwartz' case, human values were expected to reflect three universal human requirements: biological needs, needs for social coordination, and needs for group welfare and maintenance. The ten individual-level value types did not, however, clearly separate these three requirements (Smith, Bond & Kagitcibasi, 2006).

3.5.2 Measurement and Structure of the SVS Value Types

The ten individual-level value types can be measured by both the Schwartz Value Survey questionnaire (Schwartz, 1992) and the Portrait Values Questionnaire (PVQ) (Schwartz *et al.*, 2001). The PVQ contains 40 short verbal portraits of people and takes about 10 minutes to complete. Each portrait describes the person's goals or aspirations. For example, "Thinking up new ideas and being creative is important to him. He likes to do things in his own original way". Respondents are then asked: "How much like you is this person?" and they are supposed to answer this question on a six-point Likert-type scale with the labels "very much like me", "like me", "somewhat like me", "a little like me", "not like me", and "not like me at all" (Schwartz *et al.*, 2001). The scores of one's personal values are thus derived from the respondents' self-reports and is arrived at by calculating the mean of the portraits that correspond to a value. The number of portraits for each value is due to the breadth of its conceptual definition (Schwartz, 1992).

According to Schwartz *et al.* (2001), the SVS as an instrument of measurement demands a high level of abstract thinking, which can lead to less valid results in less-educated samples – this was presumably the reason for a considerable deviation of 5% of the samples in some less-developed nations that Schwartz and colleagues investigated. Therefore, the PVQ was used in

the research presented here. It is regarded as a potentially more valid measure for use with a cross-cultural sample of students (cf. Matthews, Lietz & Darmawan, 2007) than the SVS, and the PVQ has been found to produce clearer results than the SVS because respondents seem to better identify themselves with how values are assessed by the PVQ (cf. Schwartz *et al.*, 2001). Hinz, Brähler, Schmidt & Albani (2005), although they confirmed the ten value types of the PVQ in principle, they failed to confirm the ordering and the circumplex structure found by Schwartz. However, a comparison of the SVS and the PVQ by Schmidt, Bamberg, Davidov, Herrmann & Schwartz (2007) supports the convergent and discriminant validity of the ten value types, although they also found that Tradition and Conformity correlate at almost 1.0, suggesting that the two value types should form one factor. Furthermore, analysing the means of the value types as measured by both the SVS and the PVQ showed a Spearman's rank correlation coefficient of $r=.95$, providing evidence that the relative importance of the value types do not depend on the measurement tool (Schmidt *et al.*, 2007). Table 3.1 (based on Schwartz *et al.*, 2001, p. 521) lists the ten individual-level value types and their definitions.

Table 3.1: Individual-level value types of the SVS (based on Schwartz *et al.*, 2001, p. 521)

Value type	Definition
Power	Social status and prestige, control or dominance over people and resources
Achievement	Personal success through demonstrating competence according to social standards
Hedonism	Pleasure and sensuous gratification for oneself
Stimulation	Excitement, novelty, and challenge in life
Self-Direction	Independent thought and action—choosing, creating, exploring
Universalism	Understanding, appreciation, tolerance, and protection for the welfare of all people and for nature
Benevolence	Preservation and enhancement of the welfare of people with whom one is in frequent personal contact
Tradition	Respect for, commitment to, and acceptance of the customs and ideas that traditional culture or religion impose on the self
Conformity	Restraint of actions, inclinations, and impulses likely to upset or harm others and to violate social expectations or norms
Security	Safety, harmony, and stability of society, of relationships, and of self

These ten value types can be arranged into two bipolar higher-order dimensions (Schwartz *et al.*, 2001). One set of bipolar higher-order dimensions is 'Openness to Change', consisting of Self-Direction and Stimulation, and 'Conservation', consisting of Conformity, Tradition and

Security. The other set of bipolar higher-order dimensions is Self-Transcendence, consisting of Universalism and Benevolence, and Self-Enhancement, consisting of Achievement and Power (Schwartz, 1992).

Hedonism is a special case, as it shares elements with both 'Openness to Change' and 'Self-Enhancement' (Schwartz, 1992; Schwartz, 1994a). More precisely, Schwartz suggests that researchers should make their decision of where to put Hedonism based on their own data: if Hedonism correlates more strongly with Self-Direction and Stimulation, it should be placed in Openness to Change; if it correlates more strongly with Power and Achievement, it should be placed in Self-Enhancement; if it correlates equally with Self-Direction/Stimulation and Power/Achievement, Schwartz suggests putting Hedonism into Openness to Change because it is more common across samples; and if Hedonism correlates weakly with the others, it should be treated separately (Schwartz, personal communication).

Figure 3.1 (taken from Burgess, 2005, p. 111) shows the structure and conflicting as well as congruent relations between the ten individual-level value types as well as the two bipolar higher-order value dimensions.

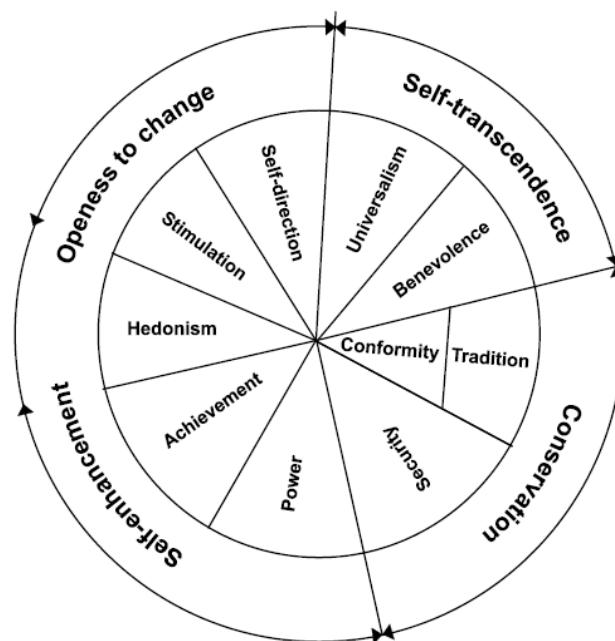


Figure 3.1: Structure of relations among the individual-level SVS value types (taken from Burgess, 2005, p. 111)

The closer two given values are the more similar their underlying motivations are; the more distant two given values are the more antagonistic their underlying motivations are. Except for Tradition, the structure is a circumplex (Schwartz *et al.*, 2001). The two opposing higher-order dimensions are also depicted: Openness to Change versus Conservation and Self-Enhancement versus Self-Transcendence.

It is also important to note that the SVS does not claim the absolute absence or presence of a particular value but instead argues that what is important is the relative ordering of the value types (Schwartz, 1992). This is analogous to the RVS which employed a ranking method (Rokeach, 1973) suggesting that the relative importance of the values is of interest. The precise measurement underlying the RVS need not concern us here. The interested reader is referred to the detailed account of the nature and measurement of human values by Rokeach (1973).

3.6 Summary

The concept of culture at its various levels was explained and its relationship to values, particularly personal or individual-level values, was discussed. Then, the Schwartz Value Survey and its ten individual-level value types were described and it was shown that this set of values is an often-validated, near-universal set of human value orientations that can be applied to the vast majority of human experiences and actions.

The impact of culture on the Internet was also discussed and it was shown that there are differences as to how online learning is conceptualised, designed and used across the world and across contexts and that people are likely to differ in how they approach PKD in online learning. It is argued here that the salience and importance of the various influencing aspects on PKD in OLEs differ and that the context of a particular online learning course is a decisive factor on how knowledge is developed. This 'cultural situatedness' will be discussed in the following chapter, which also draws together the concepts of knowledge, the SECI model, personal values and online learning.

4 Cultural Situatedness: Knowledge, SECI, Values, and Online Learning

This chapter discusses the interrelationships of knowledge, knowledge management, SECI, personal values and online learning, with a particular focus on the cultural situatedness of these concepts. In particular, the cultural situatedness of the SECI model as a framework of PKD in online learning will be discussed. Then, the impact of personal values on SECI will be described. This is followed by an analysis of the relationship of knowledge and learning. After that, the application of the SECI model, both in general and in OLEs in particular, will be discussed. After a section on online learning and culture, a summary of the concept of cultural situatedness will be provided.

4.1 Knowledge and Cultural Context

Knowledge is embedded, contextualised, rests on individual assumptions and requires an active negotiation of meaning that is intersubjectively agreed upon in order to be meaningful:

“As there are no fixed truths or totally definitive knowledge, and because circumstances change, the human condition may best be understood as a continuous effort to negotiate contested meanings ... that is why it is so important adult learning emphasizes contextual understanding, critical reflection on assumptions, and validating meaning by assessing reasons. Transformation theory... adds a fifth and crucial mode of making meaning: becoming critically aware of one's own tacit assumptions and expectations and those of others and assessing their relevance for making an interpretation.” (Mezirow, 2000, pp. 1-2)

According to Thompson & Walsham (2004), “*the meaning of any objective ‘knowledge’ will always remain the subjective product of the person in whose mind this is constituted, always relationally defined, and therefore does not transfer easily to others*” (p. 726, italics in the original). If knowledge is seen as context-specific, then knowledge creation – or PKD in the case of this study – is not free from context but embedded in it (Jyrämä & Äyväri, 2007).

Mingers (2008) also emphasises that much of knowledge is intersubjective. Intersubjectivity of knowledge requires that this knowledge is relevant for a community and can be made sense of by a community. This intersubjectivity requires a joint context; if the context changes, knowledge may cease to be knowledge because it is now void of meaning and relevance.

It is argued here that there should be less emphasis on knowledge as an object but a stronger emphasis on facilitating the context in which knowing takes place (Thompson & Walsham, 2004). In the study reported here, this context does not only consist of the OLE *per se*, but also of other contextual variables, such as the demographic setup of the learner cohort, the

academic discipline studied, the relationship with possible face-to-face instruction, etc. Some of these variables will be empirically investigated in this research, whereas other variables can only be discussed at a theoretical level.

On an epistemological level, Nisbett, Peng, Choi & Norenzayan (2001) suggest that the differences that exist among cultures have an influence on theories of knowledge and on what can be labelled as knowledge. Culture also co-determines cognitive processes (Nisbett, 2003). Nisbett *et al.* (2001) argue therefore that “the cognitive processes triggered by a given situation may not be so universal as generally supposed, or so divorced from content, or so independent of the particular character of thought that distinguishes one human group from another” (p. 307). In an experiment reported in Nisbett (2003), people from Asian and Western cultures were asked to decide which two of the three words ‘panda’, ‘monkey’ and ‘banana’ should be grouped together. Most Asians linked monkey with banana, whereas most Westerners linked panda with monkey. This suggests that Westerners are more likely to perceive the world in categories (pandas and monkeys are both animals), whereas Asians are more likely to emphasise relationships (monkeys eat bananas). In a heterogeneous team consisting of members of several cultures, these cognitive differences can have both advantages and disadvantages. On the one hand, perceiving the world in different ways presumably hampers interaction and communication within a team as obstacles are being created by different ways of thinking. On the other hand, bringing different styles of thinking and perception into a team can potentially lead to finding more than one possible solution to a problem or to increased creativity and innovation through a mutual challenge of one’s own ways of thinking. Moreover, albeit somewhat overgeneralising, North Americans focus predominantly on a focal object and less on context, whereas Asians focus more on contextual information surrounding that object (Kitayama, Duffy, Kawamura & Larsen, 2003). This is likely to have an effect in OLEs as well: North Americans might be better able than Asians to ‘ignore’ characteristics of the OLE as this constitutes the context of the subject matter and they might thus be able to focus better on that which is being taught, i.e. the content rather than the medium.

Kitayama, Markus, Matsumoto & Norasakkunkit (1997) found evidence that cognitive capacities may be modified if people are exposed to a new host culture. One can speculate, therefore, that if OLEs are regarded as the place and context within a particular cultural setup, then people might adapt their cognitive abilities accordingly. In other words, one’s original ‘offline’ culture is modified through the exposure to ‘online’ culture. This means that in OLEs with a homogeneous group of learners there is only one ‘offline’ culture which is unlikely to be modified – ‘online’ culture is very similar to ‘offline’ culture. On the other hand, in OLEs with a heterogeneous set of learners the various ‘offline’ cultures are likely to conflict in the OLE. In this case, the ‘online’ culture may adopt some elements of some of the ‘offline’ cultures. Thus, the ‘online’ culture of the OLE may be at least partly in contrast to the ‘offline’ culture. That learner then has to react somehow to this discrepancy between her own ‘offline’ culture and the ‘online’ culture of the OLE. The learner either accommodates the ‘online’ culture to some degree or she may get irritated by the ‘online’ culture which is different to her ‘offline’ culture – both reactions have some impact on the PKD processes and ultimately the PKD outcomes of an individual learner.

These differences in cognitive processes are important to note here, as differences in cognition are based on different tacit background knowledge (Viale & Pozzali, 2007) and will affect how knowledge is seen and interpreted, which in turn affects knowledge management and knowledge creation. Viale & Pozzali (2007) distinguish between three types of tacit knowledge: tacit knowledge as competence, tacit knowledge as tacit background knowledge, and tacit knowledge as implicit cognitive rules:

1. Tacit knowledge as competence, i.e. skills and know-how, can be learned by imitation and apprenticeship, with a strong face-to-face element, and learning by doing/learning by using. This conceptualisation of tacit knowledge is in the centre of the research reported here, as the skills and know-how element directly links to PKD.
2. Tacit knowledge as tacit background knowledge is acquired mainly through Socialisation and cannot be articulated, and is based on biological and cultural capacities and assumptions, embedded in contexts.
3. Finally, tacit knowledge as implicit cognitive rules is acquired through implicit learning, and can be regarded as the tacit equivalent of 'knowledge as justified true belief'. Linguistic knowledge is an example of tacit knowledge as implicit cognitive rules. Viale & Pozzali (2007) define this type of tacit knowledge as "*implicit cognitive rules* that can guide the actions and decisions of a subject while at the same time remaining confined to the tacit domain" (p. 235, italics in the original).

Knowledge management and related initiatives are often conceptualised at the level of an organisation and rarely at the individual level. Lehner & Haas (2010), however, have recognised this in their study on knowledge management success factors. They argue that it is meaningful to measure success at the level of an individual due to the multitude of exogenous influences, while at the same time recognising that such success factors are, as a consequence, subjective and impede a more strategic view of knowledge management success at the level of the whole organisation (Lehner & Haas, 2010). It is argued here that PKD in online learning is presumably better investigated at the individual level as the number of affecting factors is large and the effects of them are likely to differ from OLE to OLE and from individual to individual.

Given the highly complex nature of knowledge, von Krogh, Ichijo & Nonaka (2000) emphasise that "[i]t is [their] strong conviction that knowledge cannot be managed, only enabled" (p. vii). In the opinion of this author, it would be essential to instil this idea of the non-manageability of knowledge into practitioners in an organisation and argue in favour of a focus on creating a context which is beneficial for knowledge to thrive, be shared, be made use of, and be applied. This would also lead to a stronger focus on the more tacit end of the knowledge continuum and reduce the overly strong focus on explicit knowledge. It is proposed here that such 'enabling' of the context of PKD in online learning, i.e. its cultural situatedness, is promising for creating an effective and useful online learning experience. Such enabling should be one of the primary tasks of online tutors.

4.2 The SECI Model in a Cultural Context

The SECI model needs modification in order to incorporate culture more explicitly and to reflect the impact of culture on knowledge creation more fully. This section gives examples of how others have adapted the SECI model to either make it more suitable to a different domain or apply it at an individual level rather than at an organisational level for which it was originally intended.

Nonaka & Toyama (2003) claim that the movement through the SECI modes is not a circle but a spiral: the continuous interaction between tacit and explicit knowledge is amplified in the course of going through the SECI modes, moving up the ontological levels of individual, group, and finally organisation. As this study deals with individual-level PKD and therefore only one ontological level, the concept of a spiral is not warranted in this context. It is suggested here that all four SECI modes can be followed by knowledge creation or PKD of an individual only, without the need to follow a spiral extending over three ontological levels of individual, group, and organisation.

Kimmerle, Cress & Held (2010) describe the interplay between individual and collective knowledge by giving examples of digital technologies in which individual learning and collective knowledge building takes place. Although they recognise that the SECI model does not explicitly deal with knowledge transfer via computer-based technologies, they do suggest that some aspects of SECI can be applied in the context of online technologies. They borrow from the SECI model (Nonaka & Takeuchi, 1995) and from Luhmann's (1995) systems theory to devise a framework which models knowledge building. Individual knowledge and learning (cognitive system) and collective knowledge and knowledge building (social system) are conceptualised through the SECI model and through systems theory, respectively (Kimmerle, Cress & Held, 2010). Both levels of knowledge should be considered as merged and intertwined, not distinct or separate. They then go on to apply the four SECI modes to their model of individual and collective knowledge and the exchange between the individual cognitive system and the social system that they see as the basis for the development of new knowledge:

- Externalisation is described in terms of Nonaka's Externalisation and Combination
- Internalisation combines what Nonaka labels Internalisation and Socialisation

Thus, Externalisation in Kimmerle, Cress & Held's (2010) terms, is more encompassing than SECI's Externalisation mode, but does not discriminate between the making-explicit of knowledge (Externalisation) and the (re-)combining (Combination) of knowledge.

Cress & Kimmerle (2008) identify two conditions for individual learning to take place:

"Individual learning occurs as a result of externalization (due to processes of deeper elaboration which are activated by the externalization process). And individual learning occurs as a result of internalization (due to the simple adding of new knowledge or due to the expansion of a person's individual knowledge through internalization and, arising from that, an opportunity to interconnect old and new knowledge)." (p. 112)

It is suggested here that individual learning can be regarded as a quasi-synonym of PKD. Interestingly, neither Combination nor Socialisation is mentioned explicitly by Cress & Kimmerle (2008) for the conceptualisation of individual learning. This suggests that externalising, i.e. articulating one's personal knowledge in, say, a blog, does not necessarily require Combination activities for PKD to take place. Analogously, internalising, i.e. a change of the state of knowledge of an individual learner does not necessarily require Socialisation activities.

Nonaka and colleagues have also pointed out the contextualised nature of knowledge arguing that the same reality can be viewed differently, as different contexts and perspectives exist from which it can be observed:

"Knowledge is not just a part of the reality. It is a reality viewed from a certain angle. The same reality can be viewed differently depending on from which angle (context) one sees it. In knowledge creation, one cannot be free from one's own context. Social, cultural, and historical contexts are important for individuals (Vygotsky, 1986) because such contexts give the basis for one to interpret information to create meanings. That is why limited environmental interaction and externalization of personal knowledge can lead to ontological ills and fallacies, because the whole complexity of given phenomenon may remain undiscovered. Hence, in knowledge creation, one tries to see the entire picture of reality by interacting with those who see the reality from other angles, that is, sharing their contexts." (Nonaka & Toyama, 2003, p. 3)

In terms of creating new knowledge and innovation, Snowden (2002) argued that a common context is not always an enabler of knowledge creation but can also act as a barrier, suggesting that if context is never removed or changed and if everyone operates from the same context new meaning is less likely to emerge.

It is also important to discuss the contextualised nature of *ba*. In terms of Nonaka's knowledge-creating theory (e.g. Nonaka, 1994), the attempt to describe context was done through introducing the concept of *ba*, i.e. a shared time and space for knowledge creation (Nonaka & Konno, 1998). Both *ba* and context are emergent rather than static concepts (Augier, Shariq & Vendelø, 2001). This emergent nature of context suggests that all PKD activities and PKD outcomes in online learning courses are highly dependent on context and, in turn, shaping context; in other words, context is both constitutive of social action and the outcome of social action (Dilley, 1999). It is therefore essential to investigate context and its effect on PKD in OLEs, as context co-determines the effectiveness and efficiency of PKD.

Chou & Tsai (2004) criticised that Nonaka's model of knowledge creation only provides a framework for converting knowledge, but does not identify enabling or contextual conditions. In order to address this, they examined knowledge creation from both an individual and an organisational perspective. One, user involvement – the importance that a user attaches to a given system –, and, two, cognition of knowledge – the willingness to search for new information and process involved in it –, were identified as indicators at the individual level. At the organisational level, organisational mechanisms as defined as a "structural arrangement or a variety of design actions to facilitate interactions and knowledge exchange" (Chou & Tsai,

2004, p. 207) were identified as indicators. These organisational mechanisms can be regarded as somewhat similar to the concept of cultural situatedness proposed in this study. Chou & Tsai (2004), interestingly, found that the organisational-level *ba* had a much stronger influence on knowledge creation than individual-level *ba*. This supports the notion advocated here that context and the various cultural situatedness factors are likely to strongly influence PKD in OLEs.

Related to the SECI model is Blackler's (1995) categorisation of knowledge into five types – adapted from Collins (1993) –, namely:

- Embrained knowledge, which depends on conceptual skills and cognitive abilities
- Embodied knowledge, which is action-oriented and only somewhat explicit
- Encultured knowledge, which refers to the process of arriving at shared understandings
- Embedded knowledge, which resides in procedures and routines
- Encoded knowledge, which is conveyed by signs and symbols

Lam (2000) puts four of these types into one of four categories involving the two dimensions explicit-tacit and individual-collective:

- Embrained knowledge: individual-explicit
- Embodied knowledge: individual-tacit
- Embedded knowledge: collective-tacit
- Encoded knowledge: collective-explicit

Interestingly, Lam (2000) did not conceptualise encultured knowledge into the individual-collective and explicit-tacit continua. This might be because encultured knowledge cannot be grouped into either tacit or explicit knowledge and also not into either collective or tacit knowledge. It is argued here that encultured knowledge would be more appropriately conceptualised as a contextual factor which impacts on the remaining four types of knowledge according to Blackler (1995) rather than as a type of knowledge in its own right. In other words, what Blackler labels encultured knowledge is not knowledge but the common context that co-determines the intersubjective interpretation of the other four types of knowledge. Relating to the SECI model, it is suggested to localise Blackler's (1995) five types of knowledge as follows:

- Encultured knowledge: highly tacit, contextualised, strongly related to Socialisation
- Embodied knowledge: highly tacit; contextualised
- Embrained knowledge: medium explicit/medium tacit
- Embedded knowledge: medium explicit/medium tacit
- Encoded knowledge: highly explicit, related to the concept of information, strongly related to Combination

The five types can thus be localised at different positions on the tacit/explicit continuum and also partly linked to a particular SECI mode. This conceptualisation is helpful in deciding where to group knowledge in the SECI model, thus facilitating research and practical applications of the model.

4.3 The Impact of Personal Values on the SECI Model

In this section, two of the SVS value types – Power and Benevolence – are chosen to illustrate the potential impact that personal values can have on the SECI modes. The aim of this section is to show that personal values have the potential to influence PKD in OLEs to some degree.

Power is about “social status and prestige, control or dominance over people and resources” (Schwartz *et al.*, 2001, p. 521). In the Socialisation mode, the direct sharing of experiences among colleagues may be hampered by employees who score high on Power, because they may not be willing to share knowledge with others, as they believe this could lead to a loss of power within the company. In the Externalisation mode, in the dialogue involved in it, employees who score high on power may use ambiguous concepts and metaphors in order to avoid having to share knowledge in any meaningful way. In the Combination mode, information hoarding may be a strategy of an employee scoring high on Power. Finally, in the Internalisation mode, the individual-level value of Power does not seem to have a direct effect, as Power is about a certain power relationship with others, whereas Internalisation is closely linked to an individual only (Takeuchi & Nonaka, 2004).

Benevolence is about “preservation and enhancement of the welfare of people with whom one is in frequent personal contact” (Schwartz *et al.*, 2001, p. 521). In the Socialisation mode, if the giver of knowledge scores high on Benevolence, he or she is likely to be willing to share knowledge and closely working together with the receiver of knowledge. People scoring high on Benevolence are also likely to invest considerable time and effort to make knowledge explicit in the Externalisation mode and thus support their colleagues. In the Combination mode, information is not hoarded, but shared, sometimes to such an extent that there could be information overkill. In the Internalisation mode, analogous to Power, Benevolence does not seem to have a direct effect because it is about a certain relationship with others rather than closely linked to an individual.

4.4 Application of the SECI Model: General Issues

The SECI model (Nonaka, 1991, 1994; Nonaka & Takeuchi, 1995) is a contextualised model, embedded and shaped by context. As already mentioned above, Nonaka & Konno (1998) adapted the concept of *ba*, which they consider “to be a shared space that serves as a foundation for knowledge creation” (p. 40). This shared space also points to the ‘cultural situatedness’ of the SECI model as it suggests that contexts have to be shared with others who have a similar understanding of the situation in order to be meaningful to them – and members

of a different culture often have quite different understandings of the same situation. Therefore, it is often more difficult to use a *ba* as a shared space for knowledge creation, because that shared space may be interpreted differently by members of different cultures, thus leading to problems in knowledge creation.

Glisby & Holden (2003) criticised SECI and posited that it is not universally applicable because it stems from a particular context, in this case from a Japanese context. Some researchers, for example Li & Gao (2003), claimed that the term 'tacit' is used differently from Polanyi's (1966) work. Weir & Hutchings (2005) acknowledge that the SECI model is not universally applicable, but also suggest that SECI does have some relevance for knowledge management across cultures. It is proposed that SECI can be applied in a variety of contexts, as long as its origin and cultural situatedness are kept in mind and as long as it is adapted and modified accordingly in order to be relevant for the purpose for which it is applied. What also has to be kept in mind is that Nonaka and colleagues did not distinguish between implicitness and tacitness but they seem to suggest that tacitness includes implicitness (cf. Li & Gao, 2003): implicit knowledge can be expressed, whereas tacit knowledge cannot be expressed.

Roy & Gupta (2007) examine the suitability of the SECI model for describing knowledge processes in product development of a small Indian company. They found that the knowledge conversion modes of SECI are not adequately represented in the manufacturing firm that they observed. Thus, they argue that the SECI model cannot be applied universally due to its embeddedness in Japanese business contexts (Roy & Gupta, 2007). They base their report on one particular case and therefore on one particular context, making it difficult to even speculate whether a) the idiosyncrasies of the reported company, b) the cultural value context or c) other factors have a decisive impact on the reported non-universality of SECI. In the case of India as a country with a large variety of ethnic groups and sub-cultures, making any predictions of why the SECI model may be less relevant in this context than in the Japanese context in which it was developed is even more difficult.

4.5 Application of the SECI Model in Online Learning

4.5.1 Rationale for Employing the SECI Model Instead of a Learning Model

It is argued here that the SECI model is a promising framework for investigating both PKD processes and PKD outcomes in OLEs because it puts knowledge creation in the centre of inquiry. In contrast to this, models of learning often focus on aspects of cognition and how people learn and process information, i.e. learning styles. As already discussed in section 2.4.2, the theoretical validity of the concept of learning styles has recently been questioned (e.g. Duff & Duffy, 2002; Coffield *et al.*, 2004). Furthermore, in the context of multimedia instruction, Massa & Mayer (2006) did not find strong support for the hypothesis that verbal learners should be instructed differently to visual learners. It is suggested here that a focus on knowledge and

how it is created and developed is a promising approach for the study reported here. The SECI model offers this view on knowledge and 'what happens with it' when learners engage in online learning. This means that SECI takes into account both the learner as the one who develops her knowledge and the various kinds of knowledge offered by the OLE; in other words, the SECI model offers a more holistic perspective on PKD than learning styles or related concepts.

One important component of this holistic perspective is the concept of *ba*. Nonaka & Konno (1998) consider *ba* "to be a shared space that serves as a foundation for knowledge creation" (p. 40). Although the SECI model was originally conceived as pertaining to organisational learning, it is argued here that it can be adapted for the PKD of individuals, particularly due to *ba* which Nonaka & Konno (1998) claim provides "a platform for advancing *individual* [emphasis by this author] and/or collective knowledge" (p. 40). Furthermore, it can also be argued that *ba* is the place and cultural context for PKD according to Lave & Wenger's (1991) notion of 'situated learning', thus making it a suitable concept for investigating PKD processes and outcomes.

Although the SECI model was originally developed for examining knowledge creation within an organisation, its application does not need to be limited to this context, as SECI has also been applied at the individual level (e.g. Chatti, Klamma, Jarke & Naeve, 2007) and seems thus to be a useful tool to investigate PKD in the context of online learning. It can be argued, therefore, that although the SECI model was originally conceived as a model of organisational knowledge creation involving the individual, teams and the organisation as a whole, SECI is a useful analogy for learning at an individual level (Haag, Duan & Mathews, 2009a). Let us take a computer software course as an example: Employees learn how to use a new version of a software not only through reading teaching materials (Combination) handed out by their trainer in a conventional software course, but they may learn far more by merely observing other colleagues (Socialisation) who have already been using that version for quite some time. Furthermore, experimenting with the new software and learning by doing (Internalisation), using it in a context which is relevant for a particular employee, are also ways of learning to use the software. As can be seen in this example, several SECI modes are involved in describing these PKD processes.

It is argued here that the strength of the SECI model is that it brings together a wide variety of important concepts in knowledge creation: the two types of knowledge – tacit and explicit –, *ba* as the context of knowledge creation, and the four modes of knowledge conversion. It is also a process model thereby outlining what actually *happens* in knowledge creation rather than only describing what is involved. This focus on processes is a prerequisite for individuals to understand knowledge creation and their own role in it.

Wenger (2004) defines communities of practice as "social structures that focus on knowledge and explicitly enable the management of knowledge to be placed in the hands of practitioners" (p. 2). *Ba* and communities of practice are thus related concepts. The communities of practice of OLEs interact and are embedded in the various *ba* of that OLE; since the SECI model includes the concept of *ba*, it is capable of describing how communities of practice in online

learning use the various *ba* to develop the personal knowledge of its individual members. In other words, SECI can describe how new knowledge is created in the *ba* (Nonaka & Toyama, 2003) by referring to the interaction of tacit and explicit knowledge in the various modes. In other words, the link between *ba* and communities of practice in online learning is helpful in conceptualising PKD; this points to another advantage of employing the SECI model in the research presented here.

The SECI model can also help to stress the importance of interaction in informal knowledge processes (Hoe, 2006). Whereas formal and structured knowledge processes usually take place in an OLE, it is particularly the informal and largely unstructured knowledge processes that are essential for tacit knowledge to be shared and thus fostering PKD.

In terms of the tacit knowledge-explicit knowledge distinction, Japanese companies focus more on tacit knowledge, whereas organisations in Western cultures focus more on explicit knowledge (Takeuchi & Nonaka, 2004). It is important to keep in mind that cognitive processes differ across cultures (Nisbett *et al.*, 2001). These differences may explain that American companies, for example, put a very strong emphasis on the Combination mode and on explicit knowledge or information, whereas Japanese companies do not. It is suggested here that these differences regarding a focus on either more tacit or more explicit knowledge are also relevant for PKD in online learning. Therefore, the SECI model offers the opportunity to investigate the impact of two types of knowledge, i.e. tacit and explicit knowledge, on PKD in online learning. Understanding more about the interaction between tacit and explicit knowledge will help online tutors to design more effective learning scenarios by focusing on the right mix of tacit and explicit knowledge in the OLE.

To sum up, it is argued here that the SECI model offers some important elements that are important in a thorough analysis of PKD in online learning. For example, Haag, Duan & Mathews (2007) showed that the SECI model can be a promising model to investigate PKD in online learning. In this section, the following aspects were shown to be important for holistically analysing PKD:

- The focus on both PKD processes (Socialisation, Externalisation, and Combination) and PKD outcomes (Internalisation)
- The focus of the SECI model on the concepts of knowledge and knowledge creation
- The concept of *ba* as a means for taking into account the place/context in which PKD occurs
- The holistic perspective of the SECI model regarding PKD in online learning
- The lack of support in the literature for the validity of learning styles
- The distinction between tacit and explicit knowledge and the interaction between these two types of knowledge

- The valuable link between the concepts of *ba* and communities of practice in online learning

In the sections that follow, various adaptations of the SECI model in the context of online learning will be discussed, thereby illustrating the applicability of the SECI model or of models based on SECI in the domain of online learning.

4.5.2 Knowledge Creation Models in Online Learning Based on SECI

In the context of research into scaffolding mechanisms in OLEs, Bryceson (2007a, 2007b) proposed a model of knowledge acquisition in e-learning environments called ESCIE, which is based on the four SECI modes and on the concept of *ba*. Bryceson (2007b) argues that the situation of online learning requires a slightly modified SECI model, offering a report on the use of ESCIE for the development of an online virtual agribusiness supply chain simulation, to be used as a multi-player online educational game, but no report of using ESCIE in the context of more traditional OLEs is given. Bryceson (2007a) suggests that the concept of *ba* fits well into the context of online learning, because *ba* does not need a physical presence but can be entirely virtual. The acronym ESCIE represents the five stages of the model: Explicitisation, Socialisation, Combination, Internalisation, and Externalisation.

1. The knowledge creation cycle begins with a student visiting the website and familiarising herself with the course content which is the tutor's externalisation of his knowledge of the subject matter (Explicitisation).
2. In the second phase, Socialisation, students then discuss their ideas in an online discussion forum or similar tools.
3. Simultaneous to phase two, the students combine various pieces of information such as discussion postings, texts, videos, etc. (Combination).
4. Internalisation of new information, facilitated by assignments that accompany the learning progress, is the next step.
5. Finally, this internalised knowledge can be made external again (Externalisation) through report writing or further assignments (Bryceson, 2007a).

Figure 4.1 below (taken from Bryceson, 2007a, p. 203) shows the relationships of the various elements of the ESCIE model.

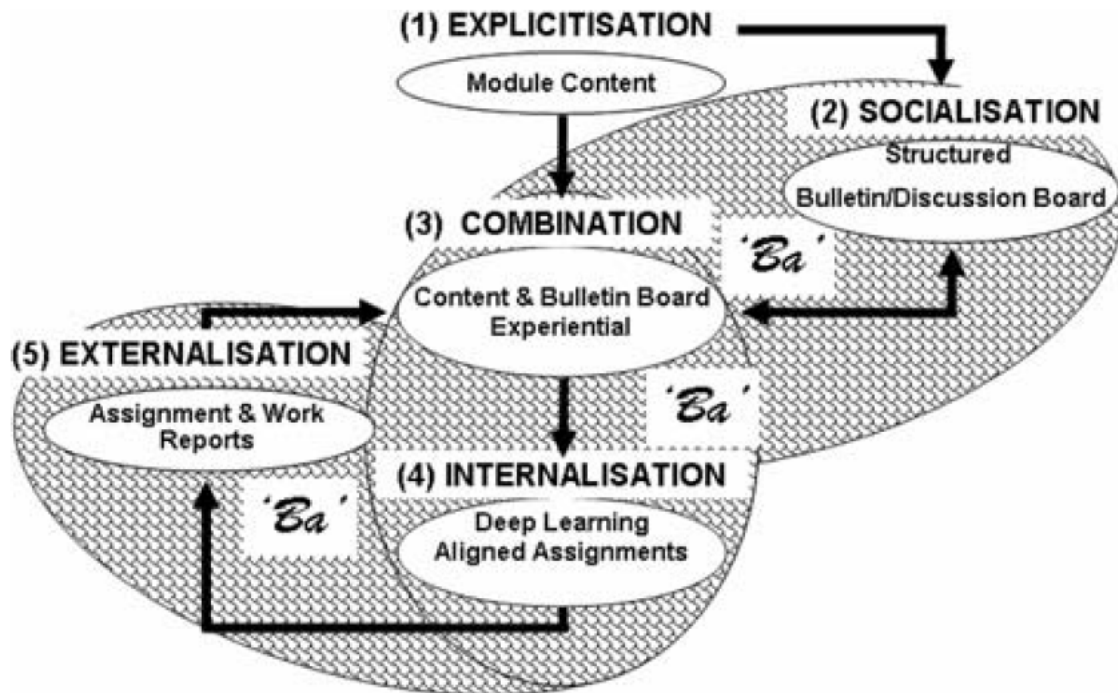


Figure 4.1: ESCIE model - adapted from the SECI model for use in online learning (taken from Bryceson, 2007a, p. 203)

It is argued here the ESCIE model is not a suitable starting point for creating a model that describes PKD in online learning. As mentioned previously, Socialisation should better be regarded as *not* being a part of a PKD model as it requires a strong face-to-face element, which is different to the conceptualisation of ESCIE, which defines Socialisation as using discussion forums, etc., something which it is argued here is better placed within Externalisation. As the PKD model is not directly concerned with any input by the tutor as it focuses on the development of knowledge of the individual learner, the Explicitisation mode is also not relevant for the PKD model proposed later in this study.

Yli-Luoma & Naeve (2006) and Naeve, Yli-Luoma, Kravcik & Lytras (2008) describe a semantic e-learning theory using the SECI modes and the respective *ba* as concepts. They conceive of e-learning as taking place in an organisation, thus arguing that the learning process they describe is cyclic and moves through the ontological levels from individual to organisational. In addition to a support context including the social interaction between students and also with their tutor covering the three dimensions of emotional attachment, cognitive support and moral values, they conceptualise an input factor, an action dealing with that input factor, and finally an output factor for each of the four *ba*. The output factor of Originating *ba* becomes the input factor of Dialoguing *ba*, and this cycle moves through all four SECI modes (Yli-Luoma & Naeve, 2006; Naeve *et al.*, 2008). Moreover, each of the four SECI modes is supported by different types of tools.

In the Socialisation mode (Originating *ba*) community-building tools aim to build cohesion among the group of learners. They strongly support the need for online tools that have good-

quality interaction features, such as videoconferencing. The input factor is that these tools deal with challenges and activities of the learners who then collect inspiring experiences together, to which the learners have to respond.

These inspiring experiences as the output factor of Socialisation then become the input factor for Externalisation (Dialoguing *ba*). Through discussing the experiences in online discussion forums or shared whiteboards (discussion-supporting tools), concepts will be articulated and thus externalised. The technical realisation of Externalisation processes is difficult. In addition to providing tools for dialogue, it is important to de-contextualise knowledge so that it can be broken up into smaller entities and in the end re-contextualised and re-used in other contexts. This can be achieved through modelling the user's needs, preferences, learning goals, background, etc., and through disaggregating learning resources into smaller objects that can systematically be related to other objects through the use of metadata. This set of learning objects can then be re-used by other learning communities according to their needs and for diverse purposes (Chatti *et al.*, 2006).

The articulated concepts can then be modelled and combined using conceptual modelling tools in the Combination mode (Systemising *ba*). Naeve, Nilsson, Palmér & Paulsson (2005) have developed such a concept-oriented modelling technique called Unified Language Modelling. This allows people to represent visually a domain of knowledge, making links, showing relationships and abstractly conceptualising knowledge, as well as employing metadata. The user of Conzilla gets an overview of the subject area, i.e. context, but can also explore and browse through the content. Chatti *et al.* (2006) propose to use learning repositories to store all the information and knowledge objects and facilitate finding and accessing these resources. In addition to that, they argue that synchronous and asynchronous communication tools enable learners to locate experts that might be of help in answering their questions or who might be able to share other information.

Finally, the conceptual models are reflected upon by the individual learners in the Internalisation mode (Exercising *ba*), which through the aid of reflective analysis tools will increase understanding. In the context of online learning, simulation tools can be the context in which learners can apply what they have learned. Chatti *et al.* (2006) suggest that personalisation of content is essential for effective Internalisation. This personalisation can be achieved through modelling the knowledge level, current performance, learning objectives, personal interests, etc. of an individual learner. Then, through the use of metadata for both learning objects and the learner model, learning objects that match the learner model can be identified and presented to her. Figure 4.2 below (taken from Naeve *et al.*, 2008, p. 18) shows the SECI process framework, adapted to the context of e-learning.

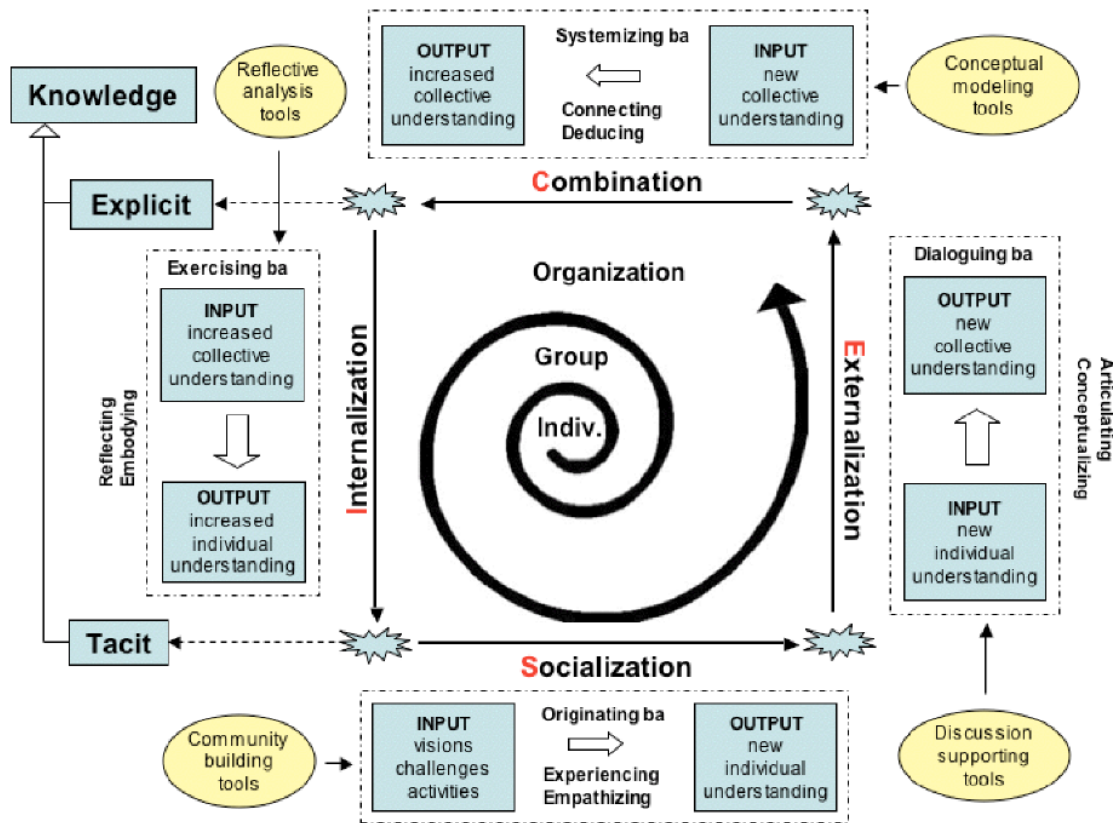


Figure 4.2: SECI process framework for e-learning (taken from Naeve *et al.*, 2008, p. 18)

Chatti *et al.* (2007) report another application of the SECI model in the context of Web 2.0. As both SECI and the concept of Web 2.0 rely on community and collaboration, they argue that Web 2.0 features can be modelled onto the four SECI modes. Thus, they propose a convergence of learning, knowledge management and Web 2.0 features. For example, they regard communities and networks as pertaining to the Socialisation mode, blogs, wikis and chat as pertaining to the Externalisation mode, RSS feeds and social bookmarking as pertaining to the Combination mode, and learning by doing as pertaining to the Internalisation mode (Chatti *et al.*, 2007). This is a good example of the adaptability of SECI into related domains, away from organisational knowledge creation. It also focuses on the individual level of learning processes rather than organisational knowledge creation. Figure 4.3 below (taken from Chatti *et al.*, 2007, p. 2) depicts processes and tools in online learning and their respective categorisation in the SECI model.

It is suggested here that the concepts associated with Socialisation may be applicable to other modes as well. As Socialisation requires a strong 'here-and-now' component and also a face-to-face focus, it is likely to be not particularly relevant for most online learning designs. However, telepresence (e.g. Steuer, 1992; Suh & Chang, 2006) is one example for which Socialisation is relevant in an online learning context.



Figure 4.3: Online learning tools and processes in the SECI model (taken from Chatti *et al.*, 2007, p. 2)

Naeve, Yli-Luoma, Kravcik, Lytras, Simon, Lindegren, Nilsson, Palmér, Korfiatis, Wild, Wessblad, Kamtsiou, Pappa & Kieslinger (2005) report on the application of the SECI model in workplace learning. They suggest drawing from two complementary aspects, namely learning management, which focuses on learning-as-process and is people-oriented, and knowledge management, which focuses on knowledge-as-resource and is mostly technology-oriented. They distinguish between knowledge-transmitting (formal learning) and knowledge-creating learning processes (informal learning). In knowledge-transmitting learning, knowledge already exists 'out there' and is merely being taught to learners via curricula in traditional courses. In knowledge-creating learning, knowledge is newly created and thus innovation is achieved.

Later in the course of the project reported by Naeve *et al.* (2005), Naeve and colleagues identified two problems in using their SECI process framework for describing knowledge-creating processes in the workplace:

1. Naeve, Kaibel, Zimmermann, Burgos, Lytras, Sicilia, Lefrère, Kravcik, Chatti, Yli-Luoma, Wild, Palmér, Nilsson, Ebner & Enoksson (2007) say that the division between knowledge-creating and knowledge-transmission processes identified in Naeve *et al.* (2005) is not a fixed division, but that "it represents two different 'execution states' that a work process can be in" (Naeve *et al.*, 2007, p. 28), and that there can be other such states, such as knowledge storage, knowledge retrieval, knowledge aggregation, and knowledge application.

2. The linearity of the SECI model is not well suited to describing what is actually happening in knowledge creation. They refer to how Nonaka, Toyama & Konno (2000) acknowledge the problem by suggesting that there is a number of intertwined SECI spirals that interact with each other and that can be of different sizes.

Naeve *et al.* (2007) deal with the second issue and re-conceptualise the SECI modes. They suggest that Combination and Socialisation run in parallel, and that Internalisation and Externalisation run in parallel, too. It is argued here that in order to meaningfully conceptualise PKD processes in OLEs, flexibility of the arrangement of the SECI modes is necessary. Not only should the SECI modes be allowed to run in parallel, but it should also be allowed to be traversed in any given order. Bypassing one or even more SECI modes should also be acceptable.

Yet another example of applying the SECI model in research in technology-mediated communication with a particular focus on virtual *ba* is presented by Saari, Laarni, Ravaja, Kallinen & Turpeinen (2004). They point out that e-mail, videoconferencing and other tools for communicating, the technology itself, the user interface and the message contents become an interface for *ba*. That virtual *ba* is thus technology-mediated but still linked to personal and team-oriented processes. In order to foster a virtual *ba* so that it becomes a more effective PKD context, Saari *et al.* (2004) suggest personalisation and customisation in terms of adapting information that is presented to a particular learner or varying the form of information. They subsume this under the heading 'psychological customisation', which models profiles of individuals, learning groups or communities based on, for example, differences in how people process information. For exercising *ba*, the OLE users have to create a user profile which is then used by the system to decide which user interface will be presented to that particular user. Saari *et al.* (2004) suggest that the psychological customisation may raise the level and quality of the tacitness involved in knowledge creation and therefore making it more natural, i.e. less technology-shaped, to create new ideas. However, they also recognise the great difficulties in conducting such psychological customisation; more empirical research is necessary.

4.5.3 The Applicability and Need for Adapting SECI in the Context of Online Learning

It is certainly a difficult task to decide whether any model stemming from and used in a particular setting should be used in another. For the context of technology-based knowledge building, Kimmerle, Cress & Held (2010) suggest that key aspects of the SECI model can be applied in that context. For example, Kutay & Aurum (2005) use the SECI model for assessing the knowledge management practice of an educational institution using a case study. The research investigated whether the level of use of each of the four SECI modes has any effect on the level of knowledge management, and whether the SECI model is applicable in an educational context and whether the level of use of the four SECI modes varies across study years or across gender. The technical report (Kutay & Aurum, 2005) strongly focuses on reporting an analysis of validity of the data, whereas the journal article (Kutay & Aurum, 2007) is

a detailed presentation of the research and its findings. The research questions are as follows (Kutay & Aurum, 2007, p. 66):

- “Does the level of use of each type of transformation of knowledge, i.e. socialisation, externalisation, combination and internalisation, have any effect on the level of KM?”
- “Is the SECI model applicable in an educational context, and does the significance of the model components vary between years or across gender?”
- “What are the current KM practices within educational organisations?”
- “Which procedures are being utilised effectively by students and which can be improved?”

In a case study of e-learning in Cisco Systems, Hildrum (2009) reports a successful example of sharing tacit knowledge online through a network of remote labs. A prerequisite for successfully sharing tacit knowledge online is a nurtured joint social environment, which can be either local or online, and assisting others through exchanging information or shared practice rather than attempting to transfer knowledge directly from one person to another (Hildrum, 2009). The SECI model was not considered to be sufficient to explain knowledge management in an educational context. He also found that knowledge management models stemming from an organisational context need to be reassessed before they can be applied sensibly in the context of education (Hildrum, 2009).

The examples of adaptations of the SECI model mentioned above illustrate the usefulness of the SECI model by either applying the complete model or applying some selected parts of it in other domains and for other purposes. The inconsistencies and difficulties in defining key elements of SECI – particularly tacit knowledge and *ba* – make it difficult to describe SECI conceptually and employ it in academic research. However, when it comes to applying SECI in business settings and contexts, these difficulties and shortcomings, may be regarded as a blessing in disguise: Practitioners who apply the SECI model for their own purposes in a business setting feel less impelled to the definitions of the concepts of the model and are therefore freer to use parts of the model in a modified way.

Although the SECI model was originally conceived as pertaining to organisational learning, it is argued here that it can be adapted for the context of PKD of individuals, especially in connection with *ba*. Furthermore, it can also be argued that *ba* is the place and cultural context for learning according to Lave & Wenger’s (1991) notion of ‘situated learning’, thus making it a suitable concept for investigating PKD. Table 4.1 below shows an adaptation of the SECI modes and corresponding *ba* from an offline context towards an online context.

Table 4.1: Adaptation of the SECI modes and corresponding *ba*

Mode and <i>ba</i>	Offline context (description based on Nonaka & Takeuchi, 1995)	Online context
Socialisation (originating <i>ba</i>)	Socialisation is about sharing experiences and “shared mental models” (p. 71). Originating <i>ba</i> is a space for physical contact and interpersonal interaction where this sharing takes place. <i>PKD process</i>	As Socialisation requires elements of face-to-face contact and direct interpersonal interaction and rapport – also including feelings, empathy, etc. – it is unlikely to be relevant to the vast majority of OLEs. It was argued before that telepresence applications may be considered to be such an exception. It is therefore suggested not to include Socialisation in the model of PKD in online learning.
Externalisation (interacting <i>ba</i>)	Externalisation is about making tacit knowledge explicit and creating concepts by dialogue and reflection. Interacting <i>ba</i> is the place where this happens. <i>PKD process</i>	Externalisation happens via online submission of course work, discussion and communication via e-mail, chats, asynchronous discussion forums, etc., but also through a joint working on wikis or blogs.
Combination (cyber <i>ba</i>)	Combination is primarily about synthesising, aggregating and combining different kinds of explicit knowledge. Cyber <i>ba</i> is the place where this happens. <i>PKD process</i>	Online learners make a deliberate choice about what information and content they want to use. For example, they might focus on audio materials or texts or hyperlinks or videos or online quizzes or other documents. Cyber <i>ba</i> is the context enabling e-learners to make a deliberate choice about how to use the different materials.
Internalisation (exercising <i>ba</i>)	Internalisation is closely linked to learning by doing. Exercising <i>ba</i> acts as the shared place where this happens. <i>PKD outcomes</i>	The creation of an online learning diary gives e-learners an opportunity to reflect on their PKD experiences and to make sense of them. The crucial thing is to apply the newly created knowledge, expertise and skills in an offline environment, i.e. in real-life situations (transfer from online context to offline context).

Examples are now given of the processes that can occur in the four SECI modes in the context of online learning. Socialisation is conceptualised as conversion of tacit knowledge from individual to individual, thus only one ontological level is involved. Moreover, Socialisation is only relevant to a particular type of online learning such as telepresence applications. Then, the learner can write an essay (Externalisation) in which she shows what she knows about a subject area or in which she shows that she can apply newly-acquired concepts in a case study. In order to close any gaps the student may have she can search for more material that helps

her understand the concepts, for example by analysing blogs that discuss online marketing, linking that to her online journal and finally writing an outline of that knowledge which is relevant to her in that given situation (Combination). Finally, the learner is now better able to answer exam questions or analyse case studies, after she has learned and understood the concepts (Internalisation).

It is argued here that it is worthwhile investigating the SECI model from the point of view of culture in order to try to understand the model better and to make it more applicable and relevant across a wide variety of contexts. Furthermore, it is important to note that research into knowledge management has mostly been conducted in the Western world, particularly the USA, and therefore has a Western cultural bias to it (Pauleen, 2007). Applying a model which stems from a non-Western context can offer a fresh and different perspective on knowledge creation. Haag, Duan & Mathews (2009a) discuss the applicability of the SECI model from the point of view of culture; this material is also reproduced in Appendix D.4.

Linking the tacit-explicit distinction and conversational technologies in online learning has rarely been attempted, but can potentially help online tutors to pick that technology which is likely to have the greatest positive impact on PKD of the learners. Asllani, Etkin & Somasundar (2008) report their research on comparing blogs and discussion forums and their suitability to foster knowledge sharing, focusing on differences between tacit and explicit knowledge. On the one hand, they found that blogs communicate tacit knowledge more successfully than discussion boards when such knowledge is being aimed at a general audience and when it is more general and relatively simple. On the other hand, explicit knowledge which is aimed at a more specialised audience and which is more structured and requires a greater expertise is more efficiently communicated via discussion forums than via blogs (Asllani, Etkin & Somasundar, 2008). By finding differences regarding the suitability of a medium to capture and share either more explicit or more tacit knowledge, their results point to the need for determining which medium or knowledge sharing tool is likely to be the most effective for a certain type and level of knowledge. Interestingly, they also found that those subjects that used blogs performed significantly better than those that used discussion forums. In the context of their study, blogs were found to be better for communicating tacit knowledge and better when it came to the subjects' performance. One cannot claim, however, that this means that a focus on tacit knowledge automatically leads to a higher performance, as the increased performance may be due to characteristics of the medium itself rather than the characteristics of tacit knowledge.

4.6 Cultural Situatedness: A Summary and Examples

The importance of context for knowledge management is emphasised by Thompson & Walsham (2004). The word 'context' is derived from the Latin *texere*, which means 'to weave', with *contextere* meaning 'to weave together' or 'to compose' (Dilley, 1999). The notion of "context implies a generalised set of connections thought in some way or other to be construed

as relevant to the object or event under discussion" (Dilley, 1999, p. 4); connections in turn also imply the existence of disconnections.

Brown, Collins & Duguid (1989) argue that knowledge is situated and that it is a product of the activity, the context, and the culture in which it is developed. Thus, knowledge is not 'just there', detached from context, but inextricably linked to culture and context, something which is labelled 'cultural situatedness' in this study.

Haraway (1991) introduced the notion of partial and situated knowledges. In the context of research in primate biology, she found that interpretations of behaviour in primate groups was strongly gendered and reflected the personality of the researchers involved. She went on to argue for a rethink of objectivity in research, taking into account different kinds of knowledge and stating that such academic research is situated (Haraway, 1991). It is argued here that not only is knowledge and knowing situated, but also the context from which such knowledge stems and in which knowing occurs. It is suggested that a given context is made up of, and influenced by, several layers of culture, such as national, organisational, group, gender or individual culture as measured by personal values. Hence, 'cultural situatedness' is defined as follows:

'Cultural situatedness' denotes the context of a given situation at a certain point in time and encompasses all aspects that have an impact on the creation of such a context. Examples of these aspects are: personal values of an individual, team or group culture, organisational culture, national culture, gender, age, characteristics of an OLE, etc.

The concept of cultural situatedness is exacerbated and made even more complex as it refers not only to the context in which PKD occurs but also to the context in which the subject matter (knowledge) was developed. If these two types of cultural situatedness are more than slightly different, frictions and incoherencies may occur.

Karahanna, Evaristo & Srite (2005) stress the importance of distinguishing between various levels of culture when examining individual behaviour and that the nature of behaviour changes the *relative* influence and impact of the different levels.

In the context of knowledge management, Zheng (2009) suggested that the three main cultural categories that influence its effectiveness are cultural factors relating to the orientation to knowledge, cultural factors relating to the orientation to people, and cultural factors relating to the orientation to work. The three categories can be described as follows:

"The orientation to knowledge establishes the shared understanding of the significance of knowledge so that key knowledge is given adequate attention and optimally exploited. The orientation to people generates organisational members' willingness to actively engage in interactions that makes knowledge management meaningful and efficient. The orientation to work creates the relevance of work tasks and knowledge-seeking behaviour so that knowledge management efforts can be sustained over time. The presence of all three orientations provides the essential cultural grounding for knowledge management." (Zheng, 2009, p. 223)

Three cultural factors were identified in the orientation to knowledge category, namely shared ownership of knowledge, prioritisation of knowledge, and critical attitude towards existing knowledge. In the orientation to people category, trust, care, openness, cooperativeness/teamwork, and cohesiveness were identified as cultural factors. Finally, entrepreneurship and a positive outlook are the two cultural factors in the orientation to work category (Zheng, 2009).

It is worthwhile linking the three orientations to the concept of situatedness. One, orientation to knowledge requires a *shared* understanding of knowledge. This so-called shared understanding points to the embeddedness of knowledge and the use of it in a particular set of real-life interactions, or in other words, context: knowledge is only significant in this context. Two, orientation to people further points to the importance of intersubjectivity of knowledge; if knowledge were fully idiosyncratic it should not be called knowledge, as no one else acting in a given context would regard it as knowledge. Three, orientation to work means that knowledge management efforts must be relevant; this relevance is constituted by a particular context and knowledge is only relevant in a particular set of cultural situatedness.

All three orientations are relatively independent but yet need to coexist for knowledge management to be effective, efficient and sustainable. The interrelations of the identified cultural factors and their respective impact are, however, largely unexplored (Zheng, 2009). The research presented here adds to filling this gap by investigating the impact of personal values on PKD in online learning.

Ho (2009) found further evidence of the complexity and interactivity of factors impacting on learning behaviour in an online context. Using a structural equation modelling approach, it was found that e-learning system quality and technology readiness have both a direct impact on learning behaviour and an indirect impact on learning outcomes through learning behaviour (Ho, 2009).

Several strands of research pointed to the cultural situatedness of the concept of knowledge and the process of learning, i.e. PKD is not a universal process but deeply rooted in and influenced by the concrete situation the learner is in.

Furthermore, learning styles have been described as differing across cultures (e.g. Yamazaki, 2005; Hofstede, 1986). Mestre (2007) calls for a diversity of learning approaches in online environments so that students can choose those approaches that suit their own learning style best. This further suggests that PKD is situated (cf. Lave & Wenger, 1991) and is influenced by context. It is suggested here that more conventional measures such as Hofstede's (1994) national-cultural-level values are too 'catch-all' and undifferentiated to take the personal and contextualised nature of PKD into account – personal values seem better suited to describe PKD. This claim is supported by Gould & Grein (2009) who criticise the privileging of national culture when differences are explored and assessed and argue that this predominant view "fails to adequately account for either micro-level variables, such as personal experience or lifestyles" (p. 239). In order to precisely bring personal experiences and individual characteristics to the fore, personal values are likely to be a suitable way of conceptualising this experience.

Kolb's (1984) experiential learning theory also underlines that "learning style is not a psychological trait but a dynamic state resulting from synergistic transactions between the person and the environment" (Joy & Kolb, 2009, p. 71). This emphasises again the dynamic and culturally situated character of learning, while at the same time explicitly mentioning the environment, i.e. context, as a crucial denominator of PKD processes in online learning. The PKD processes and outcomes in online learning have to be examined holistically; the situated environment of the learner, personal values, individual factors of the learner, and other variables have to be taken into account (Wang, Tearle & Dillon, 2007).

Oyserman & Lee (2008), based on a meta-analysis of the literature on priming individualism and collectivism, found support for a "situated model of culture in which cross-national differences are not static but dynamically consistent due to the chronic and moment-to-moment salience of individualism and collectivism" (p. 311). In other words, if a variable is salient at a given point in time then a causal influence of that variable is more pronounced than when it is not so salient.

Demographic background variables have been found to have an influence on SVS value types and can thus potentially be considered as moderator variables. For example, in a sample of expatriate Iranian Baha'is, Australian Baha'is and Australians, Feather, Volkmer & McKee (1992) found that males assigned more relative importance than women to hedonism, achievement, power and stimulation, whereas females assigned more relative importance than men to the benevolence and spirituality domains.

The distinction between tacit and explicit knowledge also has an impact on the question of context in PKD. Explicit knowledge has a largely universal character and is therefore applicable across contexts, whereas tacit knowledge is rooted in values, which mostly restricts the applicability of tacit knowledge to one particular context (Nonaka & von Krogh, 2009). Therefore, it is argued here that explicit knowledge is less dependent on the context of PKD in OLEs than is tacit knowledge. As a consequence, Socialisation, which only involves tacit knowledge, is more strongly dependent on the context than Externalisation and Internalisation, which involve both explicit and tacit knowledge. Finally, Combination is likely to be least dependent on context because it only involves explicit knowledge.

4.7 Summary

This chapter dealt with the cultural situatedness of knowledge, SECI, personal values and online learning. It was shown that culture at various levels has an impact on knowledge creation processes and on how knowledge is being conceptualised.

It was suggested that values can have different effects on the SECI modes and that the SECI model and its modes are shaped by and embedded in context. Then, a brief outline of the potential effects of some of the SVS value types on the SECI model was given.

Several issues that arise when applying the SECI model, both in general and in the context of online learning in particular, were discussed. The ESCIE model, a model based on SECI but

adapted for use in online learning, was introduced. It was suggested that the SECI model is a useful model to investigate PKD in online learning at an individual level but that it has to be adapted to be made relevant for use in that context. It was further suggested that the Socialisation mode should not form part of the investigation as Socialisation requires a very strong element of face-to-face interaction, which is usually only rarely attempted in OLEs. An adaptation of the SECI modes and corresponding *ba* was then presented. Finally, a summary of the concept of 'cultural situatedness' was provided.

5 Research Methodology

This chapter first gives an overview of philosophies and paradigms of research methodology. Then, the general research approach of this study will be outlined. Sampling, data collection, and data analysis issues that are relevant to all three data collection phases will then be discussed. Some comments are then made about the reliability and validity of findings of the whole research process, before ethical issues regarding the conducting of research are addressed. Finally, an overview of the research is given and the initial research model is presented.

As this chapter aims to provide a holistic overview of the whole study and not merely the initial research model, some of the results and conclusions of the first two data collection phases will also briefly be mentioned. This allows the reader to better understand the various data collection phases and how they link to 'the whole'. All three data collection approaches are discussed separately in chapters 6, 7 and 8.

5.1 Philosophies in Research Methodology

The distinction between qualitative and quantitative research methods is arguably one of the major categorisations of research methods. Representative examples of quantitative research methods are surveys, often conducted using scale-type questions, and experiments. Interviews, focus groups, case studies, observations and related methods are examples of tools used in qualitative research (Denzin & Lincoln, 1994, 2005).

In the last few decades, there has been a considerable and often fierce debate on the pros and cons of these two main approaches to research (Denzin & Lincoln, 2005). Quantitative research (cf. Kaplan, 2004) usually allows for a larger degree of generalisability of the findings compared to qualitative research, but qualitative research is normally capable of providing both a broader and a more in-depth insight into complex phenomena by allowing for rich and detailed descriptions of research phenomena, something that Geertz (1973) called 'thick description'. In order to arrive at such thick descriptions, researchers are often advised to use methods for triangulation (Campbell & Fiske, 1959; Denzin & Lincoln, 2005), such as employing more than one research method (Ragin, 1987).

Within the context of qualitative research, Guba & Lincoln (1994) identify four research paradigms: positivism, postpositivism, critical theory, and constructivism. A paradigm is a set of basic beliefs of the nature of the world which is held by an individual; these basic beliefs cannot be proven true or false but have to be accepted as the worldview of that individual (Guba & Lincoln, 1994). They link these four research paradigms to ontological, epistemological, and methodological assumptions:

- Ontological assumption: “What is the form and nature of reality and, therefore, what is there that can be known about it?” (Guba & Lincoln, 1994, p. 108)
- Epistemological assumption: “What is the nature of the relationship between the knower or would-be knower and what can be known?” (Guba & Lincoln, 1994, p. 108)
- Methodological assumption: “How can the inquirer (would-be knower) go about finding out whatever he or she believes can be known?” (Guba & Lincoln, 1994, p. 108)

Positivists favour validated and reliable methods, usually quantitative, to describe and control phenomena in a relatively objective way (Plack, 2005). Post-positivists want to discover cause-effect relationships and predict future behaviour based on observations of current behaviour (Creswell, 2003). Critical theorists want to go beyond this and use their research to bring about positive change in the research contexts. Finally, the aim of constructivism is to understand behaviour and how reality is constructed by human beings. This research is embedded in the post-positivist paradigm and the constructivism paradigm. Its aim is to understand PKD in OLEs (constructivism), with the focus of discovering the effect of personal values on PKD in OLEs (post-positivism).

Regarding the ontological assumption, positivists argue that there is an objective reality which can be measured and described objectively and which does not depend on human interpretations. Interpretivists, however, argue that reality can only be known through subjective constructions of reality which takes the context into account rather than by observing reality *per se*. Thus, in the positivist paradigm, reality is single and tangible, whereas in the naturalist paradigm realities are multiple and constructed (Lincoln & Guba, 1985). This thesis has argued throughout in favour of a contextualised and culturally situated approach to investigating PKD in OLEs. Both the subject matter and the research approaches of this study therefore operate in the naturalist paradigm.

Regarding the epistemological assumption, positivists employ hypothetico-deductive theory-testing to either support or disconfirm hypotheses and to allow for a generalisation of results. Interpretivists aim to understand research phenomena through interaction with the social world. Epistemologically, this study makes use of both positivism and interpretivism. Through a discussion and analysis of the literature a theoretical framework was proposed which both shows the need for taking a variety of variables for cultural situatedness into account when describing PKD in OLEs. In addition to that, hypothetico-deductive theory testing was used to measure the impact of SVS value types on PKD. Both approaches contribute to achieving the objectives of this research: the discussion of cultural situatedness points out the need for taking a holistic view on PKD, whereas the measurement of the impact of SVS value types on PKD examines one major independent variable.

Regarding the methodological assumption, positivists use quantifiable variables, test hypotheses and aim to generalise from the sample to the population. Scale-type surveys are standard instruments used by positivists. Interpretivists use a more open-minded, less predetermined and less rigid approach, trying to understand the complexity of human

behaviour, sometimes by using interviews, observations or field studies. Again, this study borrows elements from both the positivism and interpretivism approach: the theoretical framework and the concept of cultural situatedness are discussed conceptually (interpretivist), whereas the impact of SVS value types on PKD is measured by a scale-type survey (positivism).

5.2 General Research Approach

Nicolini (2009) suggests that scholars should complexify and not simplify the world. He goes on to say that neither indeterminacy, nor diversity, nor complexity can be avoided in research as the very search for truth is an “endless conflict between different rhetorical and discursive strategies” (Nicolini, 2009, p. 490). The theoretical framework of this research therefore not only addressed the research questions, but also suggested avenues for further research – avenues that would further explore said complexity of the world.

Tacit knowledge and contextualised knowledge are core constructs in the research reported here. Referring to Polanyi (1966), any research striving for a purely objective knowledge does not produce new knowledge – a tacit or at least intersubjective component is essential. In other words, all knowledge contains some tacit and personal elements, and if the tacitness or the personal elements would be removed, knowledge would be destroyed (Polanyi, 1966).

The research reported here operates from the premises mentioned above. This study is a first step to examining PKD in OLEs, but further research is needed to further validate its findings. Moreover, the emphasis on cultural situatedness and thus on the need to take into account a variety of contextual variables that influence PKD also complexifies the theoretical framework in terms of Nicolini (2009).

Both qualitative (Denzin & Lincoln, 2005) and quantitative research methods are used in this study. Taking into account all phases of data collection in this study, the focus is on quantitative data, with the exception of the exploratory study. First, an exploratory study in the qualitative research domain was conducted that yielded insights into the PKD experiences of online learners, second, a Delphi study was carried out in a mixed qualitative-quantitative approach, and third, an online survey was created, which is mostly quantitative, testing hypotheses, but which also contains some open-ended questions.

The use of both qualitative and quantitative methods has been described as ‘mixed methods’ research, which is an approach to research “in which the researcher tends to base knowledge claims on pragmatic grounds (e.g., consequence-oriented, problem-centred, and pluralistic). It employs strategies of inquiry that involve collecting data either simultaneously or sequentially to best understand research problems” (Creswell, 2003, p. 18). Alternative terms for mixed-methods research are: multi-methods, multi-strategy or mixed methodology (Bryman, 2006a). There have been both epistemological and ontological arguments against combining quantitative and qualitative research, but mixed-methods research has recently achieved more and more interest and acceptance (Bryman, 2006b).

Various dimensions of how to integrate quantitative and qualitative research can be identified and are given below (all five aspects based on Bryman, 2006a, pp. 98-99); they are then discussed in the context of this study:

1. Are the quantitative and qualitative data collected simultaneously or sequentially?

Quantitative and qualitative data are collected both simultaneously and sequentially. The first phase of data collection – asking online learners about their own views of learning online – deals with qualitative data. The second phase, the Delphi study to determine which of the SVS value types are particularly relevant to PKD in OLEs, is a mix of collecting both quantitative and qualitative data at the same time. In the third phase, the online survey, the focus is on quantitative data, with some qualitative data in the form of open-ended questions.

2. Is there a priority on quantitative or qualitative data?

Considering all three phases of data collection as a whole, the research is largely quantitative, with only some elements of qualitative data.

3. What is the function of the integration of quantitative and qualitative research, e.g. triangulation, exploration, explanation?

The discussions in the online discussion forums in the first phase of data collection are exploratory and qualitative. The results form an essential basis to devising the online survey through a more suitable and pertinent link of the survey questions with the subject matter – PKD in OLEs – with a clear *perspective from the point of view of the SECI model*. The online survey, which was designed based on the findings of the prior online discussions and the results of the Delphi study, then aims to measure the impact of personal values on PKD in OLEs. As both the Delphi study and the online survey examine the relevance of the personal value types of the SVS from two entirely different perspectives (expert opinion versus self-reported first-hand experiences), the Delphi study and the online survey can be regarded as offering a triangulation by method.

4. At what stage or stages in the research, e.g. research question formulation, data collection, data analysis, etc., does mixed-methods research occur?

Mixed-methods research occurs in data collection and, consequently, in the methods used to analyse the various forms and types of data.

5. Is there more than one data strand, i.e. more than one research method and thus more than one source of data?

Yes, there are several sources of data. Two online courses were used in the exploratory study, and the participants in the online survey were recruited via several channels.

Moreover, the notion of cultural situatedness led this researcher to abandon early on a focus on national cultural value dimensions (e.g. Hofstede, 1991) and instead put the individual-level SVS value types (Schwartz, 1992) in the centre of inquiry, as this discriminates better the

characteristics of online learners than if national cultural value dimensions had been used. Furthermore, the focus is on the 'learners' voice', i.e. on self-reports of PKD processes and PKD outcomes rather than on data resulting from observations by the researcher or from analysing grades received in assessments.

5.3 Ontological and Epistemological Assumptions and Research Approaches

Discussions about the nature of reality, i.e. ontology, and the question of what is knowledge, i.e. epistemology or the theory of knowledge, have been taking place for hundreds of years and are vast. It is not necessary to summarise all of these debates here. However, some ontological aspects of knowledge will be introduced, and the epistemological and ontological assumptions of the research presented here will be laid out.

Ontology is the study of the nature of phenomena. Regarding the concept of knowledge, a crucial ontological view of knowledge is whether knowledge is external to an individual knower or the product of an individual's consciousness, i.e. whether knowledge is objective or subjective (Jakubik, 2007). It was argued throughout this thesis that context and the cultural situatedness of PKD plays a crucial role in determining knowledge and that knowledge is strongly linked to an individual knower. Therefore, it is proposed here that knowledge is intersubjective, i.e. something is accepted to be knowledge by a certain group of people, and 'in flux', i.e. the paradigms that determine what is or is not knowledge change over time. One example for this is the formerly widespread belief that the Earth is flat and the slow paradigm shift towards the view that the Earth is round.

Ontological assumptions also matter when it comes to collecting data as a means to learn about reality. In terms of measuring PKD, it is important to note that different criteria apply for self-reports of whether one has actually developed knowledge and for more objective criteria such as exam grades which also reflect the degree of actual knowledge development. As data collection in this study is based on self-reports, any PKD processes and phenomena related to it cannot be investigated if the participant is not aware of it. Moreover, cognitive biases can affect the self-reports. Thus, in this study, any reality that is examined is necessarily somewhat subjective. One could contest whether it is more important to investigate self-reports of PKD in OLEs or analyse more objective criteria of PKD. For the purposes of this research, it is argued that self-reports are more relevant to investigating '*the personal*' in the concept of PKD.

Epistemology deals with the question of what knowledge is. Knowledge is often defined as 'justified true belief', a definition also adopted by Nonaka (Nonaka, 1994; Nonaka & Takeuchi, 1995). Moreover, as justification may be based on false premises, a justified belief does not necessarily need to be true (Gourlay, 2006a). For this research however, the condition of truthfulness needs to be dropped. This is because self-reports made by the learners do not allow for an objective analysis of whether that learner has *actually* developed her knowledge in such a way that she developed objectively *true* knowledge. For example, an individual may

state that she has indeed learned something while being unaware that what she thinks to be the case is in fact not true. Particularly in a study dealing with the concept of knowledge such as the one presented here, ontology and epistemology are linked. Knowledge investigated in this research encompasses both 'know that' knowledge – often labelled propositional knowledge (Duguid, 2005) and 'know how' knowledge – for which skills may be a more appropriate term. Jakubik (2007) argues that “[k]nowing how’ means the ability of a person to act, to perform different tasks, ability to organize and exploit existing knowledge (ability of acting, doing), while ‘knowing that’ means the knowledge (e.g. factual knowledge) that a person holds in his mind (being)” (p. 10).

The research process and the interrelationships of the three research phases were already visualised in Figure 1.2. In addition to that and before some information will be provided on sampling, data collection, data analysis and issues regarding reliability and validity of the research approaches as a whole, an overview of the three research phases, their main characteristics and objectives is given in Table 5.1.

Table 5.1: Overview of research phases

Research phase	Main characteristics	Objectives
Exploratory study	<p>Qualitative data regarding the learners' personal experiences of their own PKD in online learning</p> <p>Data collection via asynchronous discussion forums in the respective OLEs through which the learners were taught</p> <p>Learners were also asked to fill in the PVQ, a tool to determine their scores on the personal value types of the SVS</p>	<p>To investigate how online learners experience their own PKD in OLEs</p> <p>To investigate potential relationships between the responses in the discussion forums and the scores on the SVS values types</p> <p>To identify the 'learners' voice'</p> <p>To act as a trial study to find out whether PKD in OLEs can be investigated from the point of view of the SECI model</p>
Delphi study	<p>Experts were selected from the areas of knowledge management, values, and online learning</p> <p>Experts were selected from both an academic background and from a more practical background</p> <p>Experts were asked to name those SVS value types that they consider to be <i>particularly relevant</i> to PKD in online learning</p> <p>Definition of the SVS value types was provided to the experts</p>	<p>To establish which of the ten individual-level SVS value types are <i>particularly relevant</i> to PKD in online learning</p> <p>To determine which of the ten SVS value types could be regarded as being more relevant than the others in the context of this study</p>
Online survey	<p>Measures the scores of online learners on some of the SVS value types</p> <p>Measures the scores of online learners on Externalisation, Combination, and Internalisation</p> <p>Predominantly uses scale-type questions</p>	<p>To investigate relationships between personal values and PKD in online learning</p> <p>To investigate the effect of some background variables on PKD in online learning</p>

5.4 Sampling and Data Collection

Details regarding the sampling method are given in the individual chapters dealing with the three data collection phases, but some broader issues that apply to the research as a whole will be discussed in this section.

Although the research presented here does not follow a grounded theory approach (see Glaser & Strauss, 1967, as arguably the most important work on this concept), the concept of theoretical sampling will be discussed here. This research is neither an instance of grounded theory research nor an instance of theoretical sampling according to its full and original definition given by Glaser & Strauss (1967) who define it as “the process of data collection for generating theory whereby the analyst jointly collects, codes and analyses his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges” (p. 45).

Purposive sampling is a sampling strategy through which the sample frames and/or those cases are chosen that add the most insight into the subject matter and that are best suited to answer the research questions; theoretical sampling is a term essentially used synonymously with purposive sampling (Lincoln & Guba, 1985). Lincoln & Guba (1985) name ‘maximum variation sampling’ as a means “to document unique variations that have emerged in adapting to different conditions” (p. 200). The aim of this sampling approach is to include as much information as possible, but its objective is “not to focus on the similarities that can be developed into generalizations, but to detail the many specifics that give the context its unique flavor” (Lincoln & Guba, 1985, p. 201). This is precisely the aim of the research reported here, particularly of the online survey reported in chapter 8. In the research as a whole, the sampling was purposive and theoretical in the sense that a maximally heterogeneous sample was envisaged. This allows one to determine the relationship between personal values and PKD in online learning at a high level, i.e. not for a specified sub-set of online learners but for the context of online learning as a whole. Afterwards, various sub-groups of learners may be compared regarding a potential value-PKD relationship. For example, the impact of personal values on PKD of males can be compared to females.

According to Breckenridge & Jones (2009), many researchers share a concurrent definition of theoretical sampling, but the actual processes involved are often elusive and inconsistent. Strauss & Corbin (1998) suggest that the aim of theoretical sampling is to “maximize opportunities to compare events, incidents, or happenings to determine how a category varies in terms of its properties and dimensions” (p. 202). Thus, the aim is not to generalise from the data to the whole population, but to “choose those avenues of sampling that can bring about the greatest theoretical return” (Strauss & Corbin, 1998, p. 202). In other words, theoretical sampling is about generating a conceptual theory and not about compiling a descriptive account (Breckenridge & Jones, 2009). For the research described here, this ‘greatest theoretical return’ comes about when a maximally diverse set of online learners is sampled. Diversity in this

definition is conceptualised at several levels, such as age, gender, country, academic discipline, type of course, etc.

The scope of the research in terms of sample is deliberately broad. This is to reduce any bias that particular contexts (e.g. predominantly students from one or two countries only, students from only one or two academic disciplines, etc.) may bring into the research. Therefore, all learners

- a) regardless of age, gender, ethnicity, national culture etc.,
- b) regardless of academic discipline,
- c) regardless of institution (e.g. higher education, in-company courses, etc.), and
- d) regardless of the setup, content and didactical approach of the OLE, were potentially included in the sample.

In the context of this research, in all three phases of data collection, care was taken to cover the conceptual breadth of the issues being researched. In the exploratory stage in phase one, this was achieved by recruiting discussion participants from two different courses taught at universities based in two different countries. In the Delphi study, the experts were selected according to their expertise in one or more of the three subject areas involved. In the online survey, the aim was to have a diverse and heterogeneous sample.

As all three phases of data collection are conducted in a way that involves the Internet-mediated research – online discussion forums, Delphi study conducted by e-mail, online survey – some characteristics of Internet-mediated research are discussed here. The advent of new information and communication technologies, particularly the Internet, has brought many advantages for researchers in terms of easier access to research subjects from a range of backgrounds that are geographically dispersed and who would be difficult to contact otherwise (British Psychological Society, 2007). However, using the Internet as a research tool, disadvantages also arise and issues and problems that are unique to Internet research have to be addressed; Hewson, Yule, Laurent & Vogel (2003) provide a practical guide to using this medium for research purposes. For example, it is difficult to verify the identity of participants and to correctly determine whether they actually fall into the sampling frame that the researcher wishes to use. Furthermore, control over research conditions can be complicated and privacy issues have to be addressed to guarantee anonymity and confidentiality.

Recruiting a sample from the Internet affects its setup. In other words, the population that has Internet access and can be reached by the researcher differs from the population that does not have access to the Internet (Birnbaum, 2004). As this research only deals with online learners who by definition have access to the Internet, this difference in the setup of the sample is not an issue here.

Buchanan, Ali, Heffernan, Ling, Parrott, Rodgers & Scholey (2005) found that online versions of psychological tests usually measure the same thing as paper-and-pencil based versions, but they also found that this is not always the case. Furthermore, one study found that data

collected via web-based means have a slightly higher incidence of invalid responses, but at the same time it is claimed that the advantage of larger and more diverse samples outweigh this disadvantage (Johnson, 2005). For the study reported here, having a diverse and geographically spread sample was deemed to be important; this suggests that it is suitable to collect data by online means.

5.5 Data Analysis: An Overview

This section gives a concise overview of the data analysis of the three data collection phases. This is done to enable the reader to get a holistic perspective on the whole research, enabling the reader to better understand the individual phases. Detailed information on the data analysis of the individual phases is given in chapter 6 for the exploratory study, chapter 7 for the Delphi study, and chapter 8 for the online survey.

Approaches to data analysis are diverse and each approach means that a particular stance and perspective is taken *vis-a-vis* the data. Data analysis itself is liable to be subjective as the researcher with all her bias has to interpret the data from the point of view of the methodological approach taken and the theoretical paradigm in which the research operates in: "Analysis is the interplay between researchers and data. It is both science and art" (Strauss & Corbin, 1998, p. 13). In this study, there are three sources of data:

1. Qualitative data regarding the learners' personal experiences of PKD in online learning, collected via online discussion forums (exploratory study)
2. Delphi study establishing which of the ten SVS value types are *particularly relevant* to PKD in online learning, and
3. Online survey, predominantly using scale-type questions, and investigating relations between some of the SVS value types and PKD in online learning

Regarding the exploratory study, data collection via the online discussion forums is essentially exploratory in nature. The aim was to gather the experiences of online learners and subsequently examining links between their scores on personal values and their PKD experiences. Unlike content analytical approaches enquiring knowledge-building and knowledge-creating activities in asynchronous discussions (cf. Schrire, 2006), in this study it was of no interest to examine the nature of the online discussions, as these discussions only serve as a tool for data collection without being of interest *per se*. Content analysis (cf. Krippendorff, 1980) therefore is not a suitable method to analyse the contributions to the discussion forums, also due to the relatively low amount of postings in the forums.

Regarding the Delphi study, the absolute number and the percentage of experts that named a given SVS value type as *particularly relevant* to PKD in online learning were calculated. No further calculations were conducted. Some of the experts provided comments on why they consider a value type to be particularly relevant and/or why they consider a value type to be not

relevant. Some of these comments are provided and briefly discussed in section 7.3 and all comments are listed in Appendix B.2.

Regarding the online survey, several methods of inferential statistics were used. Moreover, online learners were asked which features or activities in online learning help their PKD, and which features or activities act as a barrier to their PKD. Quantitative analyses of the open-ended questions were not conducted as only small variations would have led to considerable changes in the metrics of the analysis.

5.6 Reliability, Validity, and Other Issues in Research

There has been some confusion regarding the characteristics of both the concept of reliability and the concept of validity in research (Winter, 2000). Based on an analysis of definitions of the two terms, Winter (2000) suggests to link reliability with replicability, and validity with accuracy. However, this leads to a problem, particularly in the context of qualitative research which looks at highly complex, dynamic and volatile phenomena, namely that the replicability necessary to show reliability in one's research is not only almost impossible to obtain but also not even useful to obtain (Winter, 2000). Reliability measures are often based on mathematical and statistical analyses and stem from the positivist research paradigm, whereas qualitative research is strongly interpretivist and constructivist, further suggesting that traditional measures of reliability are of little use in the context of qualitative research (Winter, 2000).

Hammersley (1992, p. 69) uses 'validity' as a synonym of 'truth' and defines it as follows: "An account is valid or true if it represents accurately those features of the phenomena that it is intended to describe, explain or theorise." He goes on to say that this 'truth' is not a precise reproduction of reality, but a selective representation of it, the validity of which has to be based on the evidence provided in research reports (Hammersley, 1992). Winter (2000) also shows that the many definitions of validity suggest that this concept is not an absolute but is relative to the research project, the researcher or the research paradigm. The assessment of validity in qualitative research is being made even more complicated because qualitative research has a strong interpretive component (Denzin & Lincoln, 2005) which can make findings of qualitative research more subjective and less generalisable than findings stemming from quantitative research.

Flick (2009) states that triangulation was first intended as a strategy for validating results obtained from the various methods used, but that its "focus, however, has shifted increasingly towards further enriching and completing knowledge and towards transgressing the (always limited) epistemological potentials of the individual method" (p. 444); triangulation is therefore more an alternative to validation than a strategy for validating results (Flick, 2009).

Dealing with the concept of validity in research is made even more difficult, because "'validity' is not a single, fixed or universal concept, but rather a contingent construct, inescapably grounded in the processes and intentions of particular research methodologies and projects" (Winter, 2000, pp. NP). Validity is thus not established by blindly following a list of procedures to

establish it, but by making explicit the criteria against which the validity of a particular piece of research is judged and the reasons for it. As Seale (1999) puts it: "The trustworthiness of research accounts can be enhanced by attention to their plausibility, given existing knowledge, and their credibility, based on supporting findings with adequate evidence for central claims." (p. 50). Addressing Winter's (2000) and Seale's (1999) concerns regarding a fixed notion of the criteria against which validity is assessed, the criteria applied here will be discussed in the individual chapters dealing with the three data collection phases.

Regarding the issue of improving the generalisability of results, Silverman (2000) suggests combining qualitative and quantitative approaches as a means of methodological triangulation, purposive and theoretical sampling, and using a theoretical framework in which generalisability is assumed. In the context of this research, both qualitative and quantitative approaches were followed. Moreover, in the online survey, purposive sampling strategies were used. This was done to identify a heterogeneous and diverse sample because the aim was to generalise the findings to online learning in general and at a high level, not to online learning in a particular country or institution. However, the theoretical framework proposed later does not make predictions as to the precise absolute impact of a particular aspect of cultural situatedness in all online learning contexts. On the contrary, it is one of the main premises of the proposed framework that one can assume that a cultural situatedness variable is likely to have an effect on PKD, but that the precise nature and size of that effect differs across online learning courses.

5.7 Ethical Considerations

To date there are no universally accepted ethical guidelines concerning Internet research (cf. Brownlow & O'Dell, 2002). However, social researchers can base ethical considerations on established guidelines for research in psychology by professional bodies such as the British Psychological Society (2004, 2007, 2008, 2009).

Conducting research via Internet-based means and tools raises further ethical issues, particularly verifying identity of participants, dealing with informed consent, and questions concerning data protection (British Psychological Society, 2007).

No names of any participant are mentioned in publications related to this study and any information that could identify an individual even without naming her was removed. This would be the case if, for example, it was mentioned that a female student answered a particular question when there is only one female student in that particular course. In the exploratory study, the real-life names of the discussion participants are included in the postings, but the learners were aware of this, as they had already been familiar with that OLE. In sum, care was taken not to identify people involved in this research. When describing and comparing statements made in the exploratory study or the online survey, no names were used, thus ensuring anonymity.

One of the major issues to consider in the data collection process is 'informed consent' (British Psychological Society, 2004). However, asking respondents to explicitly state their consent in a

consent form could lead to the 'Hawthorne effect' (Brownlow & O'Dell, 2002), meaning that they refuse to participate; it can also lead to the observer effect, meaning that the participants answer in a way that makes them look more positive, more sophisticated or cleverer. If special care is taken not to disclose any personal information that could identify the respondents, i.e. anonymising data, it is acceptable not to ask for an *explicit* statement of informed consent (cf. British Psychological Society, 2008). Such an indirect and non-explicit form of informed consent can be attained through explaining the research and particularly the handling of the data and issues such as anonymity in an introductory paragraph before the participants start answering the questions: submitting the survey and participating in the discussion forums is then regarded as an indirect indicator of informed consent. This is the approach taken in this study.

In addition to restricting the subsequent disclosure of data provided by the participants, care must be taken to "[r]ecord, process, and store confidential information in a fashion designed to avoid inadvertent disclosure" (British Psychological Society, 2009, p. 11). The discussion forums that were used in the exploratory study display the real name of the contributors to the forums, but access is restricted to the students enrolled in the courses of the two institutions involved, and the course members are aware of who may read their contributions so that they can freely decide whether they want to share information in the context of these forums or not. In the Delphi study, experts were not identified by name and they were unaware of the names of the other experts. Finally, for the Internet-based survey, names of participants were not recorded. Some participants submitted their e-mail address to take part in a draw for a book voucher as an incentive for participating in the survey, but these e-mail addresses were only used for the purpose of this prize draw and are not reported anywhere. Raw data of the survey are stored on the servers of SurveyMonkey, the online survey software used in this research, to which the access is password-protected.

No coercion to participate was placed on potential participants. Participants were free to withdraw at any time and were never pressed to continue to participate. They could do so without penalty and without being asked to provide a reason for withdrawal (British Psychological Society, 2004).

5.8 The Role of the Socialisation Mode in the Context of Online Learning

Socialisation is defined by Nonaka & Takeuchi (1995) as a "process of sharing experiences and thereby creating tacit knowledge such as shared mental models and technical skills" (p. 62). In this mode, knowledge is acquired mainly by observation, imitation and learning by doing, similar to an apprenticeship (Nickols, 2000). Moreover, Nonaka & Konno (1998) name several factors and characteristics of Socialisation:

- Tacit knowledge is exchanged through joint activities and direct interaction
- Apprenticeship

- Empathise – not necessarily sympathise – with family, friends, colleagues, etc.
- Physical proximity is key
- Sharing personal knowledge and creating a common *ba*

Socialisation as a SECI mode was not considered to be part of the study reported here. The rationale why the Socialisation mode was not included in this research is explained based on the following four key issues:

First, it is argued here that the necessity for physical proximity necessary in the Socialisation mode is, by definition, not possible in an OLE. Nonaka & Toyama (2003) also stress that successful Socialisation is fostered by 'indwelling' and 'living in' the world, which in turn suggests that the context in which knowledge creation and PKD occurs has to be actively experienced and made sense of. In the case of OLEs, this active experience is not direct or face-to-face but mediated through the Internet and related OLE technologies; therefore Socialisation as a SECI mode is less relevant in online learning than in face-to-face interaction within an organisation. It is therefore argued here that Socialisation requires a strong face-to-face element or at least an element of telepresence, something that the vast majority of OLEs do not offer. Therefore, contrary to the initial conceptualisation of Socialisation in the context of PKD in OLEs, it was decided *not* to include Socialisation in any subsequent research. This was done to account for the fact that Socialisation based on the definition of Nonaka and colleagues requires a strong face-to-face element that is not present in online learning.

Second, particularly in the context of online learning, Socialisation is an elusive and difficult concept. In the process of devising measurement indicators for the various SECI modes, it was found that it is difficult to distinguish between Socialisation and Externalisation as these modes overlap and are fuzzy (cf. Haag, Duan & Mathews, 2007). This author argues that it is essential to follow a clearly distinct and unambiguous definition of Socialisation, as this will aid statistical testing of the SECI model. Often, researchers and practitioners fail to clearly delineate between tacit and explicit knowledge, making statistical testing of the SECI model difficult (Rice & Rice, 2005). By following the original definition of Socialisation by Nonaka & Takeuchi (1995) and by taking into account additional clarification information by Nonaka & Konno (1998) and Nonaka & Toyama (2003), the Socialisation mode could be described and delineated relatively unambiguously, something which was essential to design a suitable and valid measurement indicators for this mode

Third, even though the ESCIE model includes the Socialisation mode, it is argued here the ESCIE model is not a suitable starting point for creating a model that describes PKD in online learning. As mentioned previously, Socialisation should better be regarded as *not* being a part of a PKD model as it requires a strong face-to-face element, which is different to the conceptualisation of ESCIE (Bryceson, 2007a), which defines Socialisation as using discussion forums, etc., something which it is argued here is better placed within Externalisation.

Fourth, Chatti *et al.* (2007) report an application of the SECI model in the context of Web 2.0. For example, they regard communities and networks as pertaining to the Socialisation mode,

blogs, wikis and chat as pertaining to the Externalisation mode, RSS feeds and social bookmarking as pertaining to the Combination mode, and learning by doing as pertaining to the Internalisation mode (Chatti *et al.*, 2007). However, it is suggested here that communities and networks, which they associate with Socialisation, are not inherent to Socialisation only, but are instead applicable to other modes as well.

As a consequence of the discussion above, a reduced set of SECI modes was used, encompassing only Externalisation, Combination, and Internalisation. Socialisation will not be used as this is only relevant in certain types of online learning, e.g. telepresence (Suh & Chang, 2006). Steuer (1992) argued in favour of defining virtual reality in terms of human experience and not in terms of technological hardware. He argues that the concept of presence is essential for this view of virtual reality as telepresence. Telepresence is defined as the experience of the sense of being in an environment by means of a communication medium (Steuer, 1992). Whereas OLEs often include communication media, the actual experience of 'being there' is usually not present. One typical example of such telepresence or virtual reality is remote surgery: the surgeon who may physically be on a different continent but who can still operate on her patient through technological means. As this strong, almost face-to-face feeling is not present in the vast majority of OLEs, the Socialisation mode will not be empirically investigated in this research. However, Socialisation remains part of the theoretical framework so that it can be delineated conceptually from the other three modes. Moreover, according to Nonaka and colleagues definitions, Socialisation requires elements of face-to-face contact and direct interpersonal interaction and rapport – also including feelings, empathy, etc. – this mode is not relevant to a typical OLE of today.

5.9 Overview of Research and Initial Research Model

The three main data collection phases of this study are presented here; a more detailed account will be reported in later chapters dealing individually with one of these three separate data collection phases:

1. In order to elicit the learners' view of the PKD processes and outcomes in OLEs, open-ended questions were posted in online discussion forums. No discussion *per se* developed, but the questions posted online should rather be regarded as resembling open-ended questions in a questionnaire.
2. In order to determine those SVS value types that are *particularly relevant* to PKD in OLEs, a Delphi study was conducted. This data collection phase encompasses elements of both quantitative and qualitative research.
3. A predominantly scale-type questionnaire (quantitative research) provided on the Internet with additional open-ended questions (qualitative research) investigated the PKD processes and outcomes from the perspective of the SECI model.

Online learning is defined as either courses offered solely via the Internet or courses supported by the Internet (blended learning) in either higher education, professional education, or any other form of formal education. However, the instructions for the sample made it clear that all questions refer only to the online learning part of their course.

It has to be noted here that it is difficult to clearly delineate between tacit and explicit knowledge, making statistical testing of the SECI model difficult (Rice & Rice, 2005). This problem also showed in the research presented here as it was difficult to delineate the Externalisation and Combination modes from one another. Both modes seem to share some commonalities and processes. It was therefore suggested that both Externalisation and Combination should be conceptualised as PKD *processes*; this is discussed in section 8.13.

A reduced set of SVS values (only using Self-Direction, Stimulation, and Achievement) was used after a Delphi study on the relevance of SVS values to PKD in online learning suggested that these three value types are likely to be *particularly relevant*.

Finally, only some of the factors that potentially have an impact on PKD in OLEs could be empirically investigated in this research. These are: age, gender, national cultural background, level of IT skills, and academic discipline taught via the OLE.

Figure 5.1 below shows the initial research model. The following paragraphs define the various elements of the model and provide further explanation of it; each of the boxes depicted in the figure will be discussed separately:

1. The individual-level value types of the SVS are used in this research. They are the means to investigate the impact of personal values on PKD in OLEs.
2. The SECI model is used as the perspective from which the processes and outcomes of PKD in online learning will be investigated.
3. Cultural situatedness encompasses the contextual and situational characteristics of
 - a) the OLE,
 - b) the individual learners themselves, and
 - c) other factors.

The factors that form part of 'cultural situatedness' have an impact on both the SVS value types and on the SECI model. The various aspects of cultural situatedness change the salience and impact of the SVS value types, as well as the salience and impact of PKD as described by the SECI model. As a consequence of the expected strong variation of contextual factors, correlations between factors of cultural situatedness and PKD are likely to differ across OLEs.

4. *Ba* is defined as separate from 'cultural situatedness'. *Ba* is merely the places where PKD occurs. *Ba* affects the SECI modes, but not the values. By contrast, 'cultural situatedness' has an impact on both the SECI modes and on personal values. The various *ba* of the OLE impact on PKD as described by the SECI model.
5. Worldview represents the state of knowledge of an individual at that point in time when PKD is being investigated. It encompasses all knowledge and skills of an individual and her understanding of the world and her immediate environment.

The arrows linking the SVS value types and the SECI model indicate a hypothesised correlation between these two concepts; this was investigated in the online survey reported in chapter 8.

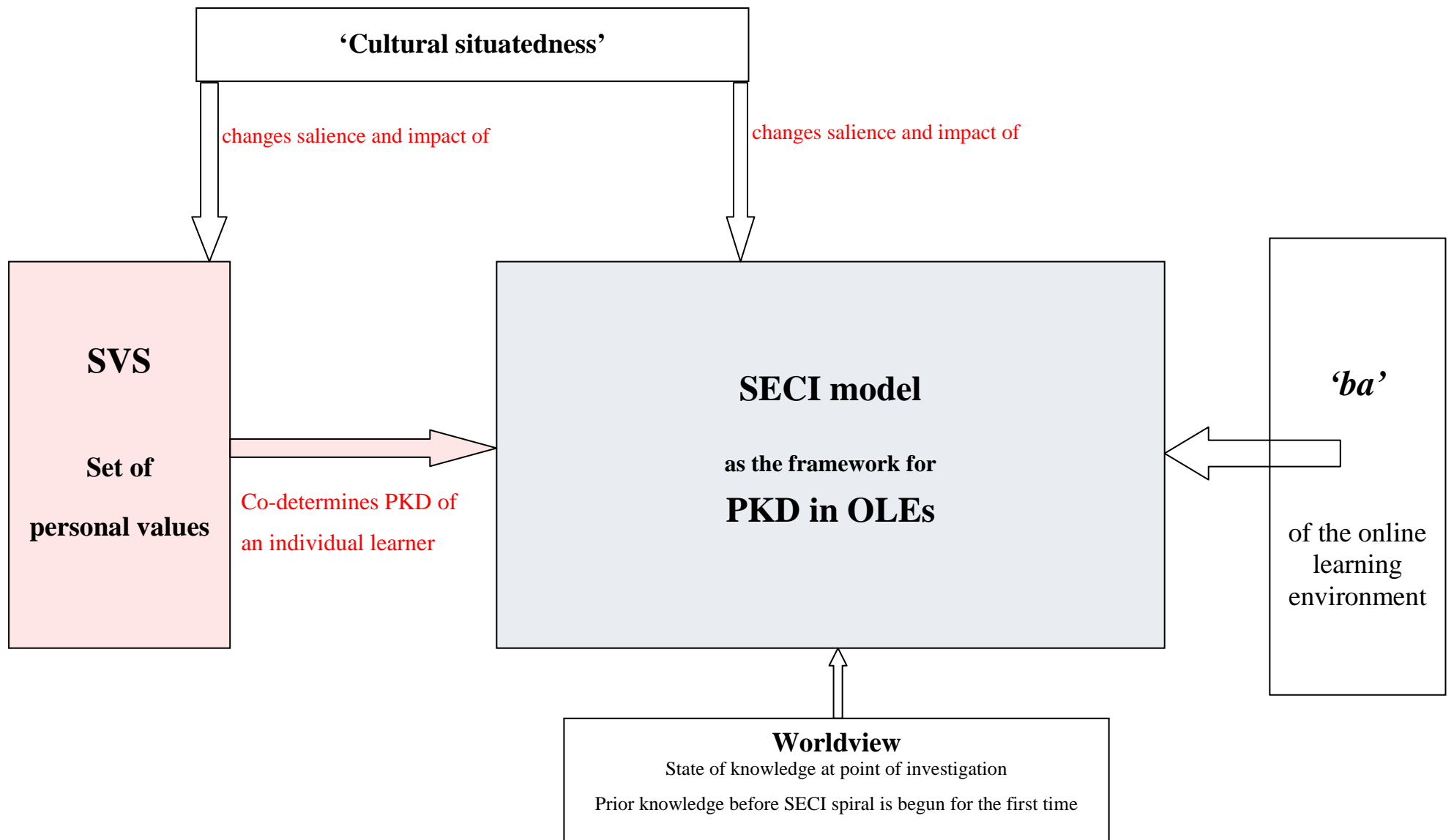


Figure 5.1: Initial research model

6 Learners' Experiences and Personal Values: An Exploratory Study

This chapter describes the research process up to and including an exploratory study with the objective to investigate the experiences of online learners of their PKD and the impact of personal values on PKD in online learning. The methodology of the exploratory study and the data analysis and results will then be presented. Finally, the lessons learned and their impact on subsequent data collection will be discussed.

During the process of data analysis, it turned out that the questions of the exploratory study did not adequately investigate PKD from the perspective of the SECI model and that the personal value types could not be linked in a meaningful way to the comments made by the learners regarding their PKD. These lessons learned are discussed in section 6.5. However, even though the exploratory study could not fully address its objectives, this researcher decided to report the research process and findings and *not* skip this account for the following reasons:

- To report the findings that were valuable and that illustrated well the personal experiences of learners in online learning
- To discuss why the exploratory study could not adequately address its objectives
- To point out those findings that provide further support that the concept of cultural situatedness is indeed important in the context of online learning

6.1 Before the Exploratory Study: Shift from National-Cultural Values to Individual-Level Values

In the early stages of the research in which the literature review still dominates the research process, hypotheses about the relationship of values and PKD in OLEs were postulated. Instead of using the SVS values, it was initially contemplated to use Hofstede's set of national-cultural-level value dimensions (Hofstede & Hofstede, 2005). However, in the course of the research process and the literature review, it became more and more apparent that the notion of investigating PKD, i.e. knowledge development at an *individual* level, is not suitably addressed by the concept of national culture. This is the reason why the focus of the research changed and the individual-level value types of the SVS were used instead. If the reader is interested in a discussion of Hofstede's national cultural values and their relationship with online learning, she is referred to Haag, Duan & Mathews (2007); this material is also reproduced in Appendix D.1.

In the listing that follows, this author provides the *initial* version of his proposals of how to conceptually link the four SECI modes with PKD in the context of online learning:

- *Socialisation* primarily happens via e-mail, chats, asynchronous discussion forums, instant messaging and other online media. Interpersonal contact is not face-to-face, but mediated through online communication channels. These channels can either be used to transfer information or to create interpersonal rapport online expressing feelings, empathy, etc.
- *Externalisation* happens via online submission of course work, discussion and communication via e-mail, chats, asynchronous discussion forums, etc., but also through a joint working on wikis.

It was found that it is difficult to distinguish between Socialisation and Externalisation as these modes overlap and are fuzzy. It is argued here that Socialisation requires a strong face-to-face element or at least an element of telepresence, something that the vast majority of OLEs do not offer. Therefore, contrary to the initial conceptualisation of Socialisation in the context of PKD in OLEs, it was decided *not* to include Socialisation in any subsequent research. This was done to account for the fact that Socialisation based on the definition of Nonaka and colleagues requires a strong face-to-face element that is not present in online learning.

- In the *Combination* mode, learners make a deliberate choice about what information they want to use. For example, they might want to focus on audio materials or texts or hyperlinks or videos or online quizzes or other documents. Cyber *ba* is the context that enables e-learners to make a deliberate choice on how to use the different materials and regarding the structure of these elements.
- In the *Internalisation* mode, the creation of, for example, an online learning diary, gives e-learners an opportunity to reflect on their PKD experiences and to make sense of them. The crucial thing is to apply the newly created knowledge, expertise and skills in an offline environment, i.e. in real-life situations (transfer from online context to offline context).

To sum up, in order to account for the hypothesised importance of the individual in examining PKD in online learning, the focus shifted to individual-level, i.e. personal, values. One-size-fits-all approaches to PKD are unlikely to be effective and the specifics of a particular OLE and course design have to be taken into account.

6.2 Background and Objectives of the Exploratory Study

The exploratory study investigated how the online learners themselves experience their own PKD in OLEs, such as using texts and audiovisual materials, communicating in asynchronous discussion forums, etc. Thus, the focus was on the 'learners' voice' and not on reports made by the tutors who run the online learning courses.

The objective of the exploratory study was also to investigate potential links and relationships between the responses made in the asynchronous discussion forums and the score of the learners on the individual-level SVS values types as determined by the PVQ, thus making

assumptions of whether there are correlations between personal values and students' experiences of PKD in OLEs. Furthermore, the exploratory study also acted as a trial study to find out whether PKD in OLEs can be investigated from the point of view of the SECI model.

6.3 Methodology of the Exploratory Study

An exploratory study into learners' experiences of PKD in online learning was conducted involving two multicultural student groups: 16 students from the Writing for E-Business Websites course run exclusively via the learning management system Moodle (Cole, 2005) at the TAMK University of Applied Sciences, Tampere, Finland, and 86 students from the IT Project Management module at the University of Bedfordshire, Luton, United Kingdom. The students were asked to fill in the PVQ, a tool to determine their scores on the individual-level value types of the SVS and take part in discussions in asynchronous forums in the respective OLEs of the courses.

The following broad subject areas were covered in the study:

- Communication and interaction online
- Features and types of files the online learners use and to what degree the learners used them, and
- Best and worst aspects of an OLE, effectiveness of online learning, and a comparison of classroom and online learning

The cover letter which introduced the research project and the online survey is reproduced in Appendix A.1. The following ten questions were posted in the online discussion forums of the two respective courses:

1. Do you feel that the discussions in a forum or a chat help you to learn? If so, how do the discussions help you to learn? If not, why do you think they don't help you to learn?
2. *How* does an online course contribute to your learning differently from classroom and training room learning? Please also give reasons.
3. What do you like *most* in an online course? Please also give reasons.
4. What do you like *least* in an online course? Please also give reasons.
5. In order for you to learn best and most effectively in an online learning environment, how should the online environment be designed? You can comment on any aspect you want, for example, on layout, length of course, features and tools, etc. Please also give reasons.
6. Which of the following types of files or features do you use often in an online learning environment: text documents, video files, audio files, quizzes, wikis, discussion forums, chats, e-mail etc.? Are there other features that you use often?

How do you think these types of files or features help you to learn? Which of the features do you think helps you to learn best and why? Which of the features do you think don't help you to learn at all and why?

7. In your opinion, what are the *disadvantages* of online communication in comparison with face-to-face communication?

8. In your opinion, what are the *advantages* of online communication in comparison with face-to-face communication?

9. How many messages do you post in online discussion forums per week?

10. Which types of interaction and communication have you experienced in an online learning environment? You can name a wide variety of types such as, for example, chatting with other learners, being in emotional e-mail discussions, collaborating on wikis, etc.

The students then shared their opinions and experiences of the areas mentioned above in the asynchronous discussion forums. Ten threads were set up in the discussion forums of the two OLEs and only one question was dealt with in each thread. Appendix A.1 provides screenshots of the main threads of the discussion, the cover letter explaining the PVQ, and it also shows two examples of postings in the discussion forums.

Follow-up questions and prompts were used by the researcher in order to try to clarify some responses, and further prompts were employed to encourage other students to participate. To increase the response rate and thus reduce response bias, a follow-up e-mail was sent. The text of the follow-up e-mail is reproduced in Appendix A.2.

Regarding the use of the online survey containing the PVQ, there were two complaints that the questionnaire hosted on SurveyMonkey (www.surveymonkey.com) could not be accessed. The researcher followed up on this and could confirm to the learners that everything was fine with the questionnaire and the students managed to fill in and submit the online questionnaire at the second attempt. The wording of the questions also seemed clear to the students, as there was only one request by a participant to clarify what exactly was meant by one particular question.

Some questions regarding demographics were asked in addition to the PVQ. Before starting to fill in the PVQ, the participants were asked to answer the following question: "Please state whether you are male or female". This was necessary so that the participant could be forwarded to the suitable gender-specific version of the PVQ. The participants then answered the forty items of the PVQ. The questionnaire then continued with the following background questions:

"Please state your e-mail address. This information is essential, as it allows the researcher to contact you with your results of the Portrait Values Questionnaire."

As an incentive and thank you for taking the time to participate in the discussion and the survey, the researcher calculated the scores of the participants on the ten SVS value types and e-mailed them the results.

"Please state your first name and last name. Providing your name is optional."

This question was asked to make it easier for the researcher to match the online forum contributions to the corresponding SVS value score, but the participants could opt for not disclosing that information.

“Which course are you a member of?”

For this question, a drop-down menu was provided from which the participants could choose the name of their course, either “Writing for E-Business Websites” or “IT Project Management”. This also helped the researcher to match the forum postings to the PVQ results.

“How old are you?”

Participants could select one of the following categories: “under 18”, “18-24”, “25-30”, “31-40”, “41-50”, “51-60”, and “61 and older”. The question was included so that the impact of age on PKD in OLEs could be investigated.

“From the drop-down menu, please select the country that characterises your cultural background best. For example, if you have been living in the UK for two years, but have spent most of your life in Trinidad and feel that this culture represents you best, please select Trinidad. If you are in doubt which country to choose, please choose the country that characterises you best rather than skipping this question, as it is essential for research purposes.”

In addition to investigating how the personal values of a learner impact on PKD in OLEs, an additional aim of the exploratory study was to explore the role of national culture on PKD in OLEs. To this end, the participants were asked about the national culture that they think characterises them best. Please note that the wording of the question aims to ensure that the learners do not choose the country of which they are a citizen but which characterises them best.

“How do you rate your information technology (IT) skills (e.g. standard Office software, Internet, programming, etc.)?”

The participants were asked to choose one of five answer options alongside a continuum: “Regarding IT skills, I'm a... beginner (1) – (2) – neither beginner nor expert (3) – (4) – expert (5)”. This question was included to examine whether the level of IT skills has an impact on PKD in OLEs.

“Prior to your current experience with e-learning, in how many e-learning courses or courses that required at least some involvement in e-learning have you participated in?”

The following reply options were used: “none”, “one”, “two”, and “three or more”. It was hypothesised that prior experience with online learning can have a positive effect on PKD processes and outcomes.

6.4 Data Analysis and Results of the Exploratory Study

In total, 19 students both participated in the online discussion and filled in the PVQ (2 of the Writing for E-Business Websites course and 17 from the IT Project Management module). Some of the comments made are discussed here in this section. This researcher then identified the various answers given by the participants and the reader can find the verbatim answers in Appendix A.3. The appendix does not include the full text of all of the comments but instead reproduces selected quotes that represent the ideas included in the comments. For example, the following contribution to the question “What do you like most in an online course? Please also give reasons” was shortened in Appendix A.3 to “I can study when I have time”:

“I like most in an online course that I can study when I have time – of course I have some schedule and I must do everything in time, but e.g. one day I can do a lot and another day (when I haven't got enough time) I can do a little or nothing.”

Whereas the full text provides some more details in addition to stating that flexibility in terms of time is one of the things that the participant likes most in an online course, “I can study when I have time” is sufficient to convey the main argument here, namely time flexibility – thus, only “I can study when I have time” is reproduced in the appendix.

The contributions in the two asynchronous discussion forums were analysed with the assistance of the computer-assisted qualitative data analysis software NVivo (Gibbs, 2002) and then linked to the rankings of the learners on the ten individual-level value types. The nodes ‘PVQ – yes’ and ‘PVQ – no’ were used to denote whether a certain contribution to the discussion was made by a person who filled in the PVQ or by a person who did not. After initially employing free coding, axial coding was conducted in order to categorise learners' responses and to arrive at higher-level codes.

Figure 6.1 below shows a screenshot of the NVivo Node Explorer listing the nodes representing the questions and also listing some tree nodes, for example ‘Interaction types and files and feat’. The names of the participants are hidden for reasons of anonymity and privacy.

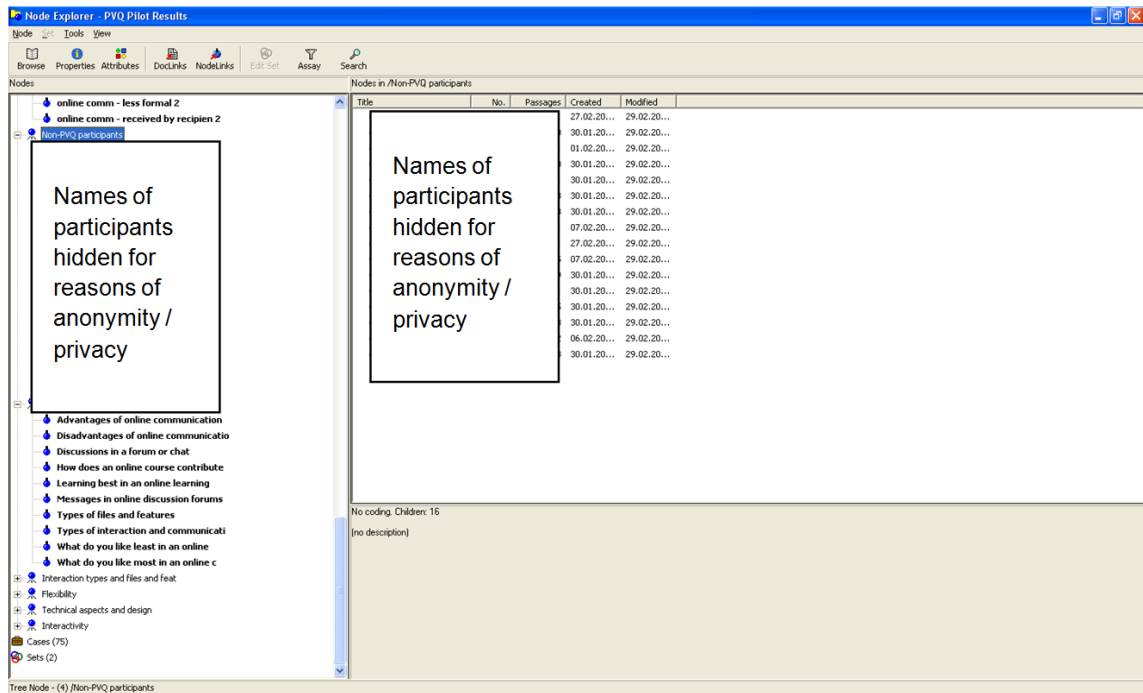


Figure 6.1: NVivo nodes: Forum questions

Figure 6.2 and Figure 6.3 show the various free nodes that the researcher used; again, the names of the participants are hidden for reasons of anonymity and privacy. Both positive and negative comments were made regarding the processes of online learning. For example, “access to more knowledgeable people” was identified by the learners as a benefit of online learning, whereas others expressed the disadvantage that it is difficult to be motivated to learn (“motivation – difficult”). Rather than examining the nodes individually, answers to the ten questions and general issues identified by the participants will be discussed later in this section.

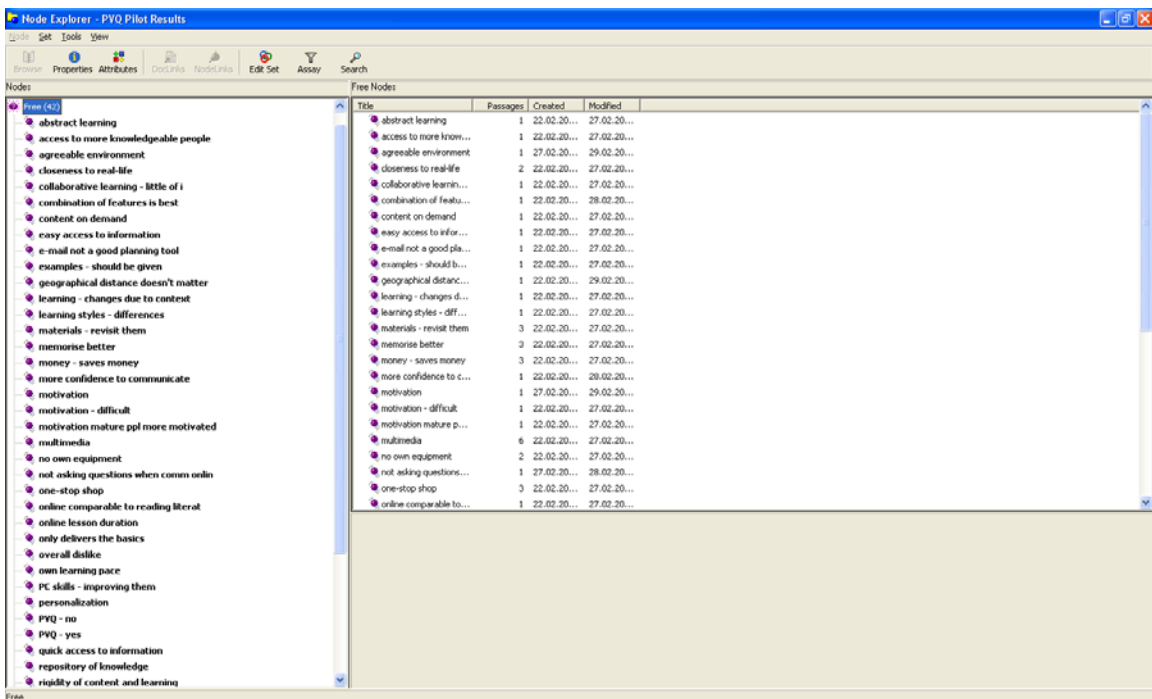


Figure 6.2: NVivo nodes: Free nodes -1-

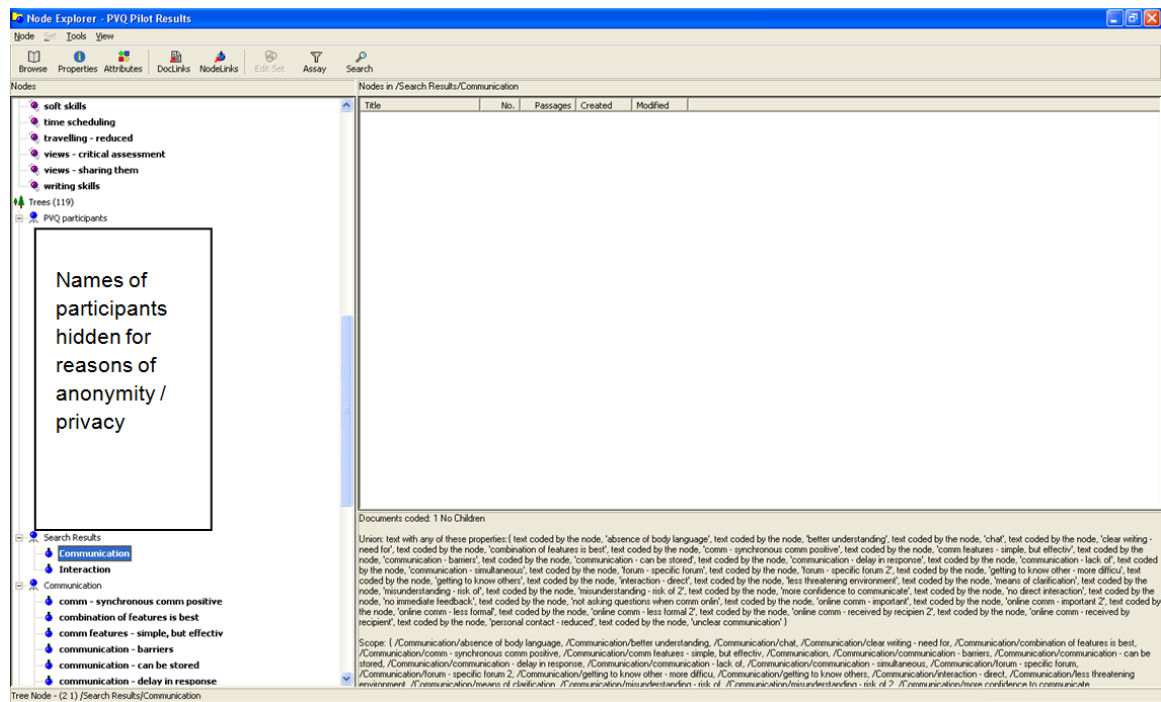


Figure 6.3: NVivo nodes: Free nodes -2-

Figure 6.4 below gives an overview of the nodes dealing with 'Communication' aspects within online learning. Again, both positive and negative comments were made about the same issue. For example, some learners suggested that communication online is simple but effective ("comm features – simple, but effective"), whereas others argue that there is not that much communication online ("communication – lack of"). It is suggested here that this is likely to differ considerably from one OLE to the next: some OLEs may provide communication tools but they are not used because of a lack of support and encouragement from the tutor, whereas other OLEs may put the communication features in the centre of the teaching approach and tutors may strongly encourage participation in the discussions. The divergent answers suggest that an OLE *per se* is neither a positive nor a negative factor for inter-peer interaction, but that it is essential how the tutors and the learners make use of the OLE. In other words, the given contextual variables and the characteristics of the learners involved are essential.

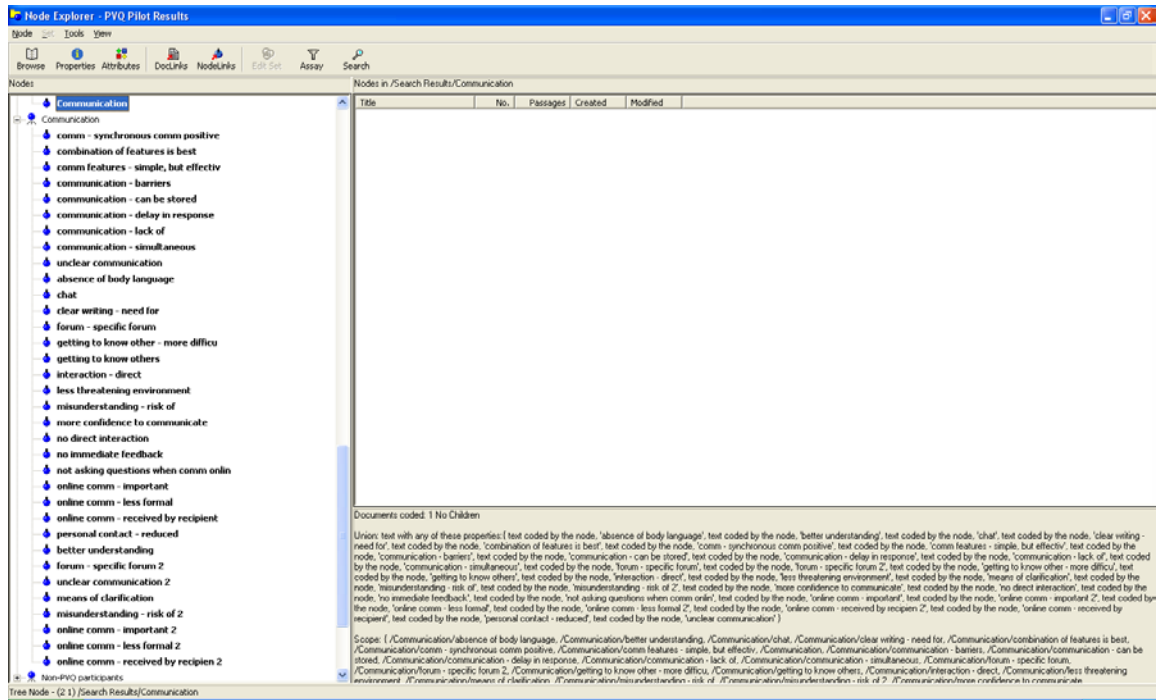


Figure 6.4: NVivo nodes: Communication

This discrepancy of opinion regarding the characteristics of communication and interaction can also be seen in the tree node 'Interactivity' in Figure 6.5 below. For example, interaction was both regarded as being direct and as being non-direct (“interaction – direct” versus “no direct interaction”).

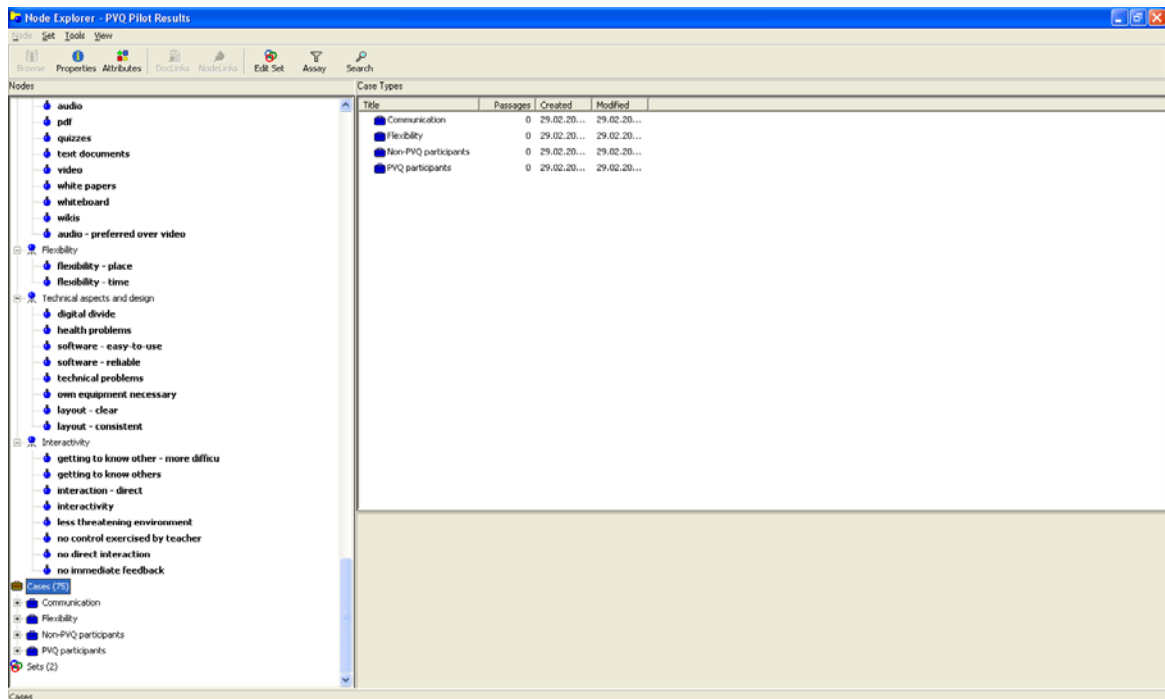


Figure 6.5: NVivo nodes: Interactivity

Finally, Figure 6.6 provides an insight into which interaction types and files and other features were mentioned by the learners, the importance of flexibility of learning in terms of place and time, and some other technical and design aspects that the students found important.

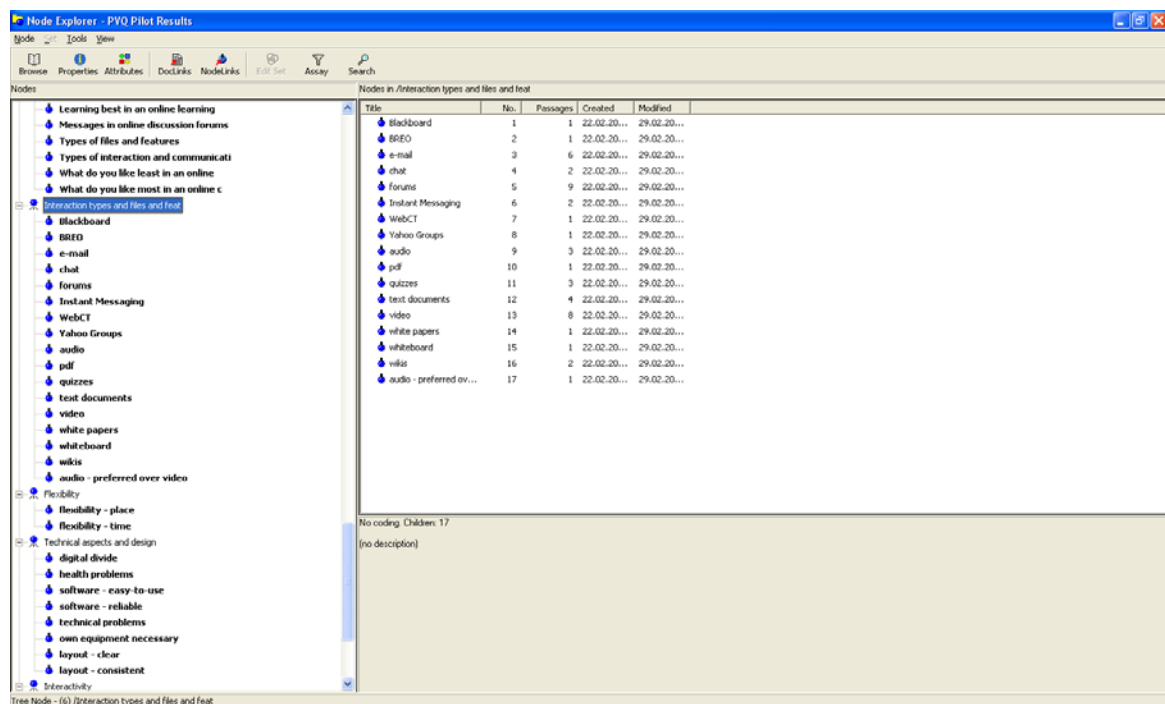


Figure 6.6: NVivo nodes: Means of interaction, files, flexibility, technical aspects and design

All ten questions asked in the online forums will now be briefly discussed individually. To illustrate the findings further, some of the postings made by the students will also be provided; these are listed verbatim and are formatted in italics. After that, some general findings will be discussed.

1. Do you feel that the discussions in a forum or a chat help you to learn? If so, how do the discussions help you to learn? If not, why do you think they don't help you to learn?

Several postings pointed out that getting to know other students' views is important and helpful for their own PKD as the different views and opinions from fellow students helped them to become aware of aspects of the subject matter that they had not yet thought of. This exchange of ideas was usually regarded as being positive, with one student saying:

“yes i think online chat can be useful as sometimes you need to look at things from a different view, which could be introduced to you via speaking to someone online”

However, some students suggested that discussions conducted online may not provide them with a truthful or trustworthy representation of the facts, but merely tells them of other students' opinions. For example, this idea was expressed as follows:

“However, i do agree that it is not the most trustworthy source of all but is a place for others to express views”

"Discussion forum's can be helpful to develop your own opinion, but they lack facts or evidence just opinions or suggstions; they are good to debate, and see others points of veiw but they cannot be relied upon as a factful source of communication."

Interestingly, one student said:

"I improve my language."

This suggests that the benefits of online discussion need not be restricted to the subject matter at hand, but it can also indirectly have a positive impact on more generic skills. Further to acquiring more generic skills, one student pointed out that some features of OLEs can be beneficial for planning purposes:

"This 2nd life virtual environment stuff helped with meetings and one can schedule his time and be doing their task not neccessary being in uni with team mates but holding instant messaging meetings.good idea."

In sum, online discussions were generally viewed favourably and the diversity of and exposure to the views of others was welcomed. However, students were also aware of the subjective nature of many discussion contributions and were concerned by the difficulty to establish the truthfulness of a contribution.

2. *How* does an online course contribute to your learning differently from classroom and training room learning? Please also give reasons.

The possibility of reviewing and repeating learning materials and the flexibility in terms of time were mentioned as advantages of online learning:

"I find it sometimes is easier on line especially if I have difficulty I can review the program for couple of time also I can fix in my time table anytime."

Furthermore, the indirect nature of OLEs in terms of asking the tutor or peers questions was seen as enabling more introverted learners to take part in discussions:

"Online courses are helpful because for those of whom are introverted people, it gives them more confidence to ask questions or put forward answers to questions, because they are on their own/independantly learning."

One student pointed out the convenience of an OLE as a one-stop-shop for PKD, containing all necessary materials in one place:

"An online course, pretty much allows me access to my course details: lecture notes, assignments, staff contact details, anywhere in the world anytime of day."

However, negative issues were also expressed, for example that the absence of a teacher or facilitator requires the student to be more self-reliant and pro-active in developing her knowledge using an OLE:

"I find it a bit more challenging to learn stuff online because you have to find all the answer yourself. There is no teacher around who can guide you through task etc."

One student remarked that whereas an OLE can provide the basic knowledge of a course, there is still a need for gaining practical experiences, something an OLE is not likely to offer:

"Online course will provide me with the basics the course has to offer and of course without the practical experience ,it might well be thought of as abstract learning."

In sum, the flexibility in terms of time and place as well as the convenience of an easy access to learning materials seems to be the main ways of how an OLE can positively contribute to PKD. It is important to note here that these comments do not refer to processes dealing directly with PKD approaches, but rather reflect the way of how an OLE makes these PKD approaches more convenient.

3. What do you like *most* in an online course? Please also give reasons.

Again, the flexibility in terms of place and time is frequently mentioned by learners regarding what they like most in an online course. The quiet and familiar surroundings in which a student can engage with an OLE are also mentioned as important:

"I like online courses for the reason that i can learn and study information and materials in my own time, wherever and whenever is most convenient for me."

"That I can manage my time by my schedule; Be situated in quiet, safe, not disturbed, relaxed environment"

Interestingly, one student suggested that the fact that one has to actively engage with an OLE as opposed to sitting passively in a lecture room can make you more motivated to study:

"you might be more motivated because you CHOOSE to work."

In sum, yet again, the flexibility and convenience that an OLE offers for PKD is pointed out.

4. What do you like *least* in an online course? Please also give reasons.

Probably the main point regarding what the students liked least in an online course is the lack of direct, personal contact with tutors and the difficulties to getting to know peers. This is illustrated by the following quotations:

"I don't have chance to meet with my teacher in reality"

"online learning or lonely learning?"

"The aspect of online learning that I like least is the lack of personal contact. I feel that often meeting in person or a discussion between peers is often a valuable tool, and helps to your build social skills. Online learning has the other major drawback of users feeling isolated and alone, working by themselves with no contact (face to face) with others. Communication with Webcams and voice communication is a method of overcoming this."

"it takes much longer to get to know class mates and it is difficult to plan group meetings via e-mail because not everyone checks their e-mail that often."

Interestingly, contrary to the statement that introverted students are more likely to ask questions in an OLE than in a face-to-face setting, one student suggested that he/she tends not to ask questions online that he/she would ask in a face-to-face session. The delay in response time seems to act as a barrier to asking questions rather than as an opportunity to think through the question properly first before posting it online:

I find that I often don't ask questions that I would ask in a regular class meeting because I start thinking that perhaps it's not such an important question after all

Another student emphasised his or her dislike of online learning in general by answering "everything....." to the question of what he or she likes least about online learning.

5. In order for you to learn best and most effectively in an online learning environment, how should the online environment be designed? You can comment on any aspect you want, for example, on layout, length of course, features and tools, etc. Please also give reasons.

The need for a simple layout and design and easy-to-use features was expressed several times. One student pointed out that the learners need to be encouraged to engage with the OLE, otherwise they would stop taking part in the course:

"So participants need guidance, reassurance, encouragement and feedback in order to make it as psychologically difficult as possible for anyone to simply stop participating (ideally!)"

Comments were made about the need to take the characteristics of the individual learner and the context into account:

"The environment of an online learning environment should be customised for the individual users."

"There should be more examples available, which would make it easier to understand the material."

This need for customisation and for using meaningful examples supports the notion of cultural situatedness advocated throughout this thesis.

6. Which of the following types of files or features do you use often in an online learning environment: text documents, video files, audio files, quizzes, wikis, discussion forums, chats, e-mail etc.? Are there other features that you use often?

How do you think these types of files or features help you to learn? Which of the features do you think helps you to learn best and why? Which of the features do you think don't help you to learn at all and why?

Most contributors mentioned text documents, discussion forums, and e-mail. Wikis and quizzes were also still relatively frequently mentioned. Some participants also mentioned video files and audio files.

Interestingly, one student suggested that he/she prefers audio files over video files; it was expected to be rather the other way around:

"My least favourite would be the video files-I'd personally get bored watching a lecture, I'd rather listen to it on the audio file."

It was pointed out that a combination of resources is particularly helpful for learning rather than any one feature individually:

"I don't think there is one way and it is the best, I think the combination of the various types of resources is the key for helpful learning."

Similar to the comment made in response to question 1 in which the trustworthiness of discussion forum postings was questioned, one student made a similar comment about wikis being liable to convey a personal opinion rather than facts:

"I am indifferent about wikis as information can be added and moved to suit someone's own beliefs or opinion, but because a wiki can have much knowledge that is interesting when ever I start on a wiki page it is best to double check and clarify the information somewhere else."

7. In your opinion, what are the *disadvantages* of online communication in comparison with face-to-face communication?

It was suggested that it is sometimes better to actually show somebody how something is done rather than just telling the learner about it. However, this cannot be achieved through online communication alone.

The lack of contextual cues that body language normally provides in a communicative situation was also mentioned as a disadvantage of online communication. One example of the comments in which this was expressed is provided here:

"it's impossible to see if the other party is really paying attention. Online communication has no subliminal messages that can be read through the lines from expressions and gestures in addition to spoken language."

8. In your opinion, what are the *advantages* of online communication in comparison with face-to-face communication?

The convenience of communicating online was emphasised by several students. For example, the easy communication of ideas, the constant availability of online communication channels, and being able to communicate with people that are geographically dispersed were mentioned.

One student argued that online communication can help to overcome the awkwardness when learners meet for the first time and start getting to know each other:

"Online communication lacks this "solid", rigid and uncomfortable feeling that appears in classroom when new course starts and nobody knows each other."

9. How many messages do you post in online discussion forums per week?

The number of messages posted in an online discussion forum per week varied between one and thirty, albeit the maximum number of thirty (one contributor named 'many') referred to

postings in non-educational forums rather than postings in an OLE. The most common range of the number of messages posted was between one and ten.

10. Which types of interaction and communication have you experienced in an online learning environment? You can name a wide variety of types such as, for example, chatting with other learners, being in emotional e-mail discussions, collaborating on wikis, etc.

Most of the respondents to this question named e-mail and discussion forums as the types of interaction and communication that they have used online. Synchronous chats, instant messaging and wikis are mentioned less frequently.

Most students, regardless of their respective ranking on values, mention flexibility concerning time and place as one of the prime advantages of online learning as opposed to learning in a face-to-face setting. This may mean that some perceptions of PKD in online learning are shaped by personal values, whereas other perceptions are rather due to the OLE itself or other factors.

Even though the responses in the asynchronous discussion forums could not be linked to the corresponding SVS value scores investigated in the research because both the number of contributors and the number of postings were relatively low, there were a number of valuable comments regarding general aspects of online learning in terms of communication and technology. Generally speaking, taking the results of the online discussion as a basis, it is argued that OLEs that lead to effective and engaging PKD are:

- rich in content,
- diverse in the presentation of content, for example via different media such as mere text, videos, audios and further stimulated by taking quizzes and sharing views and ideas in forums or chat rooms, and
- involving a good deal of interaction and communication with peers

Linking the abovementioned three aspects with the SVS, one could argue that all three of them have in common that OLEs should be diverse, varied and engaging for the learner, something which could be linked to the value type of Stimulation. Therefore, as an OLE should be stimulating in terms of the corresponding SVS value type, the learners should also score high on this value so that a match between learner characteristics and OLE characteristics is created.

Flexibility of learning – both in terms of time and place – was often mentioned as an advantage. The technical characteristics of the Internet enable this flexibility – one could therefore argue that mentioning it as an advantage is due to the inherent characteristics of the Internet rather than any other factor such as the SVS value types.

Some learners state that postings in discussion forums must be critically assessed and not be taken at face value. One could argue that scoring high on Security (checking if postings are correct) and Self-Direction (independent thought) is positively correlated with emphasising a critical assessment of contributions. These are, however, quite speculative statements.

Generally, students valued the interactive possibilities of online learning, particularly in terms of communication with peers. They also claim that it does take longer to get to know fellow students via an online learning environment than in a face-to-face setting. However, some students mentioned that being able to communicate and share their own opinion in a discussion forum rather than face-to-face is positive for more introvert students as they will feel less threatened.

Other technical or general aspects of online learning that are widely mentioned are the need for a clear and consistent layout, and the need for easy-to-use and reliable software. Students were also aware of the problem of the digital divide in the availability of technology and how this can hinder access and use of OLEs.

The importance of having rich and diverse media for distributing content in OLEs was mentioned. PDF documents fall into this category. One learner said: "I use pdf manuals as more content is rich in colour and activity (Flash and hyperlinks around the document)".

The number of messages was stated as being between 0 and 10, with one saying "I respond many times". Interesting was another student's comment: "Lately since the birth of my children may be one a week. Used to be about between 20 and 30". This is evidence that PKD behaviours are not fixed over time, but that they can be adapted to different contexts.

Figure 6.7 below depicts the revised framework after taking into account the findings of the exploratory study. Not all four SECI modes have to be involved in knowledge development. In the context of online learning, Socialisation is likely to be not particularly relevant, because this mode is usually not applicable to online learning as it requires a strong face-to-face element that can only exist in some telepresence scenarios and even then only to a relatively small degree. Therefore, note that Socialisation is depicted outside of the blue box.

The three remaining ECI modes do not necessarily have to be traversed in the order specified in the original definition (Externalisation – Combination – Internalisation): Modes can be jumped and the order of modes can be random, depending on the knowledge development process observed. In addition to that, it is argued here that, analogous to Socialisation, Externalisation and Combination are PKD processes, whereas Internalisation encompasses the outcomes of PKD. In other words, Socialisation, Externalisation, and Combination could be regarded as the independent variables that determine Internalisation, which is the dependent variable. This is the reason why the arrows are pointed towards Internalisation, but not *vice versa*. The dotted blue, green, and red arrows represent a hypothesised relationship between one or more of the SVS value types and one or more of the ECI modes, rather than on the SECI model as a whole. Furthermore, in the revised framework the ten individual-level SVS value types are listed individually with a question mark. It is argued that the *relative* importance of the value types differs from domain to domain and that it is important to determine which of them are likely to be particularly relevant. The Delphi study reported in the following chapter aimed to determine this *relative* importance.

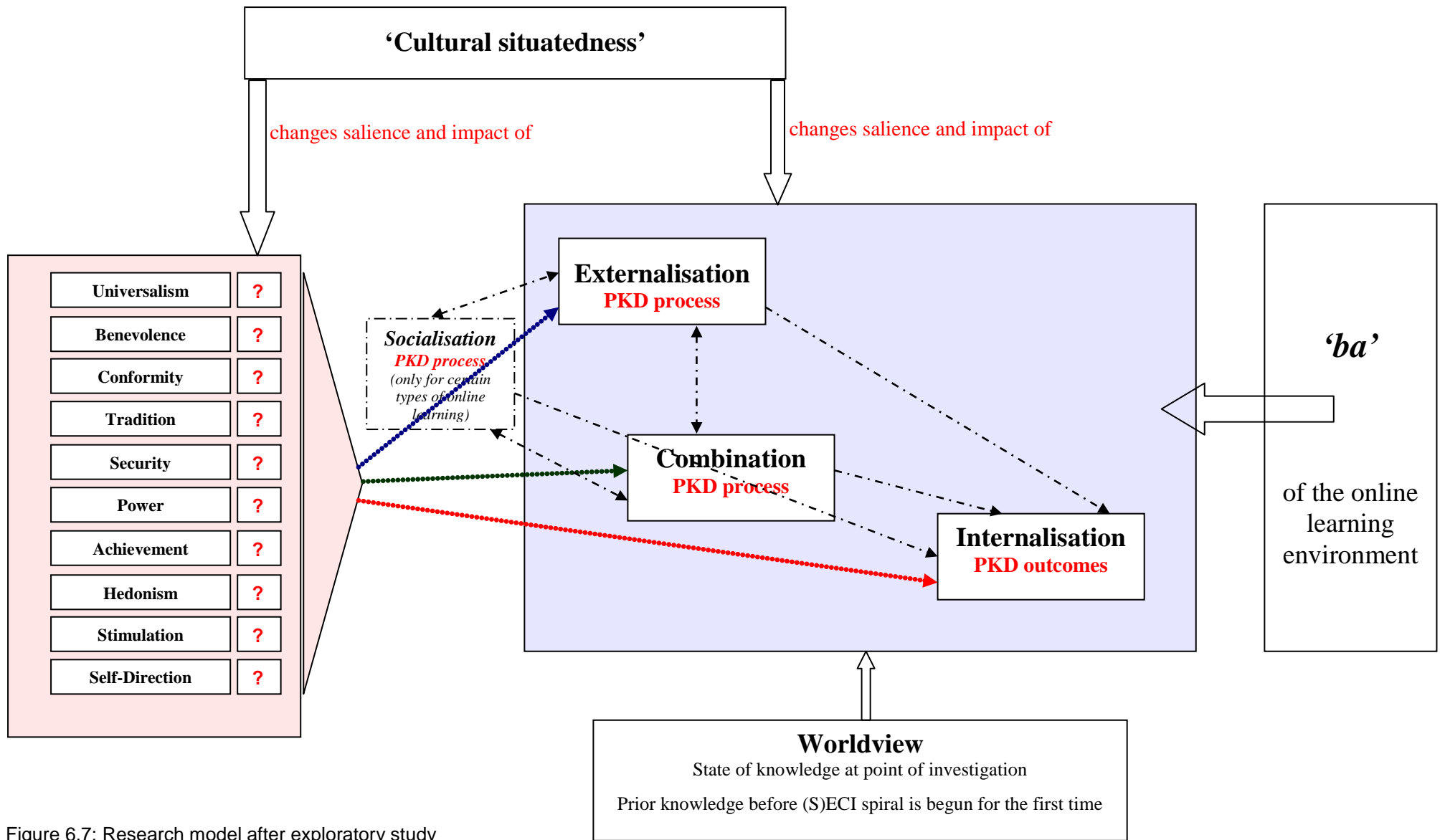


Figure 6.7: Research model after exploratory study

6.5 Lessons Learned and Impact on Subsequent Data Collection

The exploratory study provided a helpful insight into the processes of online learning. However, it turned out that the questions did not adequately address or link to neither the value dimensions nor Nonaka's SECI model of knowledge conversion. However, it is argued that this does not mean that the SVS value types and SECI are inadequate for the research. The SVS has been applied in a wide variety of research projects, also investigating education and learning (e.g. Matthews, Lietz & Darmawan, 2007), so it can be argued that it is suitable in the context of online learning as well. It is claimed by Weir & Hutchings (2005) that the SECI model contains at least some elements that are of relevance to knowledge management across cultures, whereas others, for example Glisby & Holden (2003) argue that SECI is too strongly culturally situated in the Japanese culture that highly emphasises tacit knowing. It is argued here that it might be a matter of emphasis on the respective three ECI modes; as mentioned before, Socialisation was excluded from the empirical investigation. Externalisation and Combination can be explored by self-reports of the learners of their own individual PKD processes, whereas for Internalisation, either asking the learners whether they have actually learned something or whether they have acquired new skills to determine actual knowledge development seemed promising.

Therefore, the main shortcomings of the exploratory study in terms of addressing its objectives were as follows: It was difficult to identify questions that would suitably address the main characteristics of the various SECI modes. In particular, aspects of Externalisation and aspects of Combination are difficult to distinguish and can partly overlap. Therefore, for the online survey that aims to measure Externalisation, Combination, and Internalisation it was essential to try to discriminate between the three ECI modes.

A good amount of interesting and insightful comments were made, but it was often not possible to compare the views of other learners, because a critical mass of respondents was not reached. It was also difficult to link the scores on the ten individual-level value types measured by the PVQ with the discussion postings. The small sample size of 19 students in total did not allow for statistically significant findings. Some comments were made by less than five people who scored both high and low on a particular value – a link between the value rankings and the discussion postings could therefore not be established and the findings in this respect are inconclusive. A too-strong focus on communication aspects of online learning in the online discussions might also be a reason why it was difficult to establish links between the comments and the value scores.

The specific context, i.e. aspects of cultural situatedness, of an online learning experience may be more important and salient than the personal values of the learners at a particular point in time, situation or context. Values are merely one aspect that impact on PKD (others being, for example, the characteristics of the OLE, age, gender, level of IT skills, national cultural

background, etc.), so the inconclusive findings of the exploratory study were not surprising. For example, the characteristics of a specific OLE might have such a strong impact on PKD that personal values only have a relatively minor impact on PKD in this particular setting.

As a result of the research experiences of the exploratory study, this researcher decided that the questions that were later asked in the online survey should be modified to:

- focus less strongly on communication, and
- be more suitable to explore differences in PKD from the point of view of the SVS value types.

Therefore, in the online survey, it was decided to ask learners about their PKD experiences with a particular emphasis on knowledge development processes within SECI. In other words, as this research deals with the opinions and experiences of learners, i.e. the learners' voice, the perceived rather than actual PKD outcomes were investigated. Particular care was taken to create questions that ensured a both reliable and valid measurement of Externalisation, Combination, and Internalisation.

7 Relevance of SVS Values in Online Learning: A Delphi Study

7.1 Background and Objectives of the Delphi Study

It is argued that due to the contextual situatedness of PKD in OLEs, the value types of the SVS differ in terms of importance and relevance. In order to determine which value types are *particularly relevant*, a Delphi study was conducted. Particular care was taken to identify experts from the three main topic areas involved: knowledge management, personal values, and online learning. The experts were presented with definitions of all ten value types and asked to identify a maximum of five types as being *particularly relevant* to PKD through online learning.

The Delphi method can be characterised as a useful communication tool to systematically collect and aggregate informed judgements from a group of experts on specific questions or issues (Linstone & Turoff, 1975). Dalkey & Helmer (1963) state that the aim is to obtain the most reliable consensus of a panel of experts by engaging them in a series of in-depth questionnaires, interspersed with controlled feedback. The Delphi method is a structured procedure involving group communication among a panel of experts (Adler & Ziglio, 1996). It has been used extensively in research and described in detail (see, in particular, Linstone & Turoff, 1975). A Delphi study usually comprises a series of questionnaires sent to a pre-selected group of experts in the subject areas under investigation. These questionnaires are designed to elicit and develop individual responses to the problems posed and to enable the experts to refine their views as the group's work progresses in accordance with the assigned task. Delphi studies are usually carried out over several rounds, with Turoff (1970) arguing that two rounds can be sufficiently effective in terms of reaching consensus. Furthermore, some have argued, that a one-round study can be sufficient (see Skulmoski, Hartman & Krahn, 2007), if the results after that first round are robust enough.

The aim of the Delphi study presented here was:

- To test the research hypothesis that some of the individual-level value types of the SVS are more relevant than other value types in the context of online learning

7.2 Methodology of the Delphi Study

The key to a successful Delphi study mainly lies in the selection of participants who must be knowledgeable and willing to contribute valuable ideas. As the Delphi method uses a panel of experts who have experience in, and knowledge of, the subject being studied in the research, the panel is not generally selected randomly, and it is essential to include people who are likely to contribute valuable ideas. There is diverging evidence regarding the suggested minimum number of participants to ensure the validity of results. For example, Brockhoff (1975) suggests that panels with only four experts can produce valid results. His experiments using different panel sizes also did not find clear distinctions regarding accuracy (Brockhoff, 1975).

As there are three main topic areas involved in the presented research, the experts were selected from these areas: knowledge management, values, and online learning. Particular care was taken to identify experts who are preferably knowledgeable in more than one of the aforementioned areas. Experts were identified through an Internet search for people who have a demonstrated expertise in the subject areas involved and through an analysis of some of the main writers of academic papers in the field. It was considered to be important to have experts from both an academic background and from a more applied and practical background in the panel. Thus, experts were recruited not only from universities but also from, for example, e-learning consultancies. Potential participants were chosen from a variety of countries in order to reduce cultural bias. Particular care was taken to locate experts with a demonstrated knowledge of more than one of the three areas of expertise involved. This selection was based on the description found on their institutional website and on their bibliographies, if available.

In the document e-mailed to the sample, the selected experts were asked to state both their areas of expertise and the type of organisation they are working for. They were allowed to acknowledge more than one area of expertise. In total, 13 listed knowledge management and related areas, 11 e-learning and related areas, and 8 listed culture/values and related areas as their area of expertise. 11 listed two or even all three subject areas as their personal area of expertise, which supports the view that all relevant areas of expertise were sufficiently represented in the sample. In terms of type of organisation and employment, more than one category could be ticked. 14 listed institutions of higher education, 2 listed other types of educational institutions, 2 listed knowledge management consultant or practitioner and 6 listed e-learning consultant or developer. There is some spread in terms of country of origin as well, with the responding experts coming from the United Kingdom, Germany, Spain, Austria, France, USA, New Zealand and Finland. Overall, it is suggested that this constitutes a sufficiently diverse and sufficiently exhaustive representation within the Delphi panel in terms of areas of expertise, type of organisation and employment and country.

Based on the abovementioned criteria, 36 experts in total were contacted by e-mail and asked to participate in the study. Out of the 36 experts that were contacted, 18 returned the questionnaire by e-mail. The good response rate of 50% suggests that experts involved in the

topic areas consider it important to investigate the relevance of the ten individual-level SVS value types on PKD in online learning.

The experts were provided with the definition of PKD, which was already mentioned in the Introduction, but it is important to re-state the definition here:

Personal knowledge development in OLEs encompasses idiosyncratic and individualised processes and phases of creating new knowledge, evaluating and modifying knowledge, sharing knowledge, and finally applying knowledge in real-life situations and contexts.

Furthermore, a definition of online learning was provided to the experts. This definition differed to the definition of online learning used in the Introduction. As the experts of the Delphi study are familiar with the area of online learning, a more concise definition which omitted concrete examples was chosen, whereas the definition in the Introduction is somewhat more descriptive. The definition provided in the context of the Delphi study is as follows:

Any structured or partly structured web-based learning activity in a virtual learning environment – for example, merely looking up an article on Wikipedia does not count as online learning in this context.

Providing all experts with these definitions ensured that the whole panel was aware of the same description of both the matter being investigated, namely PKD, and the context in which this takes place, namely online learning.

The sample was then asked to mark those value types of the SVS that they consider to be *particularly relevant* or having a significant impact and effect (either positive or negative on PKD in the context of online learning). They were allowed to choose a maximum of five value types and were encouraged to provide comments about why they had chosen or not chosen a particular value. The definition of the SVS value types (Schwartz, 1992) were provided to all experts in the questionnaire itself, thereby ensuring that the experts had the necessary knowledge to respond to the questionnaire in an informed way and were aware of the same conceptual definition of the SVS.

7.3 Data Analysis and Results of the Delphi Study

The results of the Delphi study show that the ten value types can be grouped into three clusters in terms of differing degrees of relevance to PKD in the context of online learning. A high consensus was found among experts in that Self-Direction, Stimulation, and Achievement were regarded as being particularly relevant in the investigated context. Less agreement was found for the value types of Hedonism, Benevolence and Conformity, which are considered to be particularly relevant by roughly a third of respondents. Finally, Tradition, Universalism, Security and Power are only relatively rarely regarded to be particularly relevant.

Due to the high consensus among the experts of the panel on the question of which of the ten individual-level value types of the SVS are particularly relevant to PKD in online learning, no

further rounds were conducted. The reason for this was that the aim of the Delphi study, namely finding a widespread agreement on the relevance of the value types was already met after one round. An e-mail was sent to all participants and it was stated that, due to the relatively high consensus already achieved in round one, it was not necessary to conduct any further rounds. Each participant also received the results of the Delphi study, including the verbal comments made by the experts. Care was taken by the researcher that no expert could be identified by the verbal comments; no statement offered any hint as to the identity of the expert. Therefore, all statements could be reported unchanged. The value types are listed in Table 7.1 in the order of frequency with which the members of the panel have labelled them as particularly relevant to PKD in online learning.

Table 7.1: Value types and relevance to PKD in online learning

Value type	Labelling a value type as particularly relevant to PKD in online learning	
	Total number of responses: 18	
	No.	Percentage
Self-Direction	16	89%
Stimulation	16	89%
Achievement	13	72%
Hedonism	6	33%
Benevolence	6	33%
Conformity	5	28%
Tradition	3	17%
Universalism	3	17%
Security	2	11%
Power	2	11%

Three clusters of value types in terms of level of agreement of experts who regarded a value type as being particularly relevant can be identified:

- High level of agreement: Self-Direction, Stimulation, and Achievement: 72-89%
- Medium level of agreement: Hedonism, Benevolence, and Conformity: 28-33%
- Low level of agreement: Tradition, Universalism, Security, and Power: 11-17%

Three value types – Self-Direction, Stimulation, and Achievement – are labelled as being particularly relevant by at least 72% of the experts. This is a substantial agreement rate, all the

more so if one considers these are the results of a one-round Delphi study. In addition to the high absolute percentage of agreement, the considerable gap between the aforementioned three values and those two values that rank on a joint fourth place needs to be pointed out. Only 33% of experts regard Hedonism and Benevolence as particularly relevant, which is substantially less than the third-ranking value type Achievement. Since the aim of the Delphi study was to find out the *relative* importance of the ten SVS value types in relation to each other, this gap between the three highest-ranking value types and the seven remaining values is particularly interesting.

Interestingly, Kopelman, Prottas & Tatum (2004) named the very same SVS value types – Self-Direction, Stimulation, and Achievement – as “highly pertinent to multiple graduate-level academic pursuits” (p. 206), without including any of the remaining seven value types. Deans and academic administrators in six fields of graduate study were asked to rank-order the ten individual-level values of the SVS according to their own assessment of what the *ideal* value profile of a Master’s student should be. Across the six fields of graduate study, the three value types were among the top three rankings in 13 out of 18 possible cases (Kopelman, Prottas & Tatum, 2004). This fully reflects the results of the Delphi study reported here.

The SVS is more than a mere accumulation of values unrelated to each other. On the contrary, a certain structure and conflicting and congruent relations between the various value types were identified and described by Schwartz *et al.* (2001).

In the context of the research presented here, one would therefore assume that those value types which are situated directly opposite of Stimulation, Self-Direction, and Achievement are not regarded to be particularly relevant. This assumption is based on Schwartz *et al.* (2001) who argue that value types that are displayed at the opposite end of the circumplex structure of the SVS value types are in a conflicting relation to each other.

Let us examine the relation of Stimulation, Self-Direction, and Achievement with their respective oppositional value types one by one. First, the value type Security, which is opposite to Stimulation (89%), is considered to be particularly relevant by only 11%, ranking last in the Delphi study – this supports the structure of the SVS. Second, Power and Security, which are both opposite to Self-Direction (89%), are both considered to be particularly relevant by only 11%, again ranking last. This also supports the circumplex structure of the SVS. Third, Benevolence, which is opposite to Achievement (72%), is considered to be particularly relevant by 33%, ranking in the medium agreement group – partially supporting the SVS structure (Schwartz *et al.*, 2001).

Hedonism is related to both Openness to Change and Self-Enhancement (Schwartz, 1994a), and also ranks neither in the high agreement nor low agreement group of the Delphi study results, and is thus not considered here. Two of the three value types in the high agreement group belong to the higher-order dimension of Openness to Change (Schwartz *et al.*, 2001). One can therefore calculate the agreement rate for Openness to Change by calculating the mean of the scores for Stimulation and Self-Direction. This agreement level for Openness to Change as being particularly relevant to PKD in online learning is 89%. For the conflicting and

opposing higher-order dimension called Conservation, the agreement level consists of the mean scores for Conformity, Tradition, and Security, and is a mere 19%. This is a strong indicator that having values aligned with the Openness to Change dimension is considered to be very important for an effective and efficient PKD in OLEs. On the other hand, having values aligned with the Conservation dimension may be considered to hamper or hinder PKD.

The average agreement rate of the two remaining higher-order value dimensions – Self-Enhancement and Self-Transcendence – do not differ as strongly as the Openness to Change versus Conservation distinction. The average agreement level for Self-Enhancement is 42% (mean for the scores of Achievement and Power – without taking Hedonism into account), whereas the corresponding level for Self-Transcendence is 25% (mean for the scores for Universalism and Benevolence). At a glance, here is the comparison of the average scores for the two higher-order dimensions.

- Openness to Change versus Conservation: 89% versus 19%
- Self-Enhancement versus Self-Transcendence: 42% versus 25%

The hierarchical order of SVS value types has been found to be relatively consistent across cultures (Schwartz & Bardi, 2001). Benevolence, Self-Direction, and Universalism were regarded as most important; Security, Conformity, Achievement, and Hedonism as medium-important; and Stimulation, Tradition, and Power as least important (Schwartz & Bardi, 2001). This does not correspond to the results of the Delphi study which focused on one context only, namely online learning. In order to illustrate the differences, Table 7.2 lists the ranking of the ten individual-level value types as found by Schwartz & Bardi (2001) and the ranking based on the Delphi study regarding the relative importance in the context of PKD in OLEs.

Table 7.2: Hierarchical order of the SVS value types: Pan-cultural average and PKD in OLEs

Rank of value type	Cross-national importance <i>(Schwartz & Bardi, 2001)</i>	Relative importance to PKD in OLEs <i>(Delphi study)</i>
1	Benevolence	Self-Direction and Stimulation
2	Self-Direction	
3	Universalism	Achievement
4	Security	Hedonism and Benevolence
5	Conformity	
6	Achievement	Conformity
7	Hedonism	Tradition and Universalism
8	Stimulation	
9	Tradition	Security and Power
10	Power	

This comparison shows some similarities but also some differences between Schwartz & Bardi's (2001) findings and the findings of the Delphi study. Self-Direction, Conformity, Tradition, and Power are not more than two ranks apart in terms of importance. Medium-sized differences can be found for Achievement and Hedonism, both ranking three places higher in the Delphi study, and Benevolence ranking three places lower. Finally, the most marked differences are for Security, Universalism and Stimulation.

When only the three value types used in the survey – Self-Direction, Stimulation, and Achievement – are compared, one could argue that Self-Direction does not differ in terms of the findings of Schwartz & Bardi (2001) and the Delphi study (first versus joint first rank), Achievement differs somewhat (sixth versus third rank), but Stimulation differs considerably (eighth rank versus joint first rank).

The ranking established by Schwartz & Bardi (2001) does not discriminate between situations, but the respondents rated the value types for importance as a guiding principle in their life, without restricting the concept of life to a particular type of context. With Benevolence ranked as the most important value type, one can argue that this finding may be due to social desirability bias (Brace, 2008), as the respondents want to portray a socially acceptable and approved value type rather than give an accurate self-report.

Moreover, Schwartz *et al.* (2001) show that research on education consistently predicted an emphasis on Self-Direction and Stimulation, which supports the results of the Delphi study.

In order to illustrate the reasons of the expert panel to label a particular value type as particularly relevant, some of the comments that the experts made will be reported here. When comments were made regarding a particular value type, they were usually suggesting that that value type is particularly relevant in the context of online learning; comments made that suggested the opposite were comparatively rare. This means that the brief discussion provided here is largely concerned with arguments that support a particular value types as particularly relevant.

All comments that deal with Self-Direction, Stimulation, and Achievement, respectively, are provided below. Additionally, one or two comments per value type for the remaining seven types are also included and discussed briefly. For reference, all comments are reproduced in Appendix B.2.

Self-Direction:

Several experts have suggested that online learning requires a high degree of self-direction, but also that it is necessary to engage with an OLE in a self-directed way as one is required to make individual choices all the time in terms of which features to use, etc. Therefore, the context of online learning is likely to offer the learner more opportunities to follow a PKD path of her own choosing, at any rate to a greater degree than in a traditional face-to-face classroom environment. A learner who scores high on Self-Direction is likely to be better able to use the greater opportunity to choose one's own goals and approaches to PKD properly.

"Online learning is by definition independent and at least partly self-directed. There should thus be a positive effect."

"E-Learning need self-direction"

"Control of one's own activity and work rhythm"

"Online learning makes possible individual choices"

"Self evident that much online learning demands independence"

"I think that it is very relevant due self-direction is related to freedom, independency and chosing the own goals. The e-learning context provides these properties."

It was stated that online learning is independent and therefore partly self-directed, thus suggesting that scoring high on Self-Direction is likely to have a positive effect on PKD processes and therefore PKD outcomes in online learning. It was also pointed out that it is important for the online learner to control her own activities while engaging in online learning; this suggests that online learning is regarded to be a relatively open and unstructured learning environment, which in turn requires that online learners are self-directed. Being an independent learner seems also to be required in the context of online learning, presumably more so than in the context of face-to-face learning. This could be due to the still relatively fluid and changing nature of online learning as opposed to a traditional face-to-face learning to which learners are very much used to. In sum, the experts of the Delphi study seem to suggest that online learners are required to constantly make choices as to which files to use and which activities to engage in; it is argued here that a high score on Self-Direction may foster the capability of online learners to deal with the relative newness and open nature of OLEs. The statement "I think that it is very relevant due self-direction is related to freedom, independency and chosing the own goals. The e-learning context provides these properties." supports this view by pointing out that contexts for OLEs provide freedom, independency and the need to choose your own goals. It is argued here that the experts point out in their comments that the self-directed nature of OLEs ideally requires a self-directed individual learner, thus pointing to the importance of Self-Direction as a value in online learning.

Stimulation:

It was pointed out that Stimulation represents a "[p]ositive driver of engagement" because online learning is a still relatively new form of learning. As a consequence, scoring high on Stimulation is likely to lead to a greater commitment to engage with the OLE, which in turn is likely to contribute positively to PKD. This notion has been expressed in slightly different ways with slightly different foci by various experts:

"Positive driver of engagement with and commitment to new form and style of learning"

"exploring new paths of learning (and teaching)"

"I am not sure the learner needs to have this value, but the online learning environment MUST be stimulating to the learner. If the learner has an innate curiosity/propensity for discovery, so much the better."

"Online environment will likely require heightened need for stimulation to generate and maintain interest"

Similar to the comments made about Self-Direction, the experts point out that it is essential to have a positive and inquisitive attitude to online learning ("Positive driver of engagement with and commitment to new form and style of learning") because online learning is still relatively new to most learners. Interestingly, one expert mentions that while the learner may not need to have the value of Stimulation, the OLE has to be stimulating to the learner. Again, one could argue that a close match between the value characteristics of a learner with the value characteristics of an OLE is likely to lead to an effective PKD.

As PKD is regarded as something that challenges a learner, again requiring commitment to engage with the OLE, a high score on Stimulation is likely to foster this engagement:

"Learning is also some kind of challenge"

"Desire for novelty and challenge - e-learning is still novel and challenging"

In addition to online learning, one expert suggests that, since learning constitutes a challenge, a high score on Stimulation will enable the learner to better meet this challenge. Further research could examine to what degree other modes of learning, such as face-to-face learning, constitute a challenge for learners and whether the importance of Stimulation as a value type differs across modes of learning.

Furthermore, it was suggested that online learning can have the potential to stimulate the learner more than other forms of learning. Here, Stimulation as a value is not attributed to an individual but to the properties of an OLE. This is interesting because it suggests that it is not sufficient that an individual scores high on Stimulation, but that the OLE has to be designed in such a way as to be stimulating as well:

"The possibilities that online learning offers should make it possible to provide greater stimulation than other means, and so there ought to be a positive effect on the knowledge of those who engage with it. (I have just a slight doubt as to how well learning in general matches this value type.)"

Again, it was emphasised that the variety of possibilities that an OLE can offer makes online learning more stimulating than other modes of learning, which in turn has a positive impact on PKD.

Achievement:

Several experts suggested that there is a relationship between a desire to achieve – and thus score high on Achievement – and the intensity of engaging with fellow learners:

“Supports identification with and attachment to the learning objectives and outcomes , would promote engagement with the on-line community through comparison of performance with the learning group”

“Online PKD will require significant need for personal achievement to be successful”

“Those who regard doing well as a challenge should be expected to receive greater benefits.”

“Many on-line learners would, for practical or personal reasons, be unable to follow a 'traditional' course; thus, on-line learning supports their need for self-improvement / achievement”

Some of the comments mentioned above do not explicitly refer to online learning but seem to link the Achievement value to learning in general, for example the comments “Those who regard doing well as a challenge should be expected to receive greater benefits.” and “Those who regard doing well as a challenge should be expected to receive greater benefits.” This means that valuing Achievement highly is likely to translate into greater PKD efforts and thus greater PKD outcomes. It is suggested here that the impact of Achievement as a value type on PKD is unlikely to differ considerably across contexts; in other words, Achievement seems to be similarly relevant in online learning and in face-to-face learning. The last comment (“Many on-line learners would, for practical or personal reasons, be unable to follow a 'traditional' course; thus, on-line learning supports their need for self-improvement / achievement”) is very interesting as it suggests that online learning is often the only possibility for people who are already in a job to continue studying. The comment suggests that a strong desire to self-improvement and achievement may be fulfilled particularly by online learning courses. It must be said here that this statement does not refer to PKD *per se*, but to a preference of preferring online learning courses to traditional face-to-face courses.

However, one expert argued in favour of the contrary, namely that Achievement is less important in an online learning context:

“Achievement is less visible in the e-contexts”

Unfortunately, the expert does not say why he/she thinks this is the case. One could speculate that the lack of face-to-face interaction in the context of online learning prevents the personal characteristics and personal value orientations from being shown to peers and tutors. However, Achievement as a value type will still be an important determinant of how a learner perceives the OLE and how she engages with the PKD processes: if she values Achievement very highly, she is likely to be relatively active in her use of the various features that are offered by the OLE. However, it is suggested here that a high score on Achievement does not necessarily mean that a learner uses an OLE intensively. For example, in the context of blended learning, a high score

on Achievement may mean that the learner focuses on achieving good grades in the face-to-face part of the course while largely ignoring the online learning part because the learner thinks this acts only as a relatively minor add-on to the course as a whole and that the OLE hardly contributes to her PKD.

One expert linked Achievement with the need to have goals in the context of online learning, a statement which may also be linked to Self-Direction:

"Goals are a must, students needs a mission"

Again, this is an example of a statement that can be linked to both face-to-face learning and online learning. Either way, a desire to achieve and to do well is likely to translate into more intensive PKD processes and, as a consequence, into higher PKD outcomes.

Finally, a general comment was made linking Achievement with being able to determine the progress made in the online learning course:

"Helps a student determine progress"

This determination of progress is presumably also equally important in other contexts of learning. Therefore, one could argue that the comment is not specifically related to OLEs. In sum, high scores on Achievement are likely to heighten the engagement of the learners with the various PKD processes that an OLE offers; this finally leads to higher PKD outcomes.

Hedonism:

The following statement links the value of Hedonism to the OLE rather than to the personal characteristics of the individual. It suggests that an OLE which is fun to interact with is likely to foster PKD; however, the question of whether scoring high on Hedonism is positively related to PKD is not addressed here:

"If the system is designed to be enjoyable rather than routine (not all are), then there should be a positive effect from the fun of doing it"

Benevolence:

There was an interesting comment made regarding Benevolence and its effect from the perspective of an online learning provider rather than the learner herself:

"From a provider perspective, this value represents a basic ethical condition of on-line 'learning': i.e. providing people with opportunitie sfor self-actualisation as opposed to merely making money out of on-line education"

Conformity:

One Delphi study participant suggested that the interactivity of some online learning tools leads to more autonomy of the learner. It can therefore be argued that when a learner scores low on Conformity she is more likely to be an autonomous user of an OLE:

"New interactive media are less conformity oriented (towards an outside authority) and further more the autonomy of the person"

Tradition:

On the one hand, one expert suggested that scoring high on Tradition is likely to make the individual sceptical about interacting with an OLE as online learning is still considered to be relatively novel:

“Traditional values are hard to break, and cause defensive learning routines”

On the other hand, another expert argued that online learning is not regarded as being novel any more, suggesting that Tradition is unlikely to have any clear effect:

“Online learning already is traditional in some people's view, and alternative approaches to learning have been actively supported for 60 years, so I would not expect any clear effect.”

Universalism:

Although only three experts regard Universalism as being particularly important to PKD in online learning, one participant argues that it is a relevant value type, because Universalism is about understanding and protecting the welfare of others, something which this expert links to the notion of community of practice in an OLE:

“yes, in the sense that its all about a community of practice, and shared ideas, shared support.”

Security:

The flexibility of and the various ways in which an OLE can be used makes the online learning experience relatively unstructured. This is something that a learner scoring high on Security might have more difficulties with than a learner scoring low on that value type:

“eLearning does not give assurance, it is in some kind a "wild" journey”

Power:

One Delphi study participant suggested that the relative anonymity of people who take part in online learning prevents people who score highly on Power from showing their authority:

“For the powerful people it is important to show their authority, they can't do that via eLearning because it is anonymous”

The wide spread of agreement levels regarding which of the value types is particularly relevant in the context of PKD in online learning was surprising. Whereas differences were certainly expected, the spread between 11% for Security and Power and 89% for Stimulation and Self-Direction was unexpected. This suggests that, although values are considered to be relatively stable across time (Rokeach, 1973) and applicable across contexts (Schwartz & Bilsky, 1987), there are indeed differences in their salience and *relative* importance across situations and contexts (Schwartz, 2006). This is important to note: Personal values *can* strongly constitute PKD behaviour, but a specific set of ‘cultural situatedness’ may reduce the impact of personal values in a given situation. Interestingly, as Bardi & Schwartz (2003) point out, there is

disagreement whether values generally guide behaviour or do so only at times and for some people. They suggest that values affect behaviour only in those situations in which there is a conscious choice involved (Bardi & Schwartz, 2003), something which arguably is the case when online learners are actively involved in PKD.

Figure 7.1 below shows the theoretical framework after taking into account the findings of the Delphi study. The only difference to the pre-Delphi version of the theoretical framework shown in Figure 6.7 is that three out of the ten individual-level SVS value types had now been identified as being *particularly relevant* to PKD in online learning: Self-Direction, Stimulation, and Achievement. From each of these three value types, there is a hypothesised relationship to each of the three ECI modes individually, represented by the blue, green, and red arrows, respectively.

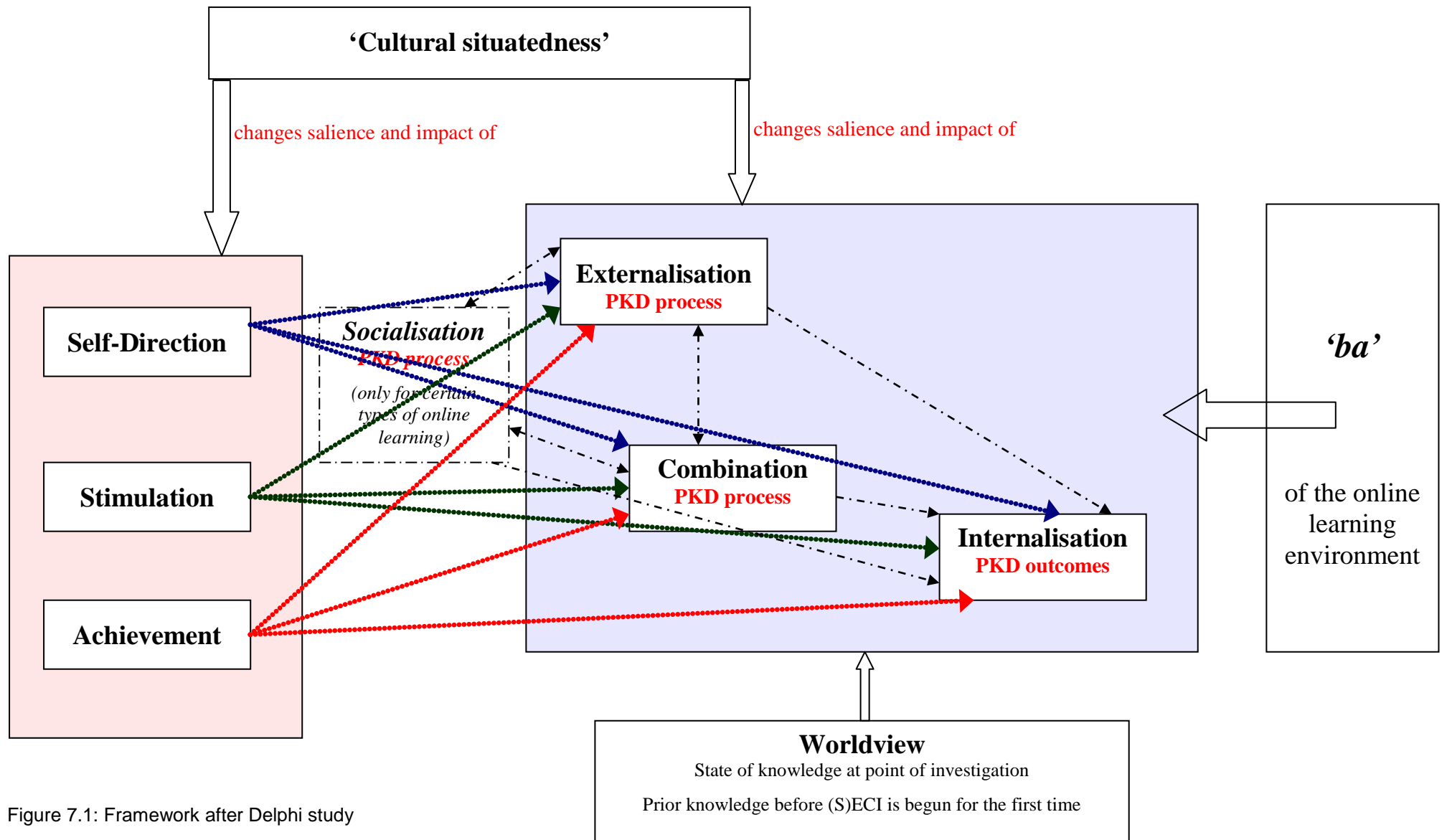


Figure 7.1: Framework after Delphi study

7.4 Summary and Lessons Learned

The considerable difference regarding the relevance of the ten individual-level SVS value types to PKD in online learning was surprising. Given that three of the value types – Self-Direction, Stimulation, and Achievement – stood out from the remaining seven value types (Haag, Duan & Mathews, 2009b), and because of the need to limit the workload for the participants in the online survey, it was decided to investigate only these three value types in the subsequent online survey. This meant that only some part of the PVQ would have to be filled in by the participants and it also made it possible to ask a larger number of questions regarding their personal background, such as age, gender, national cultural background, level of IT skills, and academic discipline.

The relatively big differences between the value types in terms of attributed relevance to PKD in online learning suggest that the concrete situation or context has an impact on the degree of salience of personal values in a particular setting. In order to find out the actual impact of those three value types that were regarded to be particularly relevant by the experts of the Delphi study, the online survey reported in the following chapter examined the relationships between these value types and Externalisation, Combination, and Internalisation.

8 Personal Values and Cultural Situatedness in PKD: An Online Survey

This chapter describes an online survey which examined the impact of personal values on PKD in online learning. In addition to examining the effect of Stimulation, Self-Direction and Achievement on PKD, the impact of other variables, such as age and gender, among others, was also investigated. Then, an adaptation of the SECI model for the context of PKD in online learning from an individual-level perspective will be presented. Finally, the varying salience of values and the cultural situatedness of developing knowledge in OLEs will be discussed.

8.1 Background, Objectives and Hypotheses of the Online Survey

8.1.1 Background and Objectives

Value types of the SVS have been found to be meaningful precursors of learning approaches (Matthews, Lietz & Darmawan, 2007), but are merely one factor impacting on PKD, so inconclusive findings regarding the effect size of the impact of values are to be expected. This is because some factors are more important and salient in a particular situation and context. For example, the characteristics of a specific OLE can have such a strong impact on PKD processes and outcomes that personal values are less important in this particular setting. To show this complex interaction of factors involved – and their varying salience across particular contexts – conducting a case study is one possibility (cf. Denzin & Lincoln, 2005; Yin, 2003). However, this would reduce the generalisability of the results considerably. There is thus a trade-off between generalisability (survey) and in-depth examination of one setting only (case study). In the research presented here it is the aim to investigate PKD in online learning at a high level, i.e. in online learning *per se* and not restricted to a particular setting (e.g. restricted to a higher education context or to the context of a corporation).

With the literature review pointing to the strong cultural situatedness of PKD in OLEs and with the inconsistent results of the analysis of the learners' view of their PKD in OLEs conducted in the exploratory study, it is argued that the following should be taken into account in the online survey:

- The collected data should represent a broad array of background variables of learners, such as age, gender, level of IT skills, national cultural background, academic discipline studied, etc.
- Having a substantially heterogeneous sample reduces the likelihood that any findings are due to the characteristics of a particular OLE, or due to gender differences, etc. In

other words, a heterogeneous sample de-contextualises the subject matter of PKD in OLEs at least to some degree, thereby reducing the potentially confounding impact of background variables and other variables that represent cultural situatedness.

In terms of the sample, the scope of the online survey is as follows:

The sample consists of students in higher education settings or other courses or programmes conducted within companies, either solely using an OLE or using both an OLE and other methods of teaching, such as CD-ROMs or face-to-face seminars (blended learning). However, the questions of the survey are only concerned with that part of the course which is taught online.

Central to the study reported here is the measurement of PKD processes and outcomes from the point of view of the SECI model. These PKD processes and outcomes require knowledge creation measures, but such measures lack agreed-upon construct operationalisations, which makes empirical measurements difficult, because the measures used also impact on the results that can potentially be achieved and may also limit their generalisability (Mitchell & Boyle, 2010). The study reported here conceptualises such an empirical measurement tool with the intention to measure the scores of individuals for Externalisation, Combination and Internalisation.

Any piece of research can therefore only investigate a particular part of knowledge creation, from a particular point of view. According to Mitchell & Boyle's (2010) taxonomy of knowledge creation measures, Nonaka & Takeuchi (1995) assessed the actor participation in knowledge creation processes through observations of said actors, for example by observing how the breadmakers failed to externalise tacit knowledge. This approach constitutes a process measurement with an actor judgement as the data source and using external criteria, i.e. measures that are based on non-participant categorisations of knowledge creation processes (Mitchell & Boyle, 2010). However, the research reported here examines the 'learners' voice', i.e. self-reports of the learners of their PKD in OLEs. In other words, this study uses internal criteria, i.e. measures that are based on subjective categorisations of knowledge creation processes made by the actors themselves (Mitchell & Boyle, 2010).

Prinsen, Volman & Terwel (2007) stated that they "did not find any studies in which the relationship between the quantity or quality of students' participation and cognitive and affective learning outcomes is addressed" (p. 407). The study reported here contributes to addressing this gap by linking the intensity of using tools for Externalisation and engaging in Combination activities with self-reported Internalisation and thus newly acquired knowledge and skills.

8.1.2 Hypotheses

It is expected that the salience and thus the importance of personal values on PKD differs from context to context. Therefore, depending on the given circumstances in which PKD occurs, personal values may have only a minimal effect, a medium-sized effect, or a large effect. For online learning *per se* and at a high level, it is hypothesised that the effect size of personal values is small to medium, which suggests a correlation coefficient and thus also an effect size of around .1 to .3 (Field, 2009). The following hypotheses are postulated and listed with a brief verbal description:

H.1: Self-Direction is positively correlated with Externalisation.

Higher score on Self-Direction is linked to a higher emphasis on “Articulating tacit knowledge through dialogue and reflection” (Nonaka, Toyama & Hirata, 2008, p. 19).

H.2: Self-Direction is positively correlated with Combination.

Higher score on Self-Direction is linked to a higher emphasis on “Systemizing and applying explicit [sic] knowledge and information” (Nonaka, Toyama & Hirata, 2008, p. 19).

H.3: Self-Direction is positively correlated with Internalisation.

Higher score on Self-Direction is linked to a higher emphasis on “Learning and acquiring new tacit knowledge in practice” (Nonaka, Toyama & Hirata, 2008, p. 19).

Summing up H.1 to H.3, learners who score higher on Self-Direction are more likely to a) actively engage in dialogue online, b) make use of a variety of functions, and c) will as a consequence develop their knowledge to a larger degree than learners who score lower on Self-Direction.

H.4: Stimulation is positively correlated with Externalisation.

Higher score on Stimulation is linked to a higher emphasis on “Articulating tacit knowledge through dialogue and reflection” (Nonaka, Toyama & Hirata, 2008, p. 19).

H.5: Stimulation is positively correlated with Combination.

Higher score on Stimulation is linked to a higher emphasis on “Systemizing and applying explicit [sic] knowledge and information” (Nonaka, Toyama & Hirata, 2008, p. 19).

H.6: Stimulation is positively correlated with Internalisation.

Higher score on Stimulation is linked to a higher emphasis on “Learning and acquiring new tacit knowledge in practice” (Nonaka, Toyama & Hirata, 2008, p. 19).

Summing up H.4 to H.6, learners who score higher on Stimulation are more likely to a) actively engage in dialogue online, b) make use of a variety of functions, and c) will as a consequence develop their knowledge to a larger degree than learners who score lower on Stimulation.

H.7: Achievement is positively correlated with Externalisation.

Higher score on Achievement is linked to a higher emphasis on “Articulating tacit knowledge through dialogue and reflection” (Nonaka, Toyama & Hirata, 2008, p. 19).

H.8: Achievement is positively correlated with Combination.

Higher score on Achievement is linked to a higher emphasis on “Systemizing and applying explicit [sic] knowledge and information” (Nonaka, Toyama & Hirata, 2008, p. 19).

H.9: Achievement is positively correlated with Internalisation.

Higher score on Achievement is linked to a higher emphasis on “Learning and acquiring new tacit knowledge in practice” (Nonaka, Toyama & Hirata, 2008, p. 19).

Summing up H.7 to H.9, learners who score higher on Achievement are more likely to a) actively engage in dialogue online, b) make use of a variety of functions, and c) will as a consequence develop their knowledge to a larger degree than learners who score lower on Achievement.

In addition to the hypotheses mentioned above that deal with relationships of personal values and the three ECI modes, the following five background variables and their impact on PKD in online learning were investigated as well, but no *a priori* hypotheses were formulated: gender, age, level of IT skills, national cultural background, and academic discipline studied.

8.2 Methodology of the Survey

8.2.1 Sampling and Data Collection

A research methodology which combines both a quantitative and a qualitative approach was employed. Both the PVQ and an online survey were administered to the learners. The survey investigated PKD by using the SECI model as a framework. It contained both Likert-type ordinal scale questions, and open-ended questions which prompt the learners to share their experiences of PKD (Oppenheim, 1992).

Given the broad geographical dispersion of the sample, which is required for recruiting a maximally diverse and heterogeneous sample, collecting data via an online survey tool is a suitable approach. SurveyMonkey (www.surveymonkey.com) was used to host the Internet-based survey. This also has the additional advantage that the data can easily be exported into SPSS (Field, 2000) and analysed using this statistical analysis software.

The questionnaire was piloted with students and academics at the University of Bedfordshire, UK. Both the content and the wording of the questions were thus checked and the questionnaire was modified accordingly. Thus, validity issues of the scale were addressed (Moser & Kalton, 1971), and face validity could be established.

It was decided not to restrict the sample to one particular course because the technical characteristics and the instructional design and pedagogies employed by the course may dominate the way how learners develop their personal knowledge – and personal values may happen to have either a strong or a weak influence. The OLEs chosen for the sample should have a wide range of students in terms of gender, age, national culture, rankings on Schwartz's values, etc. This will enable one to explore some of the potential factors which may have a decisive impact on PKD in a particular situation, and how and when values play a rather prominent and salient role and when they do not. This can be achieved through comparing subsets of the sample, e.g. males-females, young-old, etc.

In order to get a highly diverse sample, three different ways of accessing participants were followed. This allows for triangulation of data (Denzin & Lincoln, 2005) through different types of students (e.g. mature professionals or undergraduates) and through different modes of instruction (e.g. fully online course or blended learning).

The students of the eMBA course at the University of Bedfordshire, UK, were chosen as one of the sample groups. The eMBA course is organised by the University of Bedfordshire Business School. It is a two-year part-time blended learning course, particularly aimed at managers and professionals who want to improve their knowledge and skills for high-level management positions. Some of the subject areas are entrepreneurship, e-business management, strategic finance, and operations management. The teaching consists of workshops, online materials and also uses the software Wimba, which can be used for voice-over Internet live classrooms. Among other things, the course makes use of the online learning environment BREO and of discussion forums, blogs and wikis. The course is structured into four semesters with ten modules in total; four workshops and five voice-over Internet sessions are normally held in each semester. For the eMBA course, the sample population consisted of approximately 250 students, 144 of Omani origin, 41 from India, 30 from Poland, 13 from South Africa, 6 from Switzerland. A cover letter explaining the research and containing a link to the online survey was broadcast to the eMBA students by an e-mail sent by a member of the eMBA staff. The e-mail cover letter and the follow-up e-mail are both reproduced in Appendix C.1.

In addition to the eMBA, a call for participation was broadcast to potential online learners worldwide via the following three Yahoo! Groups: com-prac, interculturalinsights, onlinefacilitation. These groups were chosen because of their affinity to online learning (com-prac and onlinefacilitation) and their diverse composition in terms of national culture (interculturalinsights). Cover letters were posted in each of the three groups describing the research project and containing a link to the online survey. It has to be noted here that those group members who chose to receive postings as e-mails received the posting as an e-mail as well. The cover letter postings in all three Yahoo! Groups are reproduced in Appendix C.1. The numbers of members of the three groups were as follows:

com-prac:	1,670
interculturalinsights:	1,156
onlinefacilitation:	1,595

It has to be noted that the number of members of these three groups who have actually taken part in online learning cannot be established, i.e. the numbers mentioned above refer to the total number of members, not to members who have been online learners. This also means that the response rate cannot be determined.

Finally, the third way of contacting potential participants was through a posting in dialogin The Delta Intercultural Academy, a knowledge community on culture and communication in international business (www.dialogin.com). At the time of data collection, the online community had a membership of about 7,400 of which about 6,100 receive an e-mail newsletter. In this e-mail newsletter a brief introduction to the research as well as a direct link to the online survey was posted. A screenshot of the posting is reproduced in Appendix C.1. In order to provide an incentive for the learners to participate, the posting also contained a brief summary of the results of the Delphi study. In addition to that, the e-mail newsletter sent by the editor of dialogin The Delta Intercultural Academy contained a brief description of this study with a link to the posting on the dialogin website and a direct link to the online survey.

8.2.2 Overview of the Questions of the Online Survey

This section provides an overview of the questions that were asked in the online survey. It has to be noted that the wording of the questions also reflects the fact that some questions would start on a new page of the online survey; the numbering of questions then re-starts at 1. The answer options and further information will be given alongside the discussion of the individual questions throughout the remainder of chapter 8. Appendix C.2 shows screenshots of the full questionnaire as it was presented to the participants.

1. How often do you use search engines to find materials in addition to those provided by the online learning environment?
2. How many different types of functions do you usually access when learning about one particular topic? Examples of these functions, among others, are: discussion forums, blogs, wikis, instant messaging, chats, listening to audio files, watching video files, self-assessment quizzes, downloading course documents, etc.
3. How interested are you in getting to know other learners' opinions through reading their postings in discussion forums?
4. How often do you post in discussion forums?
5. How often do you contribute to a blog (e.g. adding, changing or deleting parts of it)?
6. How often do you contribute to a wiki (e.g. adding, changing or deleting parts of it)?

7. How often do you take part in Instant Messaging (IM) with other learners or tutors?
8. How often do you take part in online chats with other learners or tutors?
9. How often do you share information with other learners (e.g. posting links or other documents for them to read, using online communication tools to let them know about something, etc.)?
10. How often do you work together with other learners to create new materials (e.g. wikis, blogs, etc.)?
11. How strongly do you agree or disagree with the following statements?
 - I can apply the knowledge that I have acquired in the online learning environment in other contexts.
 - The functions for self-assessment (e.g. quizzes, tests, simulations) help me to learn.
 - The functions of the online learning environment contribute to me acquiring new knowledge.
 - The functions of the online learning environment contribute to improving my skills
 - Overall, I have learned a lot through the online learning environment.

Table 8.1 below shows which of the eleven questions that deal with the measurement items for Externalisation, Combination, and Internalisation are linked to which of the nine hypotheses; the listing is ordered by the ECI modes. The questions are represented by keywords, not by their actual phrasing.

Table 8.1: Relationships between questions and hypotheses

Questions of the online survey	Hypotheses
4. Discussion forums 5. Blog 6. Wiki 7. Instant Messaging (IM) 8. Online chats	H.1: Self-Direction is positively correlated with Externalisation. H.4: Stimulation is positively correlated with Externalisation. H.7: Achievement is positively correlated with Externalisation.
1. Search engines 2. Different types of functions 3. Getting to know other learners' opinions 9. Sharing information 10. Working together with other learners	H.2: Self-Direction is positively correlated with Combination. H.5: Stimulation is positively correlated with Combination. H.8: Achievement is positively correlated with Combination.
11. How strongly do you agree or disagree with the following statements? <ul style="list-style-type: none"> • Application of knowledge • Functions for self-assessment • Acquiring new knowledge • Improving my skills • I have learned a lot 	H.3: Self-Direction is positively correlated with Internalisation. H.6: Stimulation is positively correlated with Internalisation. H.9: Achievement is positively correlated with Internalisation.

12. The next page contains some questions which are formulated in a gender-specific way. In order for you to be forwarded to the appropriate version, please select whether you are male or female and then click on "Next".

(Unnumbered): Question 12 is followed by the shortened PVQ version containing the eleven items for Self-Direction, Stimulation and Achievement. A new page is then started:

1. How do you rate your information technology skills (e.g. standard Office software, Internet, etc.)?
2. Which academic discipline represents best your online learning experiences that you are reporting in this survey?
3. How old are you?
4. From the drop-down menu, please select the country that characterises your cultural background best. For example, if you have been living in the UK for two years, but have spent most of your life in Trinidad and feel that this culture represents you best, please select Trinidad.

5. Please describe which features or activities in online learning help you to learn, and why you think this is the case.
6. Please describe which features or activities in online learning act as a barrier to learning for you, and why you think this is the case.
7. If you want to participate in the draw for one of the £25 (€30) book vouchers, please state your e-mail address.

After this overview of the questions of the online survey, the next section will provide information on normality and data transformation.

8.3 Normality and Data Transformation

It is important to screen data for non-normality because significantly non-normal data can distort the results of statistical analyses (Nasser, 2004; Tabachnick & Fidell, 2001) and it also requires the use of specific approaches to analysis. Two of the most common ways for testing kurtosis and skewness as indicators for (non-)normality is calculating the standardised z-scores (it is often assumed that a z-score of more than ± 1.96 suggests non-normality), and eyeballing frequency histograms or normal probability plots (Tabachnick & Fidell, 2001). In this study, frequency histograms were analysed. Thus, different degrees of non-normality were found, with some variables being strongly non-normal. However, it was decided not to perform data transformation routines such as inverse transformation, logarithmic transformation or power transformation, which would have reduced the degree of non-normality but at the same time would have distorted the actual results as well. For example, a very high percentage of the sample used the uppermost end of the scale in the Internalisation item questions. Data transformation techniques would on the one hand have had only a limited effect in reducing such severe non-normality, while at the other hand distorting the actual results. Weighing up these pros and cons, it was decided not to transform the data. The literature review regarding the PVQ suggested that PVQ scores are usually not normalised. Schwartz also suggests not to normalise PVQ scores (Schwartz, personal communication).

As already mentioned in section 8.3.1, it was decided not to apply a z-score threshold as the nature of the answers and the characteristics of the scales of the ECI items would lead to a severe reduction of the number of cases. This would lead to a data set that is not representative of 'the typical online learner' and would thus distort the results.

As individuals tend to use the extreme upper part of a scale, acquiescence response bias is an issue in many research domains (Lee, Soutar & Louvière, 2008). Some authors argue that this bias should be controlled for (e.g. Schwartz, 1992), whereas others argue that such bias is a cultural characteristic and that controlling for it would remove valuable information (e.g. Smith, 2004). If a researcher is interested in relative rather than absolute differences – as is the case in the research presented here – then centering is recommended (Fischer, 2004). Schwartz

(2005a, 2005b) recommends several steps of preparing and cleaning data which is gathered by the PVQ.

At the beginning of the analysis of the online survey data, Schwartz' (2005a) approach to centering responses was applied. These centred scores were then used to determine the correlation between the three value types. All three value types are theoretically and conceptually similar and should therefore correlate positively (Schwartz *et al.*, 2001). However, it was found that there were significant negative correlations. For the raw, i.e. non-centred scores, the correlations were significantly positive. This suggests that researchers should only use centred scores on the basis of calculations using all ten value types. This study only used three of them, which were expected to correlate positively to a significant degree. Together with the fact that the scores for value types opposite Self-Direction, Stimulation, and Achievement were not available for the centering procedure, this led to wrongly centred scores. Therefore, the raw scores were used in this study.

8.4 Measures of Correlation

By correlating the scores of Self-Direction, Stimulation, and Achievement with the scores of the survey, potential patterns and links between these values and PKD can be found and described. SPSS for Windows was used to analyse the data (Bryman & Cramer, 2005).

Lee & Soutar (2010) suggested that the SVS does not show the characteristics of an interval scale. As the PVQ is similar to the SVS, the PVQ should arguably be considered to be an ordinal/rank-level scale. In addition to the PVQ part of the online survey, a large number of the remaining questions are also at an ordinal / rank-level rather than at an interval level. This suggests that the Spearman's correlation coefficient or Kendall's tau correlation coefficient should be used instead of the Pearson's product-moment correlation (cf. Field, 2009). Moreover, as the Pearson's correlation coefficient requires data to be both at the interval level and to be normally distributed – both of which is not the case for the data of this study – Pearson's correlation coefficient is not a suitable coefficient to employ here. Both Spearman's correlation coefficient and Kendall's tau correlation coefficient are non-parametric statistics that do not require normality (Field, 2009) and are therefore more suitable to use here. It was decided to use Kendall's tau in the vast majority of the correlation calculations. The reason for this is that it has been suggested that Kendall's tau is a better estimate of the correlation in the population (Howell, 2009). Howell (2009) also argues that Kendall's tau is more robust than Pearson's to extreme levels of non-normality of the data. In sum, given that

- a) Kendall's tau was found to be a better estimate of the correlation in the population,
- b) a large number of variables are at an ordinal rather than at an interval level, and
- c) some of the data reported here are strongly non-normal,

Kendall's tau is likely to be the most appropriate correlation statistics for use in the data analysis of the online survey.

8.5 The Use of Formative Indicators for Externalisation and Combination

The main approach to the development of measures focuses to a large degree on “scale development, whereby items (i.e., observed variables) composing a scale are perceived as reflective (effect) indicators of an underlying construct (i.e., latent variable)” (Diamantopoulos & Winklhofer, 2001, p. 269). An alternative to scale development (cf. Hinkin, 1995) is the creation of formative or causal indicators and requires the creation of an index rather than a scale (Bollen & Lennox, 1991). However, a literature review by Jarvis, MacKenzie & Podsakoff (2003) suggests that a number of studies that used reflective indicators should have used formative indicators instead.

Formative indicators are observed variables, i.e. items that make up an index, and that cause a latent variable. Contrary to that, reflective indicators (effect indicators) are observed variables or indicators that are caused by a latent variable (Diamantopoulos & Winklhofer, 2001). This means that one can view formative indicators as causing rather than being caused by the latent variable (MacCallum & Browne, 1993); the two latent variables with such characteristics in this study are Externalisation and Combination. In other words, formative indicators “are not indicators in the conventional sense as defined in factor analysis or covariance structure modeling. Rather, they are exogenous measured variables that influence the composite defined as a causally indicated variable” (MacCallum & Browne, 1993, p. 534)

Externalisation and Combination are defined in this study as a linear sum of a set of measurements. In other words, these two ECI modes are the dependent variables that are determined by a linear combination of measures of independent variables, namely their respective formative indicators (Bagozzi, 1994).

Unfortunately, guidelines for constructing an index that consists of formative indicators are scarce (e.g. Diamantopoulos & Winklhofer, 2001; Foedermayr, Diamantopoulos & Sichtmann, 2009). Diamantopoulos & Winklhofer (2001) suggest that the following four issues are critical: content specification, indicator specification, indicator collinearity, and external validity. The first three issues will briefly be discussed in this section, whereas the issue of external validity will be addressed in section 8.8 which deals with the validity of the findings.

Regarding content specification, it is important to specify the scope of the latent variable, i.e. the domain of content the index is intended to measure. This is because an index is more abstract and ambiguous than a latent variable measured by reflective indicators (Bagozzi, 1994). Moreover, it is important to cover the full breadth of a construct, otherwise relevant indicators would be excluded (Nunnally & Bernstein, 1994). In this study, Externalisation is defined as “articulating tacit knowledge through dialogue and reflection” (Nonaka, Toyama & Hirata, 2008, p. 19), whereas Combination is defined as “systemizing and applying explicit [sic] knowledge and information” (Nonaka, Toyama & Hirata, 2008, p. 19). These relatively broad definitions mean that the indexes that measure Externalisation and Combination also need to be relatively broad and multidimensional.

Regarding indicator specification, “the items used as indicators must cover the entire scope of the latent variable as described under the content specification” (Diamantopoulos & Winklhofer, 2001, p. 271). However, there are in principle a huge number of indicators for both Externalisation and Combination. Therefore, those indicators were chosen for this study which are likely to account for the most frequently used Externalisation tools or Combination features provided by today’s OLEs. Other indicators can and indeed must be added as OLEs change over time, or indicators used in this study may become obsolete and should then be deleted from the measurement tool.

Regarding indicator collinearity, “high multicollinearity would render the assessment of indicator validity problematic” (Diamantopoulos & Winklhofer, 2001, p. 272). As will be reported in section 8.9, the individual items for both Externalisation and Combination were strongly correlated. Field (2009) suggests that correlation coefficients greater than .8 or .9 suggest that multicollinearity is present. However, the highest item-to-item correlation for Externalisation is .580, whereas the highest item-to-item correlation for Combination is .414, which is far below the threshold of .8. In section 8.9 below which discusses the relationships of the ECI items with their respective aggregates, Table 8.5 and Table 8.6 present the item-to-item correlations of the items for Externalisation and Combination, respectively. Moreover, there is also a more sophisticated way to assess multicollinearity, namely computing the variance inflation factors. If the largest variance inflation factor is greater than 10, then multicollinearity may be an issue (Field, 2009). The variance inflation factors were computed using SPSS. The highest factor for Externalisation is 2.111, and the highest factor for Combination is 1.310. This is far below 10, thus suggesting that multicollinearity is not an issue here. Table 8.2 shows the variance inflation factors.

Table 8.2: Variance inflation factors for Externalisation and Combination items

Item	Mode	Variance inflation factor
Discussion forums	Externalisation	1.392
Blogs	Externalisation	1.570
Wikis	Externalisation	1.237
Instant Messaging	Externalisation	2.111
Chats	Externalisation	1.969
Search engines	Combination	1.070
Types of functions	Combination	1.307
Other learners' opinions	Combination	1.119
Sharing information	Combination	1.310
Working together	Combination	1.264

8.6 Reliability

Cronbach alpha (Cronbach, 1947, 1951) is an index of the internal consistency reliability of a measure (Rogers, Schmitt & Mullins, 2002). It is the most frequently used measure of internal consistency (Graham, 2006) but often misused, as Cronbach alpha is based on the tau-equivalent measurement model which requires several assumptions to be met in order to accurately measure reliability (Graham, 2006). If these assumptions are not met Cronbach alpha underestimates the true reliability of a measure (Graham, 2006). The items for Externalisation and Combination use different units of measurement, i.e. they are not tau-equivalent, and Cronbach alpha would therefore underestimate the true reliability of the scale (Rogers, Schmitt & Mullins, 2002).

Another aspect regarding the reliability of the measures for Externalisation and Combination must be taken into account. As mentioned previously, Externalisation and Combination consist of formative indicators and should be regarded as an index rather than a scale (Diamantopoulos & Winklhofer, 2001). Improving Cronbach alpha for Externalisation and Combination would probably lead to deletions of one or more items. This would not only negatively affect the nature of the index, but run counter the very idea of a formative index. However, the situation is different for Internalisation, because Internalisation is represented by a scale consisting of items that aim to measure exactly the same concept, i.e. a concept that is restricted in conceptual breadth and that is also quite uni-dimensional. Therefore, deleting items from the Internalisation scale in order to improve Cronbach alpha is perfectly acceptable and indeed advisable (Field, 2009). It needs to be pointed out that reliability does not provide a measure of uni-dimensionality, but actually assumes that such uni-dimensionality exists (Graham, 2006). This is at odds with the indexes for Externalisation and Combination, as these deliberately reflect multi-dimensionality. However, for Internalisation the scale items are supposed to represent a uni-dimensional construct, namely the outcome of PKD.

Cronbach alpha is reported for the measures of all three ECI modes. However, for Externalisation and Combination, caution should be taken to correctly interpret the value for Externalisation and Combination in the light of the discussion provided above regarding tau-equivalent measures. The measure for Internalisation is tau-equivalent and therefore it is correct to calculate Cronbach alpha and delete one or more of the five original items for Internalisation in order to improve Cronbach alpha; this was done by checking the output called "Cronbach's Alpha if Item Deleted" which is provided by SPSS (cf. Field, 2009). The Cronbach alpha for Externalisation is .784. This is the highest possible value for Cronbach alpha and cannot be augmented by the deletion of one or more items. Cronbach alpha for Combination is .575. It was argued earlier that both Externalisation and Combination are reflections of formative indicators representing a multidimensional concept rather than a unidimensional one. In such cases Cronbach alpha values can be relatively low, but still be at an acceptable level. Even when Cronbach alpha for Combination were to be improved by deleting two items, it rose only slightly, from .575 to .616. The scale for Internalisation consists of reflective scale items;

contrary to Externalisation and Combination, it is not an index. By deleting two items, Cronbach alpha for the Internalisation scale was raised from .823 to .878.

As Externalisation and Combination are measured by formative indicators that represent various multidimensional constructs, lower values of Cronbach alpha than usual should be accepted. This is analogous to the low values (i.e. Cronbach alpha of 0.4) that Schwartz (2005b) argues are acceptable in the case of the multidimensional value types. Schwartz *et al.* (2001) explicitly point out that researchers should not expect high internal reliabilities for the items that make up a particular value type. This is because the indexes of the value types contain very few items and represent conceptually broad definitions rather than overlapping constructs; this is similar to the characteristics of Externalisation and Combination. In other words, the items for each index were selected to cover the various components of a broad definition and not to describe a narrowly defined construct using nearly redundant measures (Schwartz, 2005b); this idea is analogous to the index for Externalisation and Combination in this study. There is thus a trade-off between capturing a larger breadth of meaning and achieving a high Cronbach alpha: if items represent more similar meanings, Cronbach alpha would be higher, but at the same time the breadth of meaning that is covered by the items would be poorer.

It is argued here, however, that it is essential in this study to cover this breadth of meaning: as Combination functions of OLEs can be very diverse, the items necessarily have to cover multiple dimensions of the Combination construct. In other words, given the multidimensional nature of the Externalisation and Combination modes and the relatively low number of items ($n=5$ for each mode), a reduction in the level of Cronbach alpha is expected. For example, Rojas-Méndez, Davies, Omer, Chetthamrongchai & Madran (2002) also say that Cronbach alpha is not fully relevant for a multidimensional construct, which is the case for Externalisation and Combination. Interestingly, Peterson (1994) points out that Nunnally, in the first edition of his *Psychometric Theory*, proposed that the minimally acceptable score of Cronbach alpha should be in the range of .5 to .6, but this score was raised to .7 in the second edition without providing an explanation. The score of .575 for Combination is thus only marginally lower than the acceptable threshold originally proposed by Nunnally. Furthermore, Ewert & Galloway (2009) cite publications that suggest that a Cronbach alpha of .6 or even as low as .5 are acceptable. This is supported by Forman & Nyatanga (2001) who suggest that a Cronbach alpha of .5 can be acceptable, and Kim, Jin & Swinney (2009) accepted a Cronbach alpha of .59. Considering Schwartz's (2005b) reasoning for acceptable levels of Cronbach alpha when constructs are multidimensional, it can be argued that the Cronbach alpha value of .575 for Combination is acceptable given the multidimensional nature of this construct. In sum, Cronbach alpha as a statistic and threshold levels of it should be used and applied with caution (Cortina, 1993) and always with regard to the characteristics of the research. Table 8.3 below summarises the Cronbach alpha values for the ECI modes.

Table 8.3: Cronbach alpha for the ECI modes

ECI mode	Cronbach alpha
Externalisation	.784
Combination	.575
Internalisation	.878

8.7 Validity

The concept of validity *per se* was already discussed in section 5.6, therefore it is sufficient in this section to discuss how the validity of the results of the online survey was assessed. Referring to Winter (2000), validity is relative to a particular piece of research: not all categories of validity, such as for example discriminant validity, construct validity or face validity, are equally important or indeed feasible to assess.

Assessing validity is particularly difficult when both the measurement tools and the proposed theoretical framework are novel, as is the case in the study presented here. This is why, throughout this thesis, care has been taken to describe in detail how the measurement tools were conceived and on what evidence – both in terms of original data and the literature review – the proposed theoretical framework of a modified SECI model that represents PKD in online learning is based.

Face validity of the measurement tool was established by discussion with, and feedback from, colleagues at the university. Some of the academics were experts in the field of knowledge management/online learning and some were experts in other subject areas. All academics were provided with a definition of the ECI modes and provided feedback for the researcher regarding whether the various items proposed to measure the scores of online learners on Externalisation, Combination, and Internalisation, respectively, indeed measure what they are supposed to measure. In other words, colleagues checked whether the items proposed by the researcher can be considered to be a valid representation of how the ECI modes are defined and conceptualised. Several rounds of modification were carried out and items were either added or dropped or modified.

Content validity is concerned with the ability of a measurement tool to include all of the content of a particular construct. In the case of this study, the question is whether the instrument includes all of the content of Externalisation, Combination, and Internalisation, respectively. The aim of this study is to investigate the impact of personal values on PKD in online learning at a high level, i.e. for online learning in general. This means that for Externalisation and Combination, items have to be created that reflect the typical features of today's OLEs. Based on the literature review, those features and functions that are likely to be part of a typical OLE were chosen as formative indicators.

As the measurement instrument which measures the scores of an individual on Externalisation, Combination and Internalisation in the context of online learning is the first of its kind, concurrent validity, which would show that this tool is valid by comparing it to an already valid test, cannot be established. In other words, the literature review could not find any instrument that actually measures the scores of an individual on the SECI modes in the context of online learning, therefore it was not possible to assess the concurrent validity of the online survey *by comparing it to another instrument*. The ESCIE model discussed above is only marginally similar to the model proposed and there is also no measurement tool that measures any scores on the ESCIE modes – this means that ESCIE cannot be used to assess convergent validity. The Explicitisation mode extends the knowledge creation cycle to the tutor's externalisation of his knowledge (Bryceson, 2007a), something which is not relevant in the research presented here, because this research is concerned only with the individual learner and her PKD. The framework proposed here therefore puts different assumptions on the online learning context and processes, thus making ESCIE *not* a suitable model through which convergent validity may be established.

The high item-to-total and inter-item reliabilities for the items measuring Internalisation suggest that convergent validity of the Internalisation scale is achieved. Moreover, the relatively high correlation between Externalisation and Combination ($\tau=.533$) suggests that both modes are closely interrelated. It can be argued that they represent PKD processes that in turn have an impact on the PKD outcomes as represented by Internalisation – this positive correlation was indeed found in this study.

In terms of assessing external construct validity, Spector (1992) proposes to correlate each indicator to a latent variable which is external to the construct. In this case, the ten indicators for Externalisation and Combination were correlated with Internalisation as a latent variable external to Externalisation and Combination; the ten indicators should theoretically be positively correlated with Internalisation. Arguing similarly to Spector (1992), Diamantopoulos & Winklhofer (2001) suggest that one can get an idea of the quality of the indicators by correlating them to a variable which is external to the index. If the indicators are significantly correlated with that variable, then the indicator should be retained. Conceptually, the individual indicators for Externalisation and Combination should correlate positively with Internalisation, as Internalisation is the dependent variable of Externalisation and Combination. The average Kendall's tau correlation coefficients for both the Externalisation items and the Internalisation items were computed. The value for Externalisation is $\tau=.174$, whereas the value for Combination is $\tau=.203$. Only one item for Externalisation (wikis) and one item for Combination (search engines) were not statistically significantly correlated with Internalisation. However, both of these values were slightly positive ($\tau=.088$ and $\tau=.076$, respectively). It was decided not to drop these two items from the index, because this would have changed the content domain represented by the various items and would also run against the very nature of formative indicators.

In terms of external validity, the heterogeneous sample which was recruited from a wide variety of countries, with considerable diversity in terms of age, gender and other background variables, is likely to represent well typical OLEs of today. Thus, the results of this study are likely to be generalisable to more generic, high-level online learning.

In addition to the various types of validity discussed above, any non-response bias inherent in the sample may also have an impact on the validity of the data. Non-response bias arises when the answers of the respondents are significantly different from the answers of non-respondents (Hudson, Seah, Hite & Haab, 2004). Comparing the answers of early respondents to the answers of late respondents is one way of examining whether non-response is likely to have an impact on the data. As late respondents are likely to resemble non-respondents in terms of their answers, one can argue that if there are no statistically significant differences between early and late respondents, non-response bias is unlikely to be an issue (Dooley & Lindner, 2003). Therefore, a Mann-Whitney test was conducted which compared late respondents, i.e. those respondents who answered the survey after the second and final follow-up e-mail had been sent, with early respondents, i.e. those respondents who answered before the first follow-up e-mail had been sent. No statistically significant differences between these two groups were found. It can be argued, therefore, that non-response bias is unlikely to be an issue in this study.

8.8 Descriptive Statistics of Demographic and Background Variables

8.8.1 Comparison of Characteristics of Data Sets with Different Sample Sizes

The data was downloaded from SurveyMonkey and imported into SPSS. Of the initial 266 cases, 44 were deleted because either

- a) the surveys were virtually empty surveys and only a handful of questions were answered, or
- b) it was obvious that the participants did not try to discriminate their answers when filling in the survey. One example of this is when participants used the anchor point 1, then 2, then 3, then 4, then 5, then 6, then 5, then 4, then 3, then 2, then 1 again, or
- c) in the PVQ questions, the participants used the same anchor at least 9 out of 11 times. The decision to drop such cases was based on Schwartz's (2007) recommendations.

In order to address the objectives of the research project, it was essential that the participants answered the PVQ questions, including stating their gender, as well as answering all fifteen questions representing the ECI modes. Then, of the 222 cases, 48 cases that contained at least one variable with a z-score of more than ± 2.0 were deleted, thus leading to a sample size of 174. A frequently used but yet arbitrary z-score threshold is ± 1.96 , which indicates a non-normal

distribution of data (Field, 2009). It was decided to use the slightly higher threshold level of ± 2.0 , because there were several cases with a z-score of greater than ± 1.96 but still smaller than ± 2.0 . Finally, the Mahalanobis distances for the non-nominal variables were calculated (Field, 2009); these calculations showed that there were no multivariate outliers. Therefore, the sample size after outliers had been removed was ninety ($n=90$).

Then, the data set with $n=174$ and the data set with $n=90$ were compared. It was found that applying a z-score threshold of ± 2.0 meant that some of the answer options now had zero cases. This means that the PKD phenomena that are represented by the data would be falsely represented, i.e. the outliers in this case are no real outliers but instead correctly reflect the 'real world' and therefore the actual use of online learning features.

Therefore, it was decided not to apply a z-score threshold but instead use the data set of $n=174$ in the calculations. As the nature of the answers causes a strong deviation from normal distributions, non-parametric statistical approaches were used because these do not require an assumption of normality (Field, 2009). Moreover, a large number of the questions used an ordinal rather than an interval scale and should therefore be analysed by non-parametric approaches (Field, 2009). Kendall's tau (τ) will be used here as the correlation coefficient because it deals well with ordinal-level data and has been found to provide a better estimate of the correlation in the population than the more widely used Spearman's rho (Howell, 2009).

8.8.2 Cultural Background and Gender Distribution of the Sample

The English-language version of the PVQ has been validated, and this online survey also used the English version of the questionnaire. This researcher received a list of countries and languages for which the PVQ was validated (Schwartz, personal communication). Of the total sample size of 174, 167 participants selected the country which characterises their cultural background best. Out of these 167 respondents, 127 answered that they identify with one of those countries for which the PVQ was validated. This equals 73.0% of the total sample of $n=174$. In order to get a rough estimate of the percentage of native/quasi-native speakers of English, it was assumed that those respondents from countries with English as an official/second official language are native speakers. 113 members of the sample were thus identified, which equals 64.9% of the total sample of $n=174$. As these are reasonably high values, it is unlikely that language difficulties or cultural characteristics have had an adverse effect on the validity of the PVQ scores. Figure 8.1 below shows the percentage distribution in terms of countries. It displays those countries that are represented by at least five respondents, with the remainder of 30.5% classified as 'Others and unknown'.

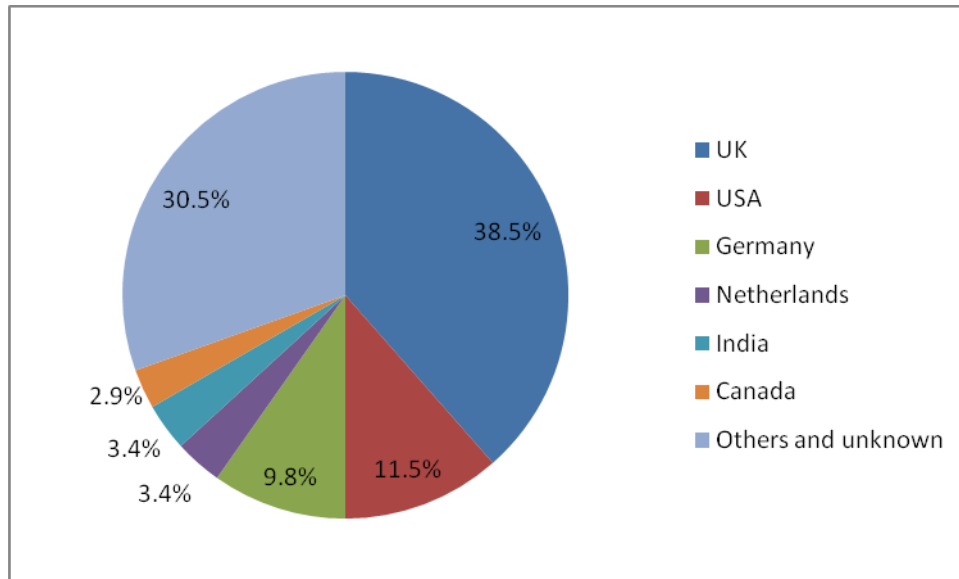


Figure 8.1: Cultural background of the sample

In this sample, females account for 71.8% of the sample ($n=125$), whereas males account for 28.2% ($n=49$). As this uneven gender distribution may induce bias into the analysis, a Mann-Whitney test was done to examine whether there are statistically significant differences between females and males; this is reported in section 8.13.1.

8.8.3 Descriptive Statistics for Externalisation, Combination, and Internalisation

Fifteen items were initially created for the online survey with the aim to measure Externalisation, Combination, and Internalisation. These items were addressed in questions 1-11. The full online survey is reproduced in Appendix C.2. In the following, descriptive statistics and frequency distributions of the fifteen ECI items will be reported.

Questions 1-11 from section 2. 'Personal knowledge development in online learning' encompass the fifteen ECI items; the wording of all questions had already been mentioned in section 8.2.2. The following listing shows which questions relate to which ECI mode:

Externalisation: Questions 4-8

Combination: Questions 1-3 and 9-10

Internalisation: Question 11 (encompassing five items)

Five items representing Externalisation were formulated after a process of re-conceptualising and re-writing the items based on feedback from colleagues and other academics. The mean and standard deviation for the Externalisation items are shown in Table 8.4 below. 'Never' was coded as 1, 'once or twice a month' as 2, 'once or twice a week' as 3, '3-5 times a week' as 4, and 'more than 5 times a week' as 5. This was the same for all five Externalisation items. The

cases that answered 'Not applicable' for a particular item were not included in the calculation of the mean and standard deviation for that item.

Table 8.4: Means and standard deviations for Externalisation, Combination and Internalisation items

Item	ECI mode	Mean	Standard deviation
Discussion forums	Externalisation	2.08	1.026
Blog		1.64	.856
Wiki		1.34	.634
Instant Messaging		2.13	1.270
Online chats		1.98	1.133
Search engines	Combination	4.37	.895
Types of functions		3.45	1.125
Other learners' opinions		3.80	1.020
Sharing information		2.35	1.058
Working together		1.57	.841
Applying knowledge	Internalisation	4.16	.725
Self-assessment		3.97	.804
Acquiring new knowledge		4.15	.722
Improving skills		4.02	.811
Having learned a lot		4.03	.924

The means for all Externalisation items are relatively low and range from 1.34 for wikis to 2.13 for instant messaging. This suggests a surprisingly low use of Externalisation tools. The high number of participants who answered that they never post in discussion forums (n=53) – see Figure 8.2 below – also points to a relatively low level of active interaction, communication, and thus Externalisation, in online learning.

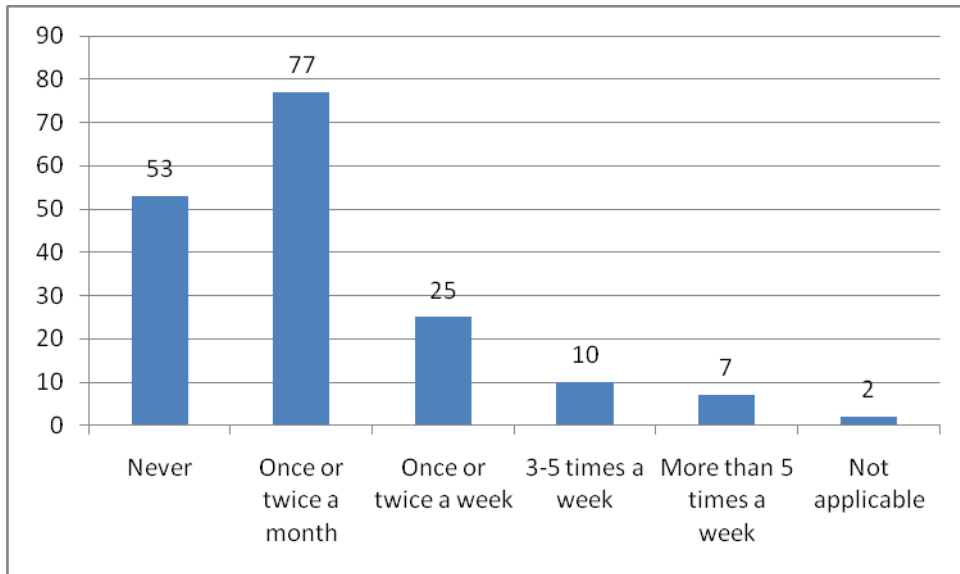


Figure 8.2: Frequency distribution for 'posting in discussion forums'

The frequency distribution reproduced in Figure 8.3 shows a particularly low level of actively contributing to a blog. Discussion forums are likely to be more ubiquitous than blogs and learners are presumably more used to being encouraged to post in discussion forums than to engage in blog writing.

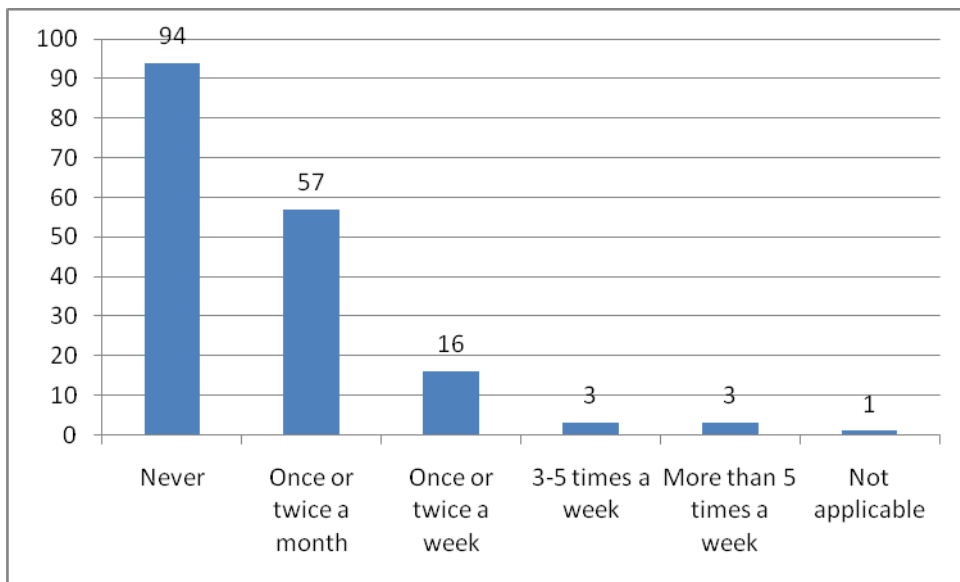


Figure 8.3: Frequency distribution for 'contributing to a blog'

Wikis are the least frequently used means of Externalisation out of the five Externalisation items represented in this study, as shown in Figure 8.4. The relative novelty of wikis as a tool may be one of the reasons for this, as may be the as-of-yet relatively unclear guidelines of how to use wikis in online learning in order to foster PKD.

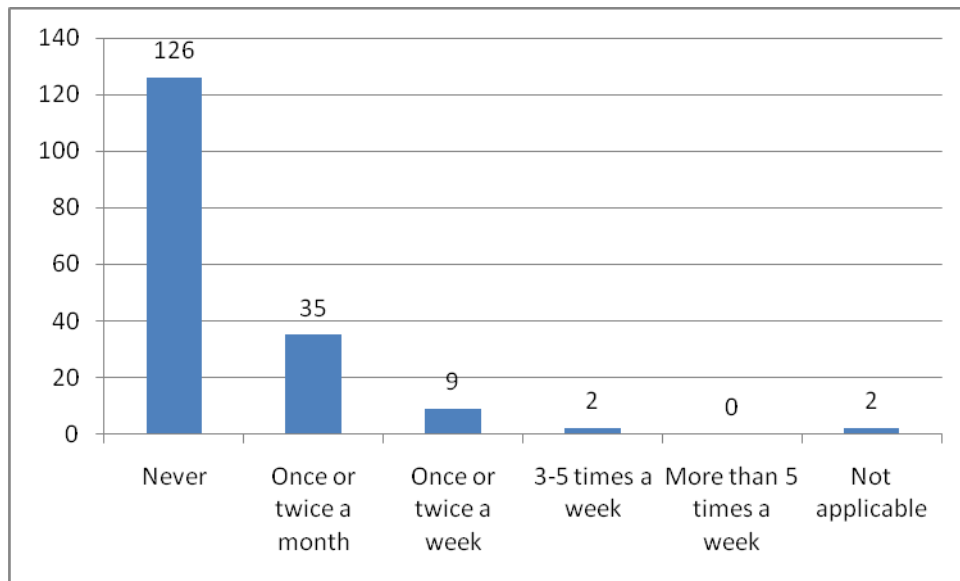


Figure 8.4: Frequency distribution for 'contributing to a wiki'

Interestingly, the highest mean score of all five Externalisation items was found for 'taking part in Instant Messaging', as shown in Figure 8.5. Even though the number of learners never using it is also high, there are a slightly higher number of participants who have answered '3-5 times a week' and 'more than 5 times a week' than was the case for the other Externalisation items.

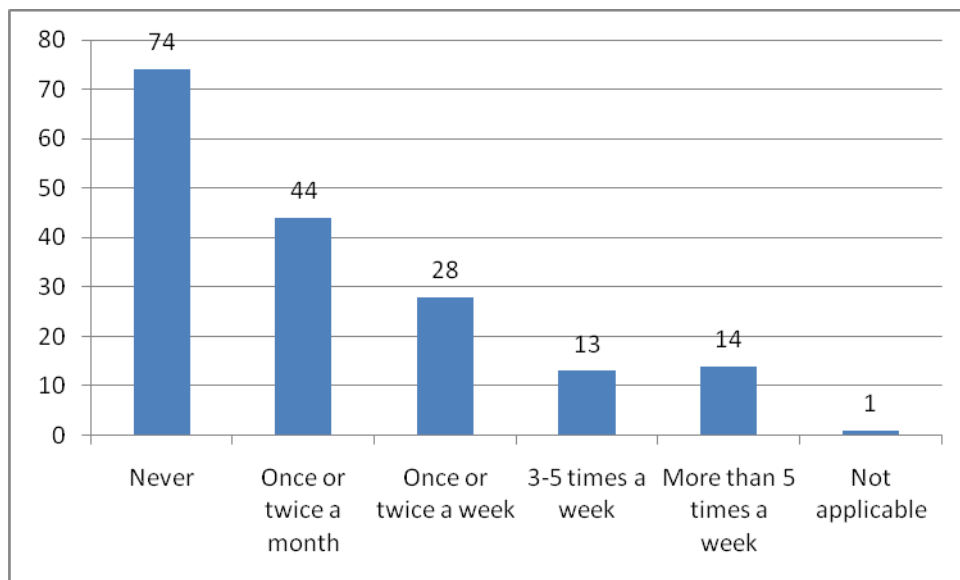


Figure 8.5: Frequency distribution for 'taking part in Instant Messaging'

The frequency distribution for 'taking part in online chats' shown in Figure 8.6 is very similar to 'taking part in Instant Messaging'. In sum, the level of engaging in Externalisation processes of a learner's PKD in online learning is relatively low and a high proportion of learners either do not actively take part in Externalisation processes at all or only to a small degree.

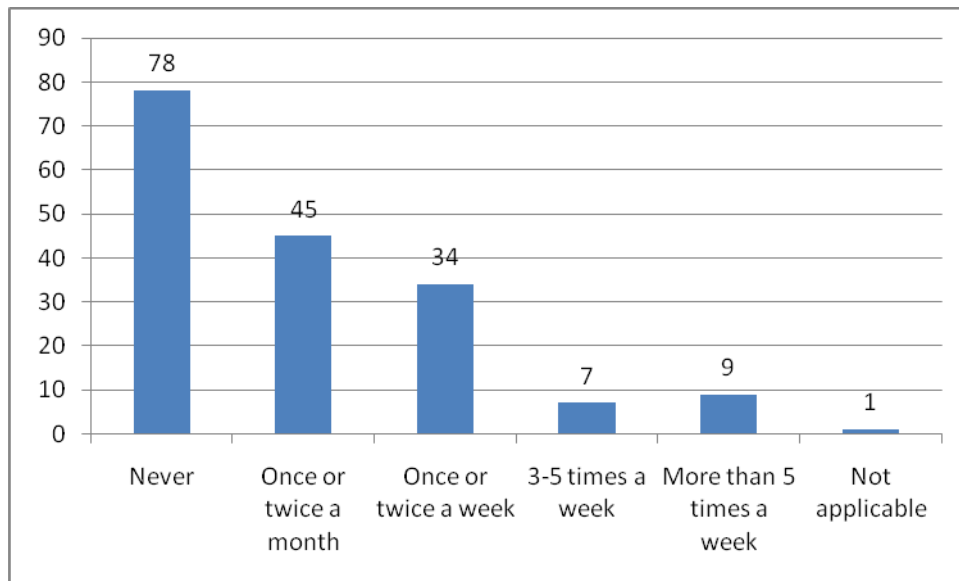


Figure 8.6: Frequency distribution for 'taking part in online chats'

The coding for the five Combination items was similar to the Externalisation items, with a coding of 1 to 5 starting from the lowest to the highest intensity. The wording of the five Combination items for the codes of 1 to 5 differs; the respective wordings are shown as the labels of the various columns in Figures 8.7 to 8.11, respectively. The cases that answered 'Not applicable' for a particular item were not included in the calculation of the mean and standard deviation for that item.

Averaged for all items, the respective means for the Combination items are higher than the means for the Externalisation items. This suggests a more frequent and intensive use of Combination activities and processes in OLEs than is the case for Externalisation. However, the spread of means among the five Combination items is high, ranging from 1.57 for 'working together with other learners' to 4.37 for 'using search engines'.

'Using search engines' seems to be a special case among the Combination items as the intensity of using search engines is very high – as can be seen in Figure 8.7 below. The question was phrased "How often do you use search engines to find materials in addition to those provided by the online learning environment?" This was done to examine the degree of the use of search engines with the objective of widening the learner's search for information in addition to that already provided by the OLE.

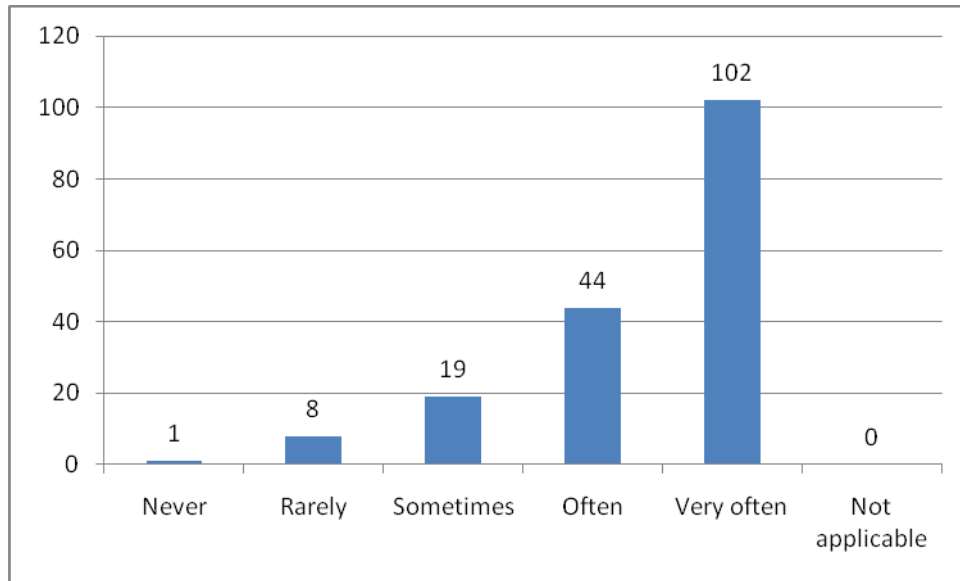


Figure 8.7: Frequency distribution for 'using search engines'

Most learners usually use a variety of different types of functions, as shown in Figure 8.8. This suggests that OLEs often contain a range of functions from which learners can choose. Indeed, learners often seem intent to make use of several types of functions in OLEs rather than selecting only one or two.

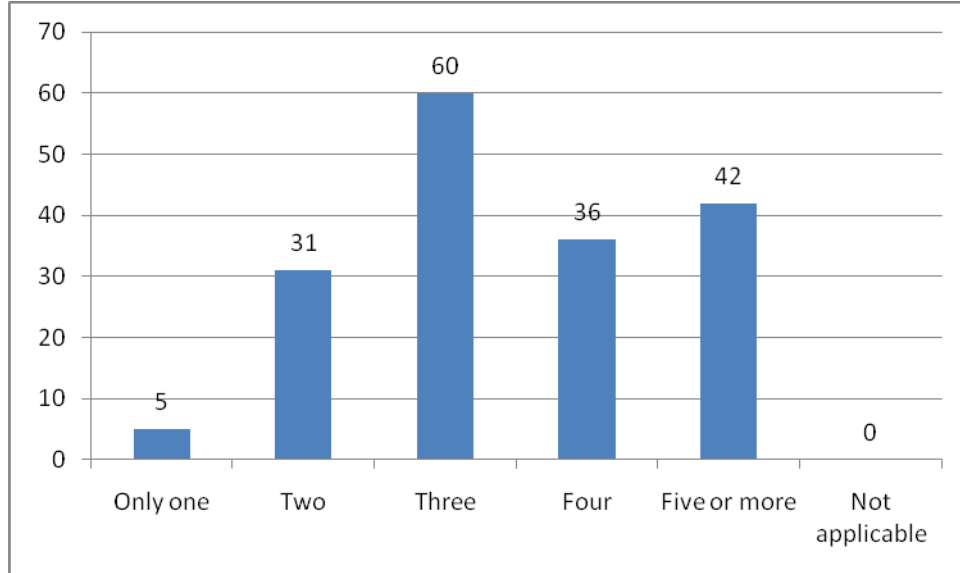


Figure 8.8: Frequency distribution for 'different types of functions'

'Getting to know other learners' opinions' can be regarded as another source of knowledge that can be incorporated into the PKD of an individual. Please note that in Figure 8.9, instead of a scaling of items from low to high intensity, the scaling was from high to low intensity. It shows that the majority of learners value the opinions of other learners on the subject matter that is covered by the OLE.

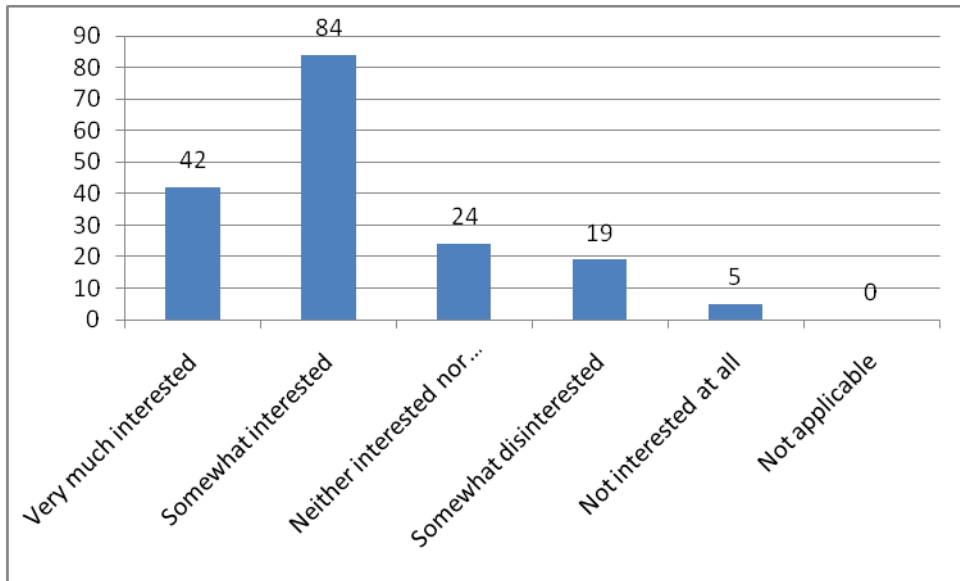


Figure 8.9: Frequency distribution for 'getting to know other learners' opinions'

'Sharing information with other learners' represents an item that denotes an active offering of information, i.e. a 'push-Combination activity'. However, this activity is not very widespread, and 35 learners stated that they never share information with others. The full information can be found in Figure 8.10.

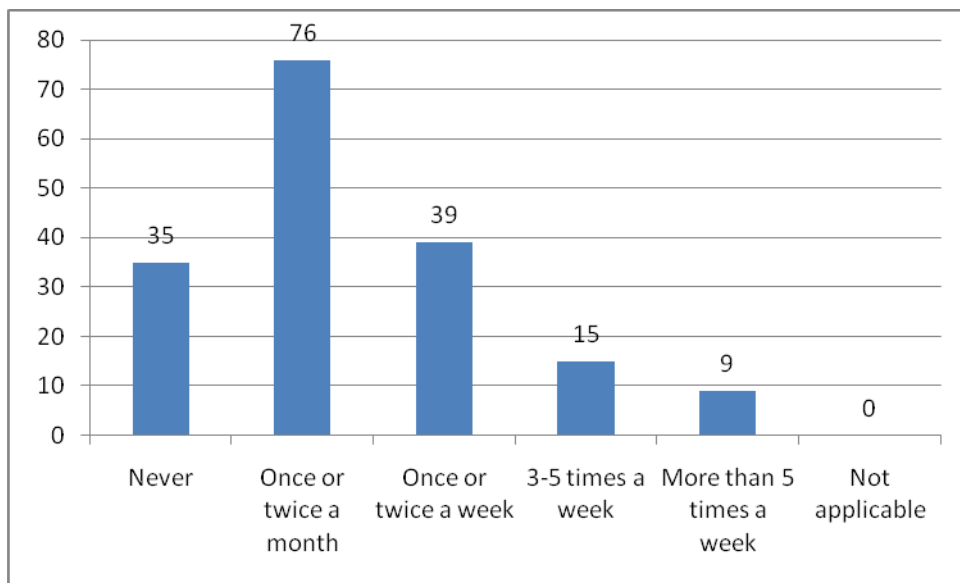


Figure 8.10: Frequency distribution for 'sharing information with other learners'

'Working together with other learners' also represents an item that denotes an active contribution of information, i.e. a 'push-Combination activity'. However, this activity is not very widespread either, and 102 learners stated that they never work together with other learners. The full information can be found in Figure 8.11 below.

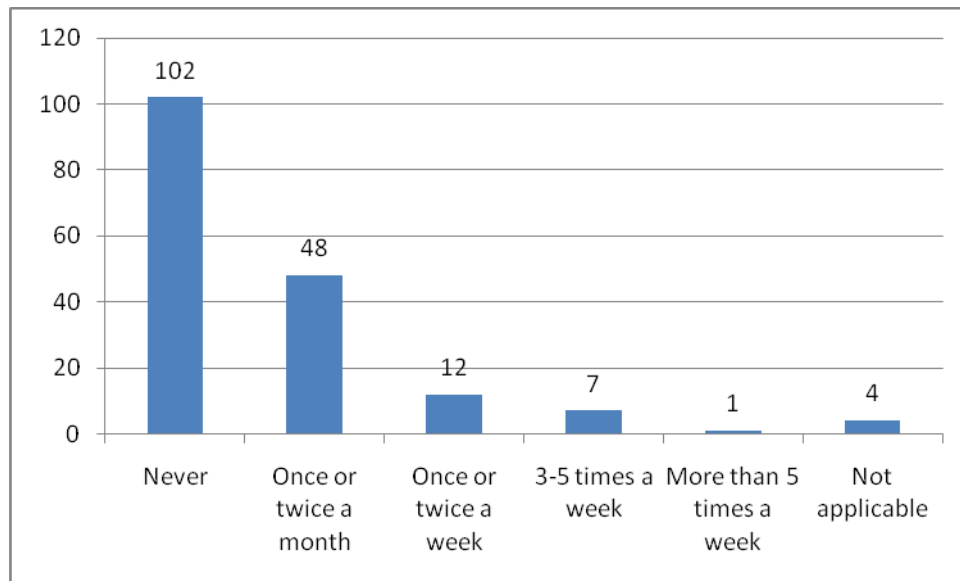


Figure 8.11: Frequency distribution for 'working together with other learners'

The coding for the five Internalisation items was as follows: 'strongly disagree' was coded as 1, 'disagree' as 2, 'neither agree nor disagree' as 3, 'agree' as 4, and 'strongly agree' as 5. This was the same for all five Internalisation items. 'Not applicable' was never selected by the participants for any of the five items.

The median for all five Internalisation items was 4 (agree). Moreover, the means were very similar and ranged from 3.97 to 4.16. The means and standard deviations of the Internalisation items are also displayed in Table 8.4 above. The frequency distributions for all five items is also very similar; they are shown in Figure 8.12, Figure 8.13, Figure 8.14, Figure 8.15, and Figure 8.16, respectively. Because the frequency distributions of all five items are very similar, they will not be discussed one by one. However, what is common for all items is that learners seem to be mostly satisfied by their PKD outcomes, i.e. Internalisation, that the OLE provides them with. It is also encouraging for tutors to know that the maximum number of learners who answered that they either 'disagree' or 'strongly disagree' with a given statement about their PKD outcomes was merely $n=12$ or 6.9%, for the item 'having learned a lot'.

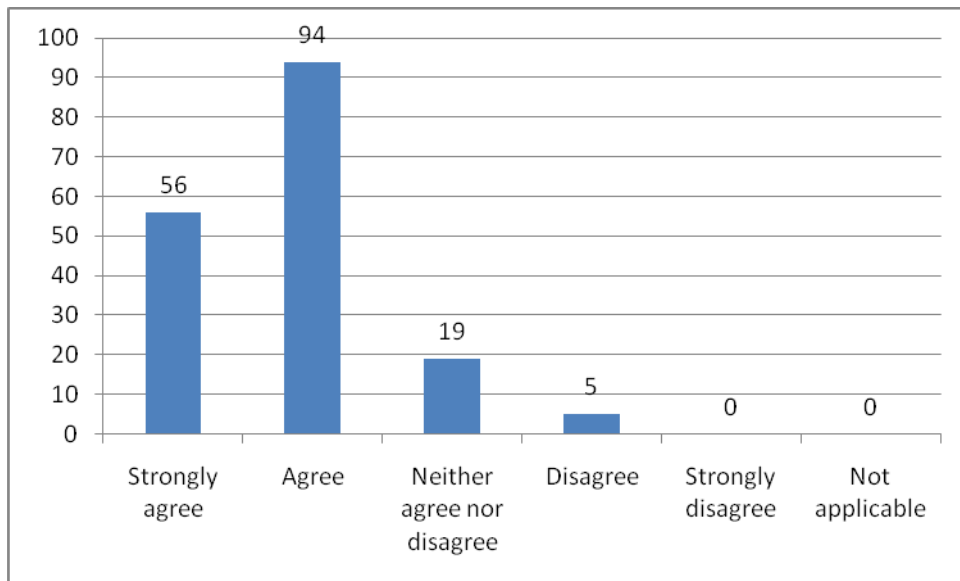


Figure 8.12: Frequency distribution for 'applying knowledge'

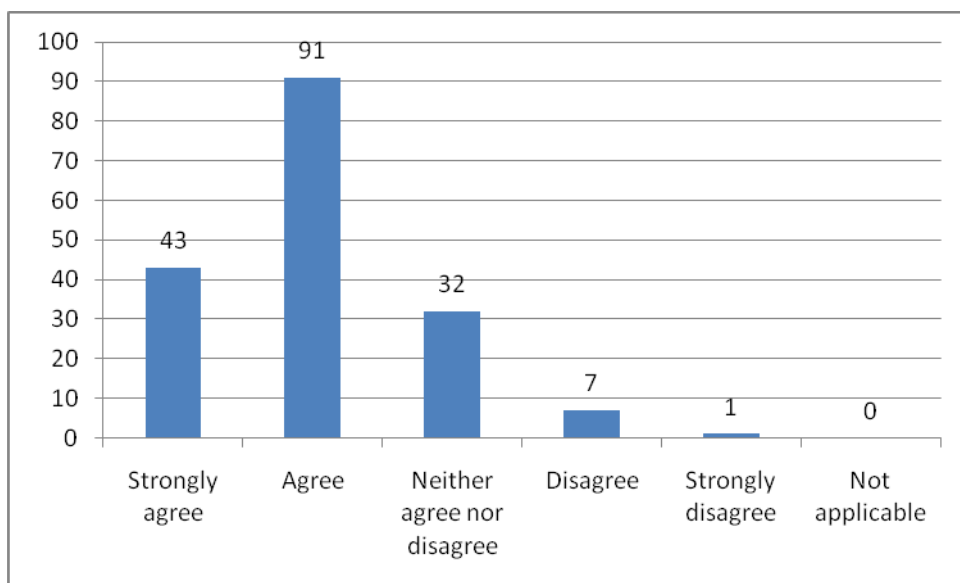


Figure 8.13: Frequency distribution for 'self-assessment helping to learn'

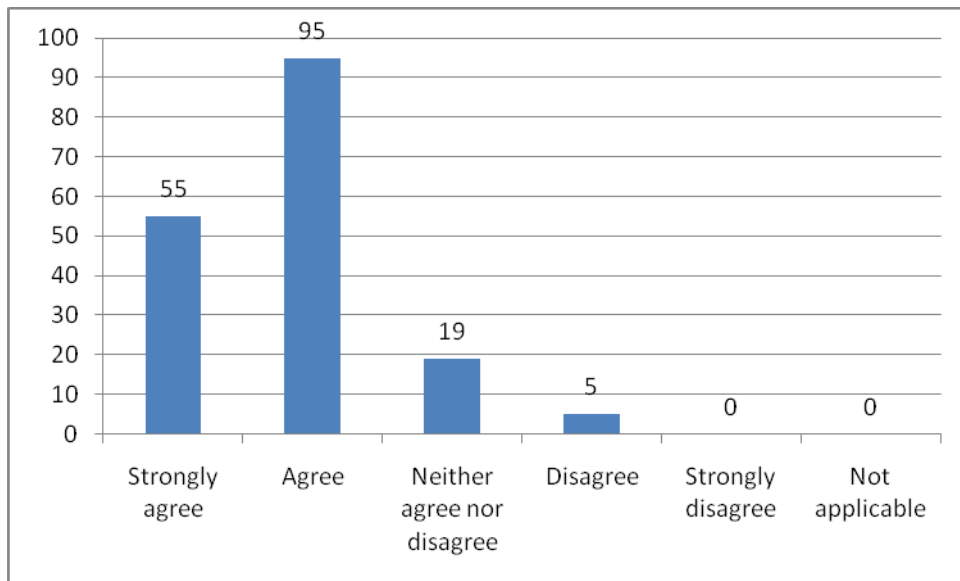


Figure 8.14: Frequency distribution for 'acquiring new knowledge'

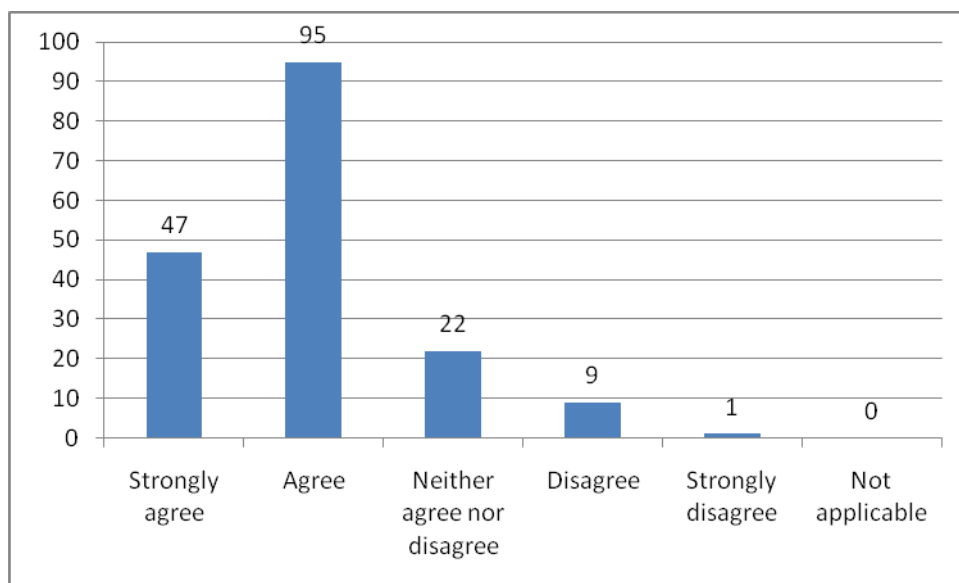


Figure 8.15: Frequency distribution for 'improving skills'

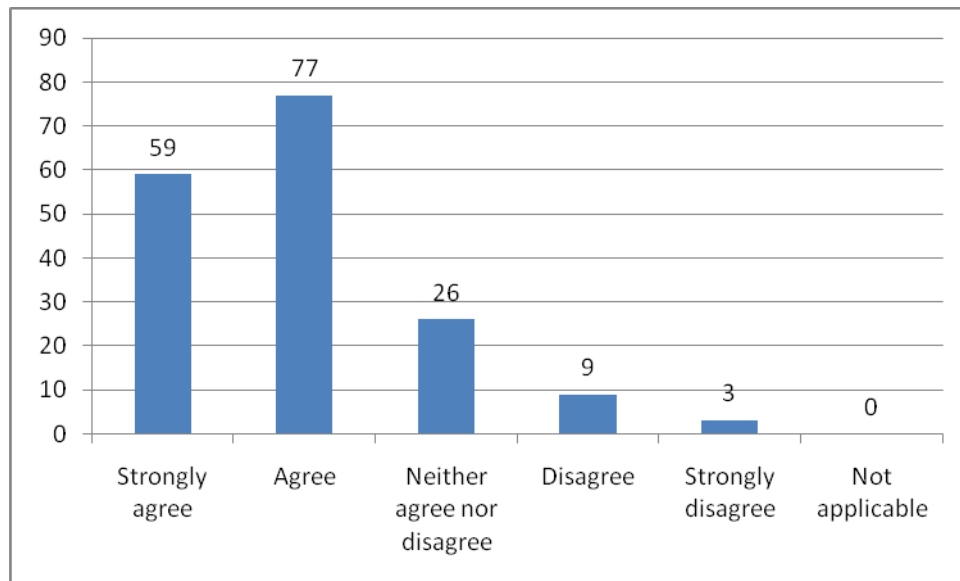


Figure 8.16: Frequency distribution for 'having learned a lot'

This section on descriptive statistics will now be followed by sections on issues concerning the normality of data and the type of correlations used in this research. After that, the impact of personal values and of other background variables on the three ECI modes will be investigated.

8.9 Relationships between Externalisation, Combination and Internalisation Items and Their Aggregates

The intercorrelations among the ECI items and their respective aggregates will be examined in this section. As mentioned previously, Kendall's tau was used as the correlation coefficient. Table 8.5 shows the interrelationships between the items for Externalisation and the aggregate value for the Externalisation index. All correlations are positive and significant at the $p < .001$ level (2-tailed). From the data set of $n=174$, the answers of the three participants who answered 'Not applicable' to one or more of the questions representing the ECI items were deleted from the data set which is subsequently used for statistical analyses. Thus, $n=171$ is usually the number of cases in the tables reported henceforth, and the number of cases is only displayed in the tables if it differs from $n=171$.

Table 8.5: Interrelationships between Externalisation items and their aggregate

		Discussion forum	Blog	Wiki	Instant Messaging	Online chats	Externalisation
Discussion forum	Correlation Coefficient	1.000	.508**	.271**	.292**	.278**	.586**
Blog	Correlation Coefficient	.508**	1.000	.318**	.397**	.406**	.609**
Wiki	Correlation Coefficient	.271**	.318**	1.000	.302**	.313**	.437**
Instant Messaging	Correlation Coefficient	.292**	.397**	.302**	1.000	.580**	.692**
Online chats	Correlation Coefficient	.278**	.406**	.313**	.580**	1.000	.672**
Externalisation	Correlation Coefficient	.586**	.609**	.437**	.692**	.672**	1.000

** . Correlation is significant at the 0.01 level (2-tailed).

The lowest inter-item correlation is $\tau=.271$ for the discussion forum – wiki relationship, whereas the highest is $\tau=.580$ for the instant messaging – online chats relationship. The wiki item has the lowest inter-item correlations throughout, suggesting that a wiki is a somewhat distinct feature that stands slightly apart from the other four Externalisation items. However, the wiki item must not be seen as separate from the Externalisation index as the inter-item correlation is still significant and relatively high. The item-to-total, i.e. item-to-Externalisation aggregate correlation is also very high, ranging from $\tau=.437$ for the wiki item to $\tau=.692$ for the instant messaging item. Given the very high item-to-aggregate correlations, the chosen items are very likely to represent

a similar phenomenon. Table 8.6 shows the interrelationships between the items for Combination and the aggregate value for the Combination index. The significance levels are also displayed.

Table 8.6: Interrelationships between Combination items and their aggregate

		Search engines	Types of functions	Interest in other learners' opinions	Sharing information with other learners	Working together with other learners	Combination
Search engines	Correlation Coefficient	1.000	.168*	-.019	.041	.057	.309**
	Sig. (2-tailed)	.	.011	.773	.537	.414	.000
Types of functions	Correlation Coefficient	.168*	1.000	.230**	.321**	.277**	.624**
	Sig. (2-tailed)	.011	.	.000	.000	.000	.000
Interest in other learners' opinions	Correlation Coefficient	-.019	.230**	1.000	.149*	.215**	.429**
	Sig. (2-tailed)	.773	.000	.	.022	.001	.000
Sharing information with other learners	Correlation Coefficient	.041	.321**	.149*	1.000	.414**	.550**
	Sig. (2-tailed)	.537	.000	.022	.	.000	.000
Working together with other learners	Correlation Coefficient	.057	.277**	.215**	.414**	1.000	.560**
	Sig. (2-tailed)	.414	.000	.001	.000	.	.000
Combination	Correlation Coefficient	.309**	.624**	.429**	.550**	.560**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The spread of the inter-item correlations for the Combination items is larger than for the Externalisation items. Only one was negative, albeit only very marginally, namely the correlation between 'search engines' and 'interest in other learners' opinions' with $\tau = -.019$. The strongest correlation was found between 'working together with other learners' and 'sharing information with other learners' with $\tau = .414$.

All items are significantly positively correlated with the Combination aggregate, with coefficients ranging from $\tau = .309$ for 'search engines' and $\tau = .624$ for 'types of functions'. It has to be stated again here that all items for both Externalisation and Combination should be kept as indicators for the Externalisation index and Combination index, respectively. The individual items represent separate PKD processes that all add to the aggregate value of either Externalisation

or Combination; it is not the objective of the items to represent the same uni-dimensional construct. Table 8.7 shows the interrelationships between the items for Internalisation and the aggregate value for the Internalisation index. All correlations are significant at the $p < .001$ level (2-tailed).

Table 8.7: Interrelationships between Internalisation items and their aggregate

		Applying knowledge	Functions for self-assessment	Acquiring new knowledge	Improving skills	Having learned a lot	Internalisation
Applying knowledge	Correlation Coefficient	1.000	.278**	.425**	.409**	.469**	.458**
Functions for self-assessment	Correlation Coefficient	.278**	1.000	.352**	.304**	.298**	.329**
Acquiring new knowledge	Correlation Coefficient	.425**	.352**	1.000	.710**	.599**	.782**
Improving skills	Correlation Coefficient	.409**	.304**	.710**	1.000	.662**	.828**
Having learned a lot	Correlation Coefficient	.469**	.298**	.599**	.662**	1.000	.824**
Internalisation	Correlation Coefficient	.458**	.329**	.782**	.828**	.824**	1.000

For Internalisation, the inter-item correlations range from $r = .278$ for 'applying knowledge' and 'functions for self-assessment' to $r = .710$ for 'improving skills' and 'acquiring new knowledge'. The item-to-aggregate correlations were also high, ranging from $r = .329$ to $r = .828$. It has to be noted that the aggregate for Internalisation is calculated on the basis of taking into account only the following three items:

- 'acquiring new knowledge'
- 'improving skills', and
- 'having learned a lot'

This is because the Internalisation scale is regarded as the dependent variable of Externalisation and Combination and a mean scale was used for Internalisation with the aim of improving Cronbach alpha, something which was achieved by deleting two of the items, namely 'applying knowledge' and 'functions for self-assessment'.

Table 8.8 below shows the relationships between the aggregates of the three ECI modes. All correlations are highly significant at the $p < .001$ level. The strongest correlation is between Externalisation and Combination with $r = .533$. The effect size of 'Externalisation as a PKD

process' on 'Internalisation as a PKD outcome' is lower than the effect size of 'Combination as a PKD process' on 'Internalisation as a PKD outcome' ($\tau=.226$ versus $\tau=.309$). This suggests that Combination processes have a stronger impact on Internalisation, i.e. PKD outcomes, than Externalisation processes have on Internalisation. However, the difference in effect size is not substantial.

Table 8.8: Interrelationships of the ECI modes – correlation coefficients

	Externalisation	Combination	Internalisation
Externalisation	—	.533**	.226**
Combination	.533**	—	.309**
Internalisation	.226**	.309**	—

Moreover, the strong correlation between Externalisation and Combination ($\tau=.533$) suggests that Externalisation and Combination could be interpreted as the two constituents of one latent factor that shares some characteristics with both Externalisation and Combination. It is argued here that the main shared characteristic is that both modes deal with 'PKD processes' as opposed to 'PKD outcomes' which are represented by Internalisation.

8.10 Personal Values and ECI Modes

This section addresses one of the main objectives of this research, namely to examine the relationships between Self-Direction, Stimulation, and Achievement and the three ECI modes. Table 8.9 below shows the correlation coefficients and significance values (2-tailed) for the relationships between Self-Direction, Stimulation, and Achievement and the five Externalisation items. Except for the correlation between Achievement and 'discussion forums' and all three correlations involving 'wiki', all correlations are positive and statistically significant at the $p<.05$ (2-tailed) or even at the $p<.01$ (2-tailed) levels. Self-Direction and Stimulation show a similar effect size on the five Externalisation items. However, for Achievement, all correlation coefficients are lower compared to those for Self-Direction and Stimulation.

Table 8.9: Personal values and Externalisation items

	Discussion forums	Blog	Wiki	Instant Messaging	Online chats
Self-Direction	.137*	.217**	.081	.188**	.185**
Sig. (2-tailed)	.025	.001	.206	.002	.002
Stimulation	.151*	.192**	.082	.154*	.206**
Sig. (2-tailed)	.013	.002	.200	.010	.001
Achievement	.032	.163**	.026	.117*	.126*
Sig. (2-tailed)	.599	.009	.687	.049	.035

Table 8.10 shows the correlation coefficients and significance values (2-tailed) for the relationships between Self-Direction, Stimulation, and Achievement and the five Combination items. All five items are positively correlated with both Self-Direction and Stimulation at the $p < .05$ (2-tailed) or even at the $p < .01$ (2-tailed) levels. The exception is Achievement, which is not statistically significantly correlated with any of the five Combination items. As was the case for Externalisation, both Self-Direction and Stimulation show similar correlations with each of the five items, thus suggesting that both value types show a roughly similar effect size on the Combination items. Analogous to the findings for the Externalisation mode, Achievement shows the lowest correlations with the Combination items, none of which is statistically significant. Therefore, Achievement is unlikely to have an effect on the Combination mode.

Table 8.10: Personal values and Combination items

	Search engines	Types of functions	Being interested in other learners' opinions	Sharing information with other learners	Working together with other learners
Self-Direction	.153*	.209**	.135*	.137*	.174**
Sig. (2-tailed)	.014	.000	.027	.024	.005
Stimulation	.141*	.178**	.135*	.159**	.128*
Sig. (2-tailed)	.023	.003	.026	.008	.040
Achievement	.046	.038	.116	.034	.074
Sig. (2-tailed)	.456	.523	.054	.570	.233

Table 8.11 below shows the correlation coefficients and significance values (2-tailed) for the relationships between Self-Direction, Stimulation, and Achievement and the five Internalisation items. For information purposes, the coefficients for the two items that had been dropped in

order to improve Cronbach alpha are listed here as well. All but four correlation coefficients show a statistically significant positive correlation between the value types and the Internalisation items. The four correlations that do *not* are:

- Self-Direction and 'self-assessment'
- Stimulation and 'applying knowledge'
- Stimulation and 'self-assessment', and
- Achievement and 'having learned a lot'

Table 8.11: Personal values and Internalisation items

	Applying knowledge	Self-assessment	Acquiring new knowledge	Improving skills	Having learned a lot
Self-Direction	.222**	.062	.178**	.149*	.163**
Sig. (2-tailed)	.000	.315	.005	.016	.008
Stimulation	.107	-.003	.206**	.150*	.132*
Sig. (2-tailed)	.086	.960	.001	.015	.031
Achievement	.128*	.122*	.161**	.158**	.114
Sig. (2-tailed)	.039	.046	.009	.010	.059

Finally, the relationships between the personal values and the aggregate, i.e. averaged, scores for the three ECI modes are shown in Table 8.12 using the Kendall's tau correlation coefficients. The significance levels are also displayed. The reader is reminded that the aggregate scores for Externalisation and Combination are based on an index, whereas for Internalisation, the mean is used based on those three items that allow for the highest possible Cronbach alpha.

Table 8.12: Personal values and aggregates of Externalisation, Combination, and Internalisation

	Externalisation	Combination	Internalisation
Self-Direction	.207**	.223**	.178**
Sig. (2-tailed)	.000	.000	.002
Stimulation	.194**	.198**	.165**
Sig. (2-tailed)	.001	.000	.004
Achievement	.131*	.081	.143*
Sig. (2-tailed)	.018	.145	.012

The following observations can be made:

- All correlations are positive.
- All correlations for both Self-Direction and Stimulation with all three ECI modes are statistically significant at the $p < .01$ level (2-tailed).
- Two out of three correlations for Achievement (the exception being the correlation with Combination) are statistically significant at the $p < .05$ level (2-tailed).
- Self-Direction shows the strongest effect size of all three value types on all three ECI modes. Stimulation shows a slightly weaker effect size on all three ECI modes than Self-Direction. Finally, Achievement shows the lowest effect size on all three ECI modes.
- These results support Bardi & Schwartz's (2003) findings that Stimulation relates strongly to behaviour, Self-Direction moderately, and Achievement only marginally.

It has to be emphasised that Table 8.12 above summarises one of the core findings of this study. It could be shown that there is a positive and statistically significant relationship between Self-Direction, Stimulation, and Achievement and all three ECI modes, with the exception of the Achievement-Combination relationship. Moreover, Self-Direction has the strongest impact, whereas Achievement has the lowest impact, and Stimulation ranking between them.

The following statements about the research hypotheses postulated earlier can now be made:

H.1: Self-Direction is positively correlated with Externalisation.

H.1 is supported. Self-Direction is positively correlated with Externalisation with $\tau = .207$ at the $p < .01$ level.

H.2: Self-Direction is positively correlated with Combination.

H.2 is supported. Self-Direction is positively correlated with Combination with $\tau = .223$ at the $p < .01$ level.

H.3: Self-Direction is positively correlated with Internalisation.

H.3 is supported. Self-Direction is positively correlated with Internalisation with $\tau = .178$ at the $p < .01$ level.

H.4: Stimulation is positively correlated with Externalisation.

H.4 is supported. Stimulation is positively correlated with Externalisation with $\tau = .194$ at the $p < .01$ level.

H.5: Stimulation is positively correlated with Combination.

H.5 is supported. Stimulation is positively correlated with Combination with $\tau = .198$ at the $p < .01$ level.

H.6: Stimulation is positively correlated with Internalisation.

H.6 is supported. Stimulation is positively correlated with Internalisation with $\tau=.165$ at the $p<.01$ level.

H.7: Achievement is positively correlated with Externalisation.

H.7 is supported. Achievement is positively correlated with Externalisation with $\tau=.131$ at the $p<.05$ level.

H.8: Achievement is positively correlated with Combination.

H.8 is *not* supported. Even though a positive correlation of $\tau=.081$ was found, it is *not* statistically significant with a significance level of $p=.145$ (2-tailed).

H.9: Achievement is positively correlated with Internalisation.

H.9 is supported. Achievement is positively correlated with Internalisation with $\tau=.143$ at the $p<.05$ level.

8.11 An Adaptation of the SECI Model for PKD in Online

Learning: The EC-I Model

A definition is a convention that serves a particular purpose by clearly including some phenomena and at the same time excluding others so that the analytical focus of a piece of research becomes clear and as unambiguous as possible (Schneider, 2007). For the purposes of the SECI model, its three main aspects have to be examined before an appropriate definition of knowledge in this context can be achieved. The three aspects – the SECI modes, the concept of *ba*, and knowledge assets – and their impact on defining knowledge are discussed one by one. For a detailed explanation of these three aspects see section 2.3.

Regarding the SECI modes, it was argued before that Socialisation in its definition by Nonaka and colleagues is only relevant and valid in very specific environments such as telepresence environments; Socialisation is therefore not included in the modified SECI model. It is suggested that Externalisation and Combination should be identified as PKD processes. It was also found in the research that these two modes are strongly correlated in the context of online learning. Finally, Internalisation represents the PKD outcomes and can be regarded as the dependent variable of both Externalisation and Combination.

Regarding *ba*, it is argued here that the various stakeholders involved in online learning, particularly tutors and students, can create an enabling context (cf. von Krogh, Ichijo & Nonaka, 2000) so that an effective, meaningful and culturally situated knowledge development can take place. The context is co-created by the tutor, the students, but also by the OLE and its embeddedness in the 'here and now' of the learning situation. Tutors can enable that context rather than manage or pre-determine it. Different OLEs allow for different *ba* to appear. For example, some OLEs are merely repositories for documents, whereas others focus on

interaction and communication of all kinds. *Ba* is also determined by the learner cohort that interacts within the various *ba*. Certain types of interaction or non-interaction will emerge in the *ba*, and the learners are likely to prefer some *ba* to others. Finally, the tutor and her preferences in instructional design and her confidence in using a particular OLE will also determine which features she will use, which in turn activates some *ba* and largely disregards others.

Regarding knowledge assets, it is suggested that the various 'pieces of content', such as text documents, audio files, video files, discussion forums, chats, blogs, wikis, hyperlinks to other websites, etc., constitute the knowledge assets of an OLE. The learners are usually free to choose which knowledge assets they want to use. If the level of engagement with the various knowledge assets becomes higher or a larger variety of knowledge assets is used, then one can speculate that the score for Externalisation and/or Combination is likely to rise accordingly.

In their study, Duan, He, Feng, Li & Fu (2010) grouped the items that they had originally assigned to a category called 'relative advantage of e-learning' into two categories instead, namely: a category called 'relative advantages of e-learning in terms of learning process' and a category called 'relative advantage in terms of learning outcomes', thus distinguishing between processes and outcomes. This supports the findings reported here, namely that Externalisation and Combination represent PKD processes, whereas Internalisation represents PKD outcomes. Figure 8.17 below depicts one of the central outcomes of the research presented here, namely the so-called EC-I model. It has to be pointed out that the EC-I model only applies to the context of PKD in online learning and not to organisational knowledge creation or any other context. The model contains the following two main elements:

1. Externalisation and Combination – or PKD processes, and
2. Internalisation – or PKD outcomes.

Within the first main element of the model, the instructional design of an OLE can be planned, implemented, and finally enabled. This is represented by the yellow box containing both Externalisation and Combination; these two modes are also closely linked with each other. Finally, the end results, i.e. the PKD outcomes, are then reached at the end of the process, depicted in the green box. Externalisation and Combination, i.e. PKD processes, impact on Internalisation; this is represented by the two arrows pointing towards Internalisation.

Neither *ba* nor knowledge assets feature as separate aspects of the EC-I model. It is suggested here that knowledge assets influence PKD processes because the learners may prefer one type of knowledge assets, for example videos, which in turn may impact on the Combination mode. Knowledge assets can, however, be conceptually linked to cultural situatedness. *Ba* forms part of the theoretical framework of PKD in OLEs as depicted in Figure 8.18, but does not feature separately in the EC-I model. This is because the EC-I model is restricted to the processes and outcomes of PKD and, contrary to the VCS-ECI framework depicted in Figure 8.18, does not take into account further contextual variables such as personal values.

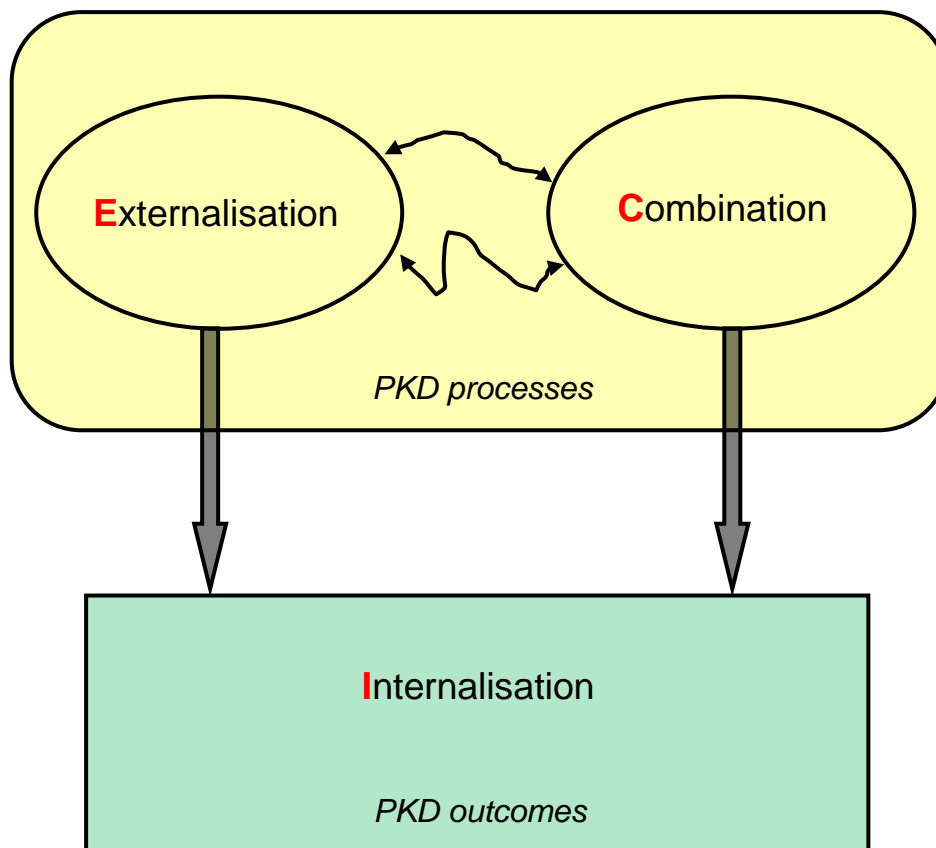


Figure 8.17: The EC-I model: A model of PKD in online learning

The next section provides an overview of the varying salience and impact of personal values on PKD in online learning, and of the cultural situatedness of developing one's knowledge.

8.12 Personal Values and Cultural Situatedness and Their Effect on PKD in OLEs: The VCS-ECI Framework

Figure 8.18 below depicts one of the core contributions of this study, namely the VCS-ECI framework. This framework takes into account the findings of the exploratory study, the Delphi study, and the online survey, as well as the literature review. Even though the framework encompasses more than personal values and cultural situatedness, these two concepts are central to the framework and their relationships with the ECI modes were empirically tested. This is why the framework is called VCS-ECI: 'V' represents personal values, 'CS' represents cultural situatedness, and 'ECI' represent the three ECI modes. The five main parts of the framework are now described:

1. Self-Direction, Stimulation, and Achievement: The Delphi study identified Self-Direction, Stimulation, and Achievement as *particularly relevant* to PKD in the context of online learning. Referring to the results of the online survey, the blue, green and red arrows show that a positive and statistically significant relationship was found between the personal values and the three ECI modes, with the exception of the Achievement-Combination relationship, which showed a slightly positive correlation but which was not statistically significant; this relationship is therefore not depicted in the model.
2. SECI modes: The SECI model was used as the perspective from which the processes and outcomes of PKD were investigated. The SECI modes do not necessarily have to be traversed in the order specified in the original definition. Modes can be jumped and the order of modes can be random, depending on the knowledge development process observed. Not all four SECI modes have to be involved in knowledge development. It was suggested that, in the context of online learning, Socialisation is not particularly relevant. Therefore, note that Socialisation is depicted outside of the box, as this mode is usually not applicable to online learning as it requires a strong face-to-face element that can only exist in some telepresence scenarios and even then only to a relatively small degree. The black arrows that link the various ECI modes with each other show that all three ECI modes are positively correlated at a statistically significant level. The arrows involving Socialisation are dotted arrows because these relationships were not empirically tested as Socialisation is likely to be not relevant in the vast majority of OLEs. In addition to that, it is argued here that Externalisation and Combination are PKD processes, whereas Internalisation represents the outcomes of PKD. In other words, Externalisation and Combination can be regarded as the independent variables that determine Internalisation, which is the dependent variable.
3. Cultural situatedness: This encompasses the contextual and situational characteristics of a) the OLE, b) the individual learners themselves, and c) other factors. It has an impact on both the SVS value types and on ECI. By contrast, *ba* only has an impact on ECI but not on values. The various aspects of cultural situatedness change the salience and impact of the SVS value types, as well as the salience and impact of the PKD processes and outcomes as described by the (S)ECI model.
4. *Ba*: *Ba* is defined as separate from 'cultural situatedness'. *Bas* are merely the places where PKD occurs. *Ba* affects the ECI modes and PKD, but not the values. By contrast, 'cultural situatedness' has an impact on both the ECI modes and the personal values. The various *bas* of the OLE impact on PKD as described by ECI.
5. Worldview: Worldview represents the state of knowledge of an individual at a particular point in time when PKD is being investigated. It encompasses all knowledge and skills of an individual and her understanding of the world and the immediate environment at that point in time.

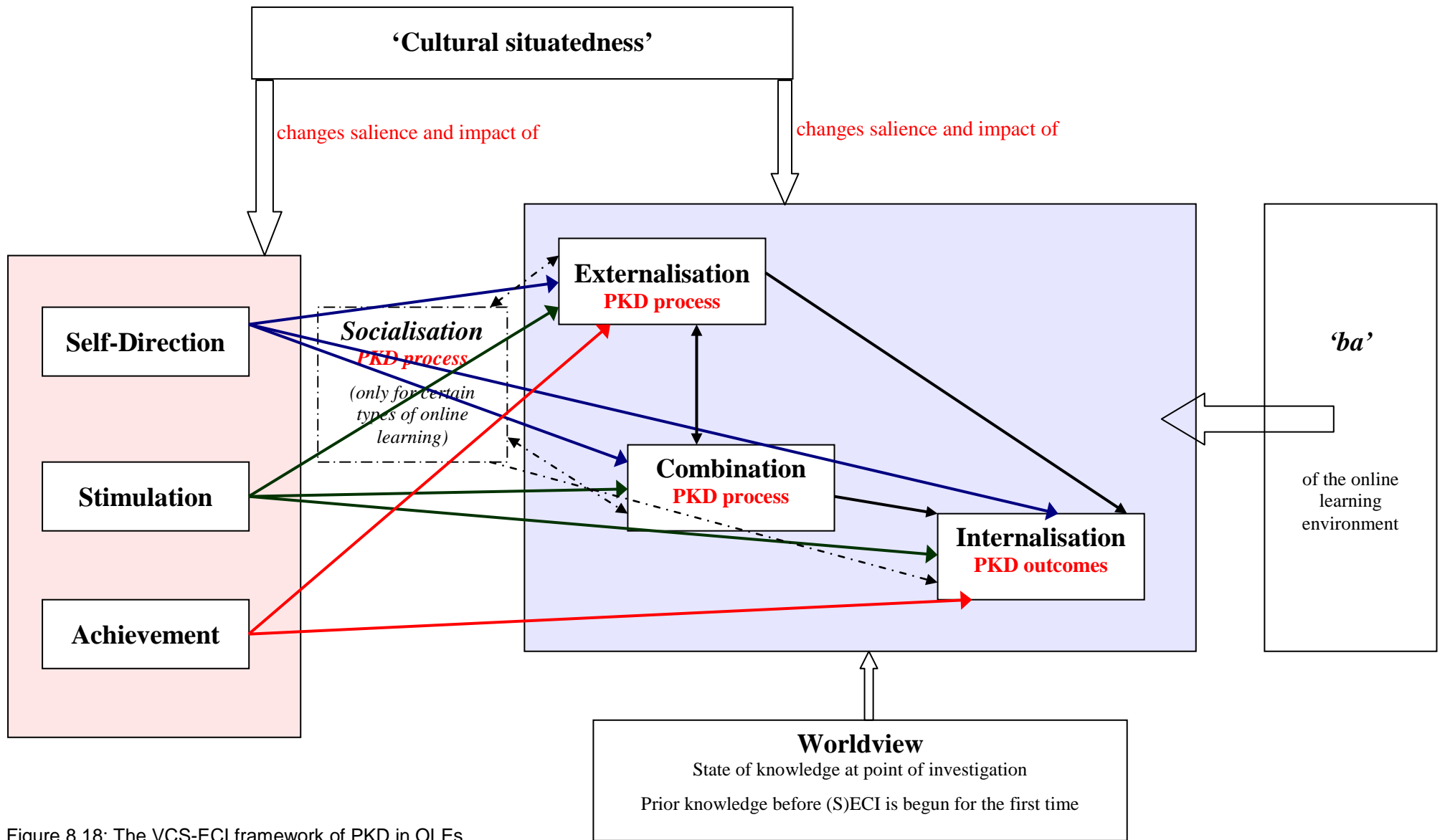


Figure 8.18: The VCS-ECI framework of PKD in OLEs

8.13 Impact of Background and Demographic Variables on PKD as Represented by the ECI Modes

This section discusses the impact of the following background and demographic variables on PKD in OLEs: gender, age, national cultural background, level of IT skills, and academic discipline.

8.13.1 The Impact of Gender on PKD

In order to examine the impact of gender on PKD in online learning, a Mann-Whitney test (Field, 2009) was conducted using gender as the grouping variable. In both a Mann-Whitney and in a Kruskal-Wallis test, the data is ranked, i.e. the lowest score is assigned a rank of 1, the next highest score is assigned a rank of 2, and so forth (Field, 2009). High scores are thus represented by large ranks, whereas low scores are represented by small ranks. Then, the sum of ranks can be computed for each group; finally, the mean rank is the sum of ranks divided by the number of cases in a particular group. Table 8.13 shows the mean rank and sum of ranks for the ECI modes for both the male and female participants. The mean rank for both Externalisation and Combination is higher for males than for females, whereas the mean rank for Internalisation is slightly higher for females.

Table 8.13: Ranks – Impact of gender on ECI modes

	Gender	N	Mean Rank	Sum of Ranks
Externalisation	male	48	100.52	4825.00
	female	123	80.33	9881.00
Combination	male	48	102.91	4939.50
	female	123	79.40	9766.50
Internalisation	male	48	82.64	3966.50
	female	123	87.31	10739.50

Table 8.14 shows that the significance levels for Externalisation and Combination are $p < .05$, suggesting that the higher scores of males on both of these modes are statistically significant. The significance level for Internalisation is far greater than .05, which suggests that males and females do not statistically significantly differ on their respective scores on Internalisation.

Table 8.14: Test statistics – Impact of gender on ECI modes

	Asymp. Sig. (2-tailed)	Exact Sig. (2-tailed)	Mann-Whitney U	Z
Externalisation	.016	.016	2255.000	-2.412
Combination	.005	.005	2140.500	-2.808
Internalisation	.571	.572	2790.500	-.567

The more frequent use of both Externalisation and Combination tools by male learners was not surprising, because research suggests that females are more anxious than males to use technology and are therefore less likely to engage with the various functions of an OLE (Lim, 2004). Thus, it was found in this study that males score higher than females on Externalisation and Combination, a finding that corresponds to the results of a literature review by Prinsen, Volman & Terwel (2007) on gender differences regarding the intensity of participation in computer-supported cooperative learning (CSCL) environments.

8.13.2 The Impact of Age on PKD

Using Kendall's tau correlation coefficients, it was found that age is positively correlated with all three ECI modes; all correlations are statistically significant at the $p < .01$ level (2-tailed) as shown in Table 8.15.

Table 8.15: Correlations for age and ECI modes

		Externalisation	Combination	Internalisation
Age	Correlation Coeff.	.185**	.260**	.170**
	Sig. (2-tailed)	.002	.000	.006
	N	164	164	164

The strongest correlation was found for Combination, the weakest for Internalisation. It is interesting that PKD processes, i.e. Externalisation and Combination, tend to become more frequent and intensive with an increasing age of the learners. This was unexpected. On the contrary, it was assumed that the use of communication facilities and other Externalisation tools would decrease with age rather than increase. This is because younger people have presumably been exposed to IT and online learning to a larger degree than older people, thus suggesting that younger people are more confident in using the technology. It is also interesting that age is positively correlated with Internalisation. Two possible reasons for this are suggested here. One, the older a learner the more confident and 'at home' she is in her approaches to PKD and therefore the PKD outcomes, i.e. Internalisation, are likely to be higher. Two, as the score for Internalisation is based on self-reports it could be that the older you get the more positively you judge your own PKD outcomes. Moreover, it could be speculated that the older

you are the more difficulties you may experience in using Externalisation and Combination tools, which would then lead to higher frequencies of use of these tools in order to compensate for these difficulties.

8.13.3 The Impact of National-Cultural Background on PKD

Since the absolute numbers of cases for most of the national cultures represented in the sample is very low ($n < 5$), in order to conduct a meaningful cross-national comparison, the cases were first grouped according to two country clusters. These clusters were arrived at through the GLOBE study (House, Hanges, Javidan, Dorfman & Gupta, 2004), and the classification of societies into two meta-regions by Gupta, Hanges & Dorfman (2002) was used. They aggregated societal values and societal practices at the cluster level and identified two meta-regions: “[t]he meta-Western region (Nordic, Germanic, Latin European, Anglo, and Latin American clusters), and the meta-Eastern region (Eastern Europe, Confucian, Southern, Arab, and Sub-Sahara Africa clusters) are noticeably different from each other” (Gupta, Hanges & Dorfman, 2002, p. 14). This bipolar clustering allows for more meaningful comparisons of survey results from the point of view of a national-cultural level. Table 8.16 shows the results of the Mann-Whitney test investigating the mean rank and the sum of ranks – while also showing the number of cases from each of the two meta-regions – for each of the ECI modes. The mean rank for the meta-Western region for Externalisation is slightly higher than for the meta-Eastern region, whereas the meta-Western region has a slightly lower mean rank than the meta-Eastern region for Combination and Internalisation.

Table 8.16: Ranks for the meta-Western and meta-Eastern regions for the ECI modes

	Meta region	N	Mean Rank	Sum of Ranks
Externalisation	Western	137	77.69	10644.00
	Eastern	16	71.06	1137.00
Combination	Western	137	76.24	10445.50
	Eastern	16	83.47	1335.50
Internalisation	Western	137	76.32	10456.00
	Eastern	16	82.81	1325.00
	Total	153		

The significance levels shown in Table 8.17 are all far greater than .05 (2-tailed). This suggests that there is no statistically significant difference in how learners from the meta-Western and the meta-Eastern region score on the ECI modes.

Table 8.17: Test statistics for the ECI modes with 'meta region' as grouping variable

	Asymp. Sig. (2-tailed)	Exact Sig. (2-tailed)	Mann- Whitney U	Z
Externalisation	.569	.573	1001.000	-.570
Combination	.535	.539	992.500	-.621
Internalisation	.571	.576	1003.000	-.567

8.13.4 The Impact of the Level of IT Skills on PKD

Using Kendall's tau correlation coefficients, it was found that the level of IT skills is positively correlated with Combination ($\tau=.245$), but not with Externalisation and Internalisation. The correlation with Combination is statistically significant at the $p<.01$ level (2-tailed) as shown in Table 8.18.

Table 8.18: Correlations for level of IT skills and ECI modes

		Externalisation	Combination	Internalisation
Level of IT Skills	Correlation	.081	.245**	.085
	Coefficient			
	Sig. (2-tailed)	.200	.000	.189
	N	164	164	164

The level of IT skills of an individual does not seem to have an effect on the frequency of engaging in Externalisation processes. Learners may find Externalisation tools easy enough to use, so that no advanced level of IT skills is necessary. However, the statistically significant positive correlation between the level of IT skills and Combination suggests that a higher level of IT skills facilitates the use of the wide variety of functions and features offered by an OLE, such as texts, audio, video, quizzes, search engines, etc. IT skills do not seem to have an impact on PKD outcomes, i.e. Internalisation.

8.13.5 The Impact of Academic Discipline on PKD

A Kruskal-Wallis test was used to determine the impact of academic discipline on PKD in online learning. The participants were asked which academic discipline represents best their PKD experiences that they are reporting in the survey. They could choose one of the following academic disciplines: natural sciences; mathematics and computer science; social sciences; humanities and arts; professions and applied sciences; and other/not applicable. In order that a meaningful test can be conducted, Field (2009) suggests that the cell frequencies should be greater than 5. This is not the case here for two of the academic disciplines – natural sciences ($n=1$), and mathematics and computer science ($n=5$). Therefore, the Kruskal-Wallis test was

applied to the four other academic disciplines only. Table 8.19 shows the mean ranks for the ECI modes for the four disciplines.

Table 8.19: Impact of academic discipline on the ECI modes – Mean ranks

Which academic discipline represents best your online learning experiences that you are reporting in this survey?		N	Mean Rank
Externalisation	Social sciences	46	77.36
	Humanities and arts	19	77.29
	Professions and applied sciences	56	83.55
	Other / Not applicable	38	79.32
	Total	159	
Combination	Social sciences	46	84.04
	Humanities and arts	19	86.45
	Professions and applied sciences	56	83.08
	Other / Not applicable	38	67.34
	Total	159	
Internalisation	Social sciences	46	75.11
	Humanities and arts	19	92.05
	Professions and applied sciences	56	83.04
	Other / Not applicable	38	75.41
	Total	159	

The test statistics were also computed and are shown in Table 8.20. As all three significance levels are far greater than .05, it can be concluded that the scores of the ECI modes do not differ statistically across academic disciplines.

Table 8.20: Test statistics for impact of academic discipline on the ECI modes

	Asymp. Sig.	Chi-Square	df
Externalisation	.904	0.566	3
Combination	.273	3.897	3
Internalisation	.466	2.550	3

Again, as with the question of whether the national-cultural background affects PKD, it could be argued that the level of academic discipline is too broad and too heterogeneous a concept for it to have a strong impact on the scores of the ECI modes. However, it may well be possible to identify differences by using more narrowly defined subject areas, such as history and

geometry. Arguably, this categorisation is sufficiently narrow and the two topics sufficiently different so that a meaningful comparison of potential differences of the ECI scores can be made.

8.13.6 The Effect of the Background Variables on PKD in OLEs: Summary of Results

The following background variables and their impact on PKD in online learning were investigated: gender, age, level of IT skills, national cultural background, and academic discipline studied. The results for these four background variables are as follows:

- Males score statistically significantly higher than females on both Externalisation and Combination. However, there are no statistically significant differences regarding the scores on Internalisation.
- Age is positively correlated with all three ECI modes (Externalisation: $\tau=.185$, Combination: $\tau=.260$, Internalisation: $\tau=.170$; all statistically significant at the $p<.01$ level).
- Using Kendall's tau correlation coefficients, it was found that the level of IT skills is positively correlated with Combination ($\tau=.245$), but not with Externalisation and Combination. The correlation with Combination is statistically significant at the $p<.01$ level (2-tailed).
- It was found that learners from Western countries and learners from Eastern countries do not differ in their scores on neither of the ECI modes.
- Using a Kruskal-Wallis test, no statistical differences were found regarding the correlations between the academic discipline studied and the ECI modes.

8.14 Fostering of, and Barriers to, PKD in Online Learning: Open-Ended Questions

This section discusses the main issues raised by the participants of the online survey regarding the following open-ended questions:

- "Please describe which features or activities in online learning help you to learn, and why you think this is the case."
- "Please describe which features or activities in online learning act as a barrier to learning for you, and why you think this is the case."

The comments to the first question were analysed with the aim of identifying issues that foster PKD in online learning, whereas the second question was analysed with the aim of identifying issues that act as a barrier to PKD in online learning. Some comments are provided here

verbatim to illustrate the main points raised by the participants. All comments made in reply to these questions are listed in Appendix C.3.

As had been reported in the chapter on the exploratory study, a substantial number of the comments made mentioned the flexibility of time and place as a help to PKD, whereas some learners regarded the lack of face-to-face interaction with peers and tutors as a barrier to PKD. The comments that are either similar to those made in the exploratory study or that cannot be linked directly to one of the three ECI modes will not be discussed here. This is because the aim of these open-ended questions is to provide an additional insight into *PKD from the point of view of the ECI modes*; it is not the aim to investigate generic advantages and disadvantages of online learning in general.

8.14.1 Fostering PKD in Online Learning

Of the comments that can be linked to one of the ECI modes, most can be linked to Combination, some to Internalisation and only very few to Externalisation. In addition to that, it was found that some comments could be linked to Stimulation and Achievement. The main issues regarding the fostering of PKD in online learning are discussed in this section.

In terms of Externalisation, some participants expressed the view that externalising what they have learned from other materials fosters their PKD:

“Explaining to others, e.g. in a discussion forum or similar, what I have learned from input materials of various kinds.”

In terms of Combination, the multitude and variety of materials and features offered by the OLE was frequently mentioned as fostering one’s PKD. This wide choice was, however, not only regarded as something positive but also as something negative as well; compare with section 8.12.2 on barriers to PKD:

“It also helps when tutors are able to bank different resources what are all about the same subject to save time searching through search engines looking for appropriate literature.”

“Interactive discussion; the pool of ideas it produces.”

“journal articles, institutional websites newspapers, lectures on video, learning activities developed by other. All these are prolific and immediate. I have a vast corpus to choose from.”

Another feature that is regarded by participants as fostering PKD is the opportunity to collaborate with others in the development of knowledge. One participant suggested that it is not important what the actual tool for collaboration is but that the purpose for which it is used matters more. This suggests that it is important that the tutor explains why she wants the students to use a particular tool and for what purpose. This is likely to make the learners reflect more on how they develop their knowledge and how the use of a particular function adds to their PKD:

"When using an online environment, the most effective are the activities that allow us to collaborate and to engage in mutual building of knowledge. It doesn't matter what the TOOL is, it matters what purpose it is used for."

"A combination of opportunities to collaborate and share with people who though have not met you are willing to make contribution to your learning."

"discussion boards where my classmates can share feedback on my activities/projects ... they too are professionals and I see them as learning resources that are as great or greater than the instructor and/or materials provided"

In addition to a mere transmission of knowledge, one participant pointed out that a combination of audio-visual materials is a good way to engage with the materials in an emotional way:

"A combination of audio-visual materials, creating some kind of emotional reaction in addition to pure cognitive transmission of knowledge"

In terms of Internalisation, one participant pointed out that it is essential to put knowledge into practice. Another participant suggested that conversations can foster PKD by jointly constructing the knowledge in context. In sum, there seems to be a need to apply knowledge in a particular context so that true Internalisation can take place:

"When there are examples to do. I learn best when putting the knowledge to practice. If I only learn the theory, I will easily forget it."

"Conversations: construction of knowledge in context"

In terms of Stimulation as a value type, some participants suggested that the variety of functions and the interactivity in online learning lead to better PKD outcomes. The fun element is also regarded as important for PKD; this may be linked to a higher score on Stimulation:

"Online learning is more stimulating and that makes a point in adapting to it."

"For me it's important that learning is FUN and so much of the online material (it seems) is dull and uninspiring. I like the interactive elements, although I may not actively participate, and anything which can make a topic come to life."

"features and activities that involve visuals and interactivity. A lot of senses should be involved (video, audio, etc). When there is a game element or humor involved it even helps better."

One respondent suggests that online learning is more stimulating than other modes of learning. It could therefore be argued that people scoring high on Stimulation will readily embrace online learning and make use of the variety of activities offered by the OLE. However, there were diverging opinions on whether online learning is stimulating and fun or dull and uninspiring. It is argued here that the reason for this may be that many learners are still relatively unaccustomed to online learning, something which may lead to either actively exploring what the OLE has to offer because the learner is interested in the new opportunities of an OLE or refusing to engage much with the OLE because it is seen as impersonal and not very relevant to one's PKD.

Another respondent suggested that an OLE should appeal to many different senses, using video, audio and other types of media. It is argued here that this may be linked to a high score on Stimulation. If a learner values Stimulation highly, she is likely to expect a variety of features in an OLE otherwise she may become bored and stop engaging with the OLE.

Doing an element of self-assessment, such as an online test, was mentioned as a means for fostering PKD. Trying to do well in online tests is likely to be linked to Achievement as a value type; if someone scores high on Achievement, she wants to do well in online tests, which in turn is likely to foster her PKD:

"Self-assessments: I suppose it is the feeling that you are taking a "test" that makes you try your best."

The desire to try your best and do well in an online learning course can be linked to a high score on Achievement. It is argued here that scoring high on Achievement is likely to lead to a high score on Externalisation and Combination and therefore on PKD processes, which in turn is likely to lead to a higher score on Internalisation, i.e. PKD outcomes. However, this does not necessarily have to be the case. For example, in a blended learning context, a learner who scores high on Achievement might decide to put most of her efforts into doing well in the face-to-face part of the course, at the expense of engaging with the OLE which is often regarded as a mere add-on component to face-to-face learning. In this case, scoring high on Achievement may lead to largely ignoring the OLE. In other words, Achievement may have either a positive or a negative impact on PKD, depending on the individual and depending on the context.

In terms of Self-Direction, a high score on that value type is likely to lead to a confident use of the OLE, something which will foster PKD in online learning by a heightened level of engagement with the PKD activities and processes. In this brief discussion of the potential impact of the three value types on fostering PKD in online learning, it was suggested that a higher score on either of the three value types is likely to lead to a higher use of OLE features and therefore PKD processes, but that this does not always have to be the case in each context and for each learner.

8.14.2 Barriers to PKD in Online Learning

Analogous to the issue of fostering PKD in online learning, of the comments that can be linked to barriers to PKD in one of the ECI modes, most of the comments can be linked to Combination, some to Internalisation and only very few to Externalisation. Again, the main issues are discussed in this section.

In terms of Externalisation, it was reported that there may be a lack of confidence when it comes to posting in discussion forums. This lack of participation in forums may be a barrier to PKD in online learning, because reflecting on the content that is being taught in the OLE and formulating an opinion or argument about it and posting it online is mostly regarded as fostering PKD:

"Discussion boards/forums can be quite helpful, though often don't have confidence to post anything myself."

In terms of Combination, whereas the diversity of learning materials was often seen as something positive, both an information overload and the lack of segmented or categorised information were regarded as barriers to PKD, as the following two examples show:

"At times there is too much information and it can be time consuming to sift through it to find the relevant parts."

"I think the only features or activities that create a barrier are those that overload you with information rather than segment information."

Quizzes and other self-assessment tools were often regarded as being too primitive. This may not constitute a barrier *per se* to PKD, but such tools may offer only little advantage in terms of PKD, as the following example illustrates:

"Most quizzes and self-assessment tools I have encountered online are very primitive as educational tools: true/false and multiple choice tests have little value pedagogically, and only may serve as a "fun" activity in some cases."

Several participants mentioned the problem of correctly judging the correctness and validity of wikis and discussion forum postings, because everyone can contribute to them, thus making it impossible to gauge the reliability of the various sources that are incorporated into an OLE:

"I don't like Wiki's , cause everybody, even if he knows nothing can write an article"

"I don't like forum because I don't trust them"

"not easy to find a reliable source, difficult to judge where other participants get their knowledge from (blogs, wikis, etc)"

In terms of Internalisation, it was pointed out that it is difficult to create a proper and meaningful context in an OLE for knowledge-building because it is difficult to create such a context online. In other words, participants regarded the presence of, and exchange with, others as a prerequisite for developing knowledge, something which is easier in a face-to-face learning environment than in an OLE:

"Knowledge is often tied to the context. Online it is often difficult to connect and build human relationships."

"When it's just very information-driven, with little interaction with others. I could not successfully learn if learning online on my own--if I do need to learn online, it needs to be with as much opportunity to get in touch with people virtually! Purely online learning does not allow for exchange of information, experience, etc., with others but, rather, serves only as a means to access information."

Contrary to the participant who regarded self-assessment tools as something that encourages people to make an effort in developing their knowledge, another participant suggested that she is not stimulated by tests as these often represent knowledge falsely. True Internalisation

therefore presumably takes place only when knowledge is embedded in a real-life context which is meaningful to the individual learner; tests and quizzes are likely to de-contextualise knowledge and thus may form a barrier to PKD:

“tests and quizzes because they are rarely meant to stimulate learning, they reinforce the notion of authority as opposed to curiosity and often give a false representation of knowledge.”

Finally, one participant suggested that she prefers features that involve a higher level of engagement:

“none act as a barrier for me...just prefer the ones with higher levels of engagement”

This suggests that scoring high on Stimulation is likely to lead to a higher use of those functions that allow for a relatively high level of engagement, which in turn could lead to a higher level of PKD outcomes. However, it is suggested here that scoring low on Stimulation does not necessarily lead to a superficial use of interactivity functions in an OLE, because a stimulating OLE can potentially raise the level of engagement of a learner with the online course, regardless of her score on Stimulation: a learner will presumably engage even more with the OLE if she scores high on Stimulation rather than low.

In these sections on fostering PKD in online learning and on being a barrier to PKD in online learning, some comments made by the respondents were discussed in terms of the impact of Self-Direction, Stimulation or Achievement on online learning. It was suggested that a higher score on either of these three value types is likely to lead to a more positive attitude towards using the features of an OLE and towards taking part in the PKD processes. It was also pointed out that this does not necessarily have to be the case because, for example, a learner scoring high on Achievement may decide to largely ignore what the OLE offers in the context of her blended learning course. The reason for this could be that the rationale of the online learning part of the course is unclear to the learner who therefore concentrates on making efforts in the face-to-face learning part of the course at the expense of any deeper engagement with the online learning part.

8.15 Salience and Impact of Personal Values

Based on the literature review, the degree of the impact of personal values on behaviour seems to differ across situations and context (Roccas & Sagiv, 2010). The study presented here investigated the extent of the impact of some of the value types of the SVS on PKD in the context of online learning. Moreover, the rank-ordered nature of personal values suggests that there are differences in their relevance for a particular individual (cf. Kluckhohn & Strodtbeck, 1961; Rokeach, 1973).

Roccas, Sagiv, Schwartz & Knafo (2002) hypothesise that traits and values are correlated, but are still conceptually distinct constructs:

“Values, as cognitive representations of motivations in the form of goals and objectives, are relevant to goal-directed acts. They are therefore likely to be better predictors of attitudes and behaviors over which individuals have cognitive control or choice. Conversely, traits should be better predictors of spontaneous, intuitive, and emotionally driven attitudes and behaviors over which individuals have little cognitive control.” (p. 793)

This distinction between values being better predictors of goal-directed acts versus traits being better predictors of intuitive and little-cognitive-control acts is crucial. PKD in OLEs requires a constant effort of choosing which link to open, which discussion to contribute to, which document to download, as well as a pro-active effort to try to learn using a particular OLE. Moreover, since online learning is not as commonplace as traditional classroom teaching, PKD in OLEs is unlikely to be a spontaneous and intuitive activity. This supports the findings of this study that personal values seem to be correlated to the various goal-directed acts that learners do in an OLE, such as taking the effort to post a contribution to a discussion board or filling in an online test.

In terms of Biggs' (1987) three learning approaches – surface, deep, and achieving –, Lietz & Matthews (2006) found that students high on Self-Direction are more likely to follow a deep learning approach and at the same time are less likely to follow a surface approach. They also found a strong effect of the Achievement value type on achievement motivation (path coefficient $p=0.63$). However, in the study reported here, Achievement does not seem to have a particularly strong effect on Internalisation ($\tau=.143$, with $p<.05$). This may suggest that an achievement motivation does not necessarily translate into a high level of Internalisation. Moreover, contrary to the results of the online survey that found a statistically significant positive relationship between Stimulation and Internalisation ($\tau=.165$, with $p<.01$), Lietz & Matthews (2006) found a negative relationship between Stimulation and academic performance. However, their concept of academic performance cannot be regarded as being synonymous with the concept of Internalisation as it is used here.

The study reported here found that personal values have a small to moderate effect on PKD in OLEs. Personal values may change when one is exposed to a new social environment (Parks & Guay, 2009), of which OLEs are an example. OLEs as the context for online learning may also lead learners to conform to norms that are inherent in such environments, even when these norms are contrary to their own personal values (Bardi & Schwartz, 2003). In other words, the cultural situatedness factors of an OLE may be a stronger predictor of behaviour than acting in accordance to one's values.

9 Conclusion

This final chapter summarises the main findings related to the individual objectives of this study. It will also point out the original contribution to knowledge. Then, practical implications for learners, tutors, and designers of OLEs will be discussed. This will be followed by a discussion of the limitations of the study. Finally, suggestions for further research will be presented.

9.1 Rationale and Overview of Research

Knowledge and the ability to create new knowledge are of paramount importance for individuals to develop their knowledge and thus engage in lifelong learning. In addition to applying existing knowledge, one of the key activities individuals have to engage in is the development of their own personal knowledge.

Knowledge creation as a concept has often been used in an organisational context (e.g. Datta & Acar, 2010; Tolstoy, 2009). In addition to that, it is also linked to learning at the individual level (e.g. Akbar, 2003; Muukkonen & Lakkala, 2009; Paavola, Lipponen & Hakkarainen, 2004) and also to learning in virtual environments (Minocha & Roberts, 2008). However, little research has been done to validate the SECI model (Gourlay, 2004a) – a model of knowledge creation –, and empirical research involving SECI is even rarer. The research presented here contributes to closing this gap.

Central to the study reported here is the measurement of PKD processes and PKD outcomes from the point of view of the SECI model. These PKD processes and outcomes require knowledge creation measures, but such measures lack agreed-upon construct operationalisations, which makes empirical measurements difficult, because the measures used also impact on the results that can potentially be achieved and may also limit their generalisability (Mitchell & Boyle, 2010). The study reported here conceptualised such an empirical measurement tool which measures the scores of individuals for Externalisation, Combination and Internalisation in the context of online learning.

As a reminder, PKD in OLEs, which is the focus of this research, is defined here again:

Personal knowledge development in online learning environments encompasses idiosyncratic and individualised processes and phases of creating new knowledge, evaluating and modifying knowledge, sharing knowledge, and finally applying knowledge in real-life situations and contexts.

Any piece of research can only investigate a particular perspective on knowledge creation, from a particular point of view. The research reported here examined the 'learners' voice', i.e. self-reports of the learners of their PKD in OLEs.

In total, the research process consisted of three phases of data collection. First, an exploratory study was conducted. This involved two different multicultural student groups using OLEs. The students were asked to fill in the Portrait Values Questionnaire (PVQ) (Schwartz *et al.*, 2001), a data collection tool for the SVS value types, and take part in discussions in asynchronous forums in the respective OLEs of their online courses. The focus was on how the online learners themselves experience their own PKD in OLEs.

Second, a Delphi study was conducted. Its objective was to find out the *relative* importance of the ten SVS value types for PKD in the context of online learning. As a result of the experts' opinions on this matter, three value types were considered to be particularly relevant in said context, namely Self-Direction, Stimulation, and Achievement. Therefore, only these three value types were kept as variables in the research design.

Third, an Internet-based survey was conducted. It focused on linking scores on Self-Direction, Stimulation, and Achievement with PKD processes and the actual change of the state of knowledge, i.e. Internalisation, of the students. The impact of the following variables on PKD was empirically investigated here: gender, age, level of IT skills, national cultural background, and academic discipline.

Both the literature review conducted and the empirical data obtained were then synthesised to generate a new model of PKD in OLEs called the EC-I model (Externalisation/Combination – Internalisation), which was newly conceptualised in this research. It is based on the SECI model, and is one of the main contributions of this study. In addition to the EC-I model, one of the main outcomes based on the literature review is the need to take the cultural situatedness of PKD in online learning into account.

9.2 Personal Knowledge Development and Personal Values: The Learners' View

It is essential to understand how individuals engage in developing knowledge, i.e. both the processes and the outcomes of PKD; these processes must be meaningful for the individual learner in a given situation and context.

Therefore, regarding Objective 1:

To investigate the personal experiences of learners of their own PKD in OLEs, and how this links to their personal values,

in order to sufficiently discriminate between the characteristics of the *individual* learners and their approaches to PKD, the SVS as a set of *individual-level* values was used, with the PVQ as the psychometric tool.

Objective 1 was first investigated by an exploratory study. This exploratory study investigated how the online learners themselves experience their own PKD in OLEs, such as using texts and audiovisual materials, communicating in asynchronous discussion forums, etc. Thus, the focus

was on the learners' voice and not on reports made by the tutors or facilitators that run the online learning courses. The objective of the exploratory study was also to investigate potential links and relationships between the responses made in the asynchronous discussion forums regarding the learners' perceived PKD and the score of the respective learners on the individual-level SVS values types as determined by the PVQ.

Even though the responses in the asynchronous discussion forums could not be linked to the corresponding SVS value scores investigated in the research as both the number of contributors and the number of postings were relatively low, there were a number of valuable comments about general aspects of online learning in terms of communication and technology. In sum, in order to foster PKD in online learning, OLEs should be:

- rich in content,
- diverse in the presentation of content, for example via different media such as text, videos, audios and further stimulated by taking quizzes and sharing views and ideas in forums or chat rooms, and
- involve a good deal of interaction and communication with peers

Furthermore, Objective 1 was also addressed by the online survey. In the online survey, two open-ended questions were asked, namely:

- "Please describe which features or activities in online learning help you to learn, and why you think this is the case.", and
- "Please describe which features or activities in online learning act as a barrier to learning for you, and why you think this is the case."

The comments of the first question were then analysed with the aim of identifying issues that foster PKD in online learning, whereas the second question was analysed with the aim of identifying issues that act as a barrier to PKD in online learning. These two questions provided additional insights into factors that the learners feel either foster or hinder their PKD. Section 8.12 discusses the main results of the two open-ended questions.

9.3 Relevance of the SVS Value Types in Online Learning

Regarding Objective 2:

To investigate which of the personal values of the SVS are particularly relevant to PKD in OLEs,

a Delphi study was conducted, which examined the impact of the individual-level value types of the SVS (Schwartz, 1992) on PKD in online learning.

The aim of the Delphi study was:

- To test the research hypothesis that some of the individual-level value types of the SVS are more relevant than other value types in the context of online learning

In the Delphi study, experts from the three main topic areas of this research – knowledge management, online learning, and personal values – were asked which of the ten individual-level value types of the SVS are *particularly relevant* to PKD in the context of online learning. The results of the Delphi study suggest that the *relative* impact of the SVS value types differs considerably and that three value types of the SVS are likely to have a stronger impact on PKD in online learning than the others, namely Self-Direction, Stimulation, and Achievement. The ten individual-level value types of the SVS could be categorised into one of three tiers in terms of perceived importance for PKD in online learning. The value types and the percentage of experts naming them as particularly relevant for online learning are listed here, grouped into three clusters of the proportion of experts who named the respective value types as being *particularly relevant*:

1. Self-Direction, Stimulation, and Achievement: 72-89%
2. Hedonism, Benevolence, and Conformity: 28-33%
3. Tradition, Universalism, Security, and Power: 11-17%

In terms of the higher-order dimensions of the SVS, an orientation towards *Openness to Change* values seems to foster PKD in online learning, whereas an orientation to its opposite higher-order dimension, *Conservation*, does not.

9.4 Impact of Personal Values and Other Factors on Personal Knowledge Development in Online Learning

Regarding Objective 3:

To investigate to what extent the personal values identified through Objective 2 impact on PKD in OLEs

Objective 3 was investigated via a web-based survey examining the impact of Self-Direction, Stimulation, and Achievement on the three ECI modes in the context of online learning.

Self-Direction, Stimulation and Achievement as conceptualised by Schwartz (1992) were found to have a small to medium-sized impact on PKD in online learning. Both Self-Direction and Stimulation correlate positively with Externalisation, Combination, and Achievement, respectively, all at the $p < .01$ level. Achievement correlates positively with both Externalisation and Internalisation, both at the $p < .05$ level. However, there is no statistically significant relationship between Achievement and Combination.

Furthermore, other factors were investigated and some were found to have an impact on PKD. The factors investigated were: gender, age, national cultural background, level of IT skills, and academic discipline studied. It was found that males score higher than females on Externalisation and Combination but no statistically significant differences were found regarding Internalisation. Age was found to be positively correlated with all three ECI modes at the $p < .01$

level. No statistically significant differences were found for the variable of national cultural background and the variable of academic discipline studied.

The instructional design and the setup of a particular OLE are likely to lead to a varying salience and varying *relative* importance of the various factors that impact on PKD, which in turn suggests that PKD differs relatively strongly from individual to individual.

9.5 Taking Culture into Account in the SECI Model When Examining PKD in Online Learning

Finally, regarding Objective 4:

To investigate how a knowledge creation model such as SECI can be applied and, if necessary, adapted, to investigate PKD in OLEs,

it was shown that the SECI model can be used as a useful starting point to investigate PKD in online learning. Objective 4 was predominantly met by the literature review through synthesising previous theoretical and empirical literature on the three main topic areas of the research, namely the SECI model, personal values, and online learning. It was shown that the SECI model can, and indeed should, be adapted so that it can be usefully applied to investigate PKD at the individual level.

As one of the main contributions of this study, a model named EC-I was conceptualised in this research. Its two main elements are:

1. Externalisation and Combination – or PKD processes, and
2. Internalisation – or PKD outcomes.

Externalisation and Combination constitute the PKD processes that ultimately lead to Internalisation, i.e. the PKD outcomes. The EC-I model is explained in more detail in section 8.11.

9.6 Contribution to Knowledge

A gap in research was identified regarding the triad of knowledge management, culture and online learning (cf. Ford & Chan, 2003), something which the research presented here contributed to address. This study also adds to the scarce number of studies that investigate the experiences of the learners themselves (cf. Sharpe, Benfield, Lessner & deCicco, 2005) by giving prominence to the learners' own accounts of their experiences of their PKD in online learning. The contribution to knowledge of this study consists of the following:

1. The EC-I model, a model of PKD in online learning

The thesis discussed the applicability of the SECI model/models based on SECI in the context of PKD in OLEs and investigated whether it can be applied at the level of an individual rather than at the level of an organisation. A new model, called the EC-I model, was proposed. This EC-I model represents PKD of an individual learner in OLEs and is the first model describing PKD in online learning, while emphasising the need to take the cultural situatedness of PKD into account.

2. The VCS-ECI framework, a theoretical framework showing a) the relationships of Self-Direction, Stimulation and Achievement with PKD in OLEs, b) the interrelationships of the ECI modes in PKD in OLEs, and c) the impact of cultural situatedness, *ba*, and Worldview on PKD in OLEs

The VCS-ECI framework was developed showing relationships of some of the factors that impact on PKD in online learning as well as the relationships of the ECI modes with each other. The framework is discussed in section 8.15. Contrary to the EC-I model, VCS-ECI does not represent an adaptation of the SECI model. Instead, it identifies some aspects that impact on the three ECI modes in the context of online learning. It graphically depicts which of these aspects were found to have an impact on an individual's score on the three ECI modes, something which was empirically tested in this study. Other aspects, such as *ba*, were theoretically discussed throughout the thesis. The EC-I model is therefore more generic and investigates PKD in OLEs at a higher level than the VCS-ECI framework does. As it is a generic model, EC-I can be relatively easily adapted and applied in contexts other than individual-level PKD in online learning. For example, EC-I is also relevant to knowledge creation at the organisational level. In contrast to this, the VCS-ECI framework can only be applied in the context of PKD in online learning. VCS-ECI helps to fill the gap in research outlined in this thesis, namely the lack of research on the triad of knowledge management, values and online learning in general, as well as the lack of research on the impact of personal values on PKD in the context of online learning in particular.

3. Creation of a measurement instrument for Externalisation, Combination, and Internalisation in the context of online learning

A measurement instrument was designed which measures the scores of a learner on Externalisation and Combination, representing PKD processes in OLEs, and on Internalisation, representing PKD outcomes in OLEs. For Externalisation and Combination, formative indicators were used, whereas for Internalisation reflective indicators were used. It needs to be pointed out that the measurement instrument must be modified to make it suitable and relevant to a context which is different to online learning. This means that the items dealing with Externalisation and Combination must be revised in such a way so that they adequately represent the PKD processes of the PKD context under investigation. The measurement items for Internalisation do not need to be modified because they measure PKD outcomes, a concept that does not differ across PKD contexts.

4. Answer to the question of which of the personal value types of the SVS are *particularly relevant* to PKD in OLEs, and to what degree

The results of the study support the proposition that the various values of a given value set (the SVS in this case) differ in salience and relevance across contexts. Among the SVS values, the values of Self-Direction, Stimulation and Achievement were regarded by experts participating in the Delphi study as *particularly relevant* to PKD in online learning. This is likely to be different in other contexts when other phenomena are being studied. The online survey showed that both Self-Direction and Stimulation are positively correlated with each of the ECI modes at the $p < .01$ level (2-tailed). Achievement is positively correlated with both Externalisation and Internalisation at the $p < .05$ level (2-tailed), whereas no statistically significant correlation was found for the Achievement-Combination relationship.

5. Theoretical discussion of, and analysis of empirical data underlining, the importance of cultural situatedness factors such as age, gender, etc. for PKD in OLEs

It could be shown that some of the cultural situatedness factors that were investigated in this research are correlated with the ECI modes and therefore with PKD in OLEs. Moreover, it was suggested that there exists a high dynamics of the influencing variables involved, thus making predictions and generalisations difficult as PKD can differ quite considerably from individual to individual.

9.7 Implications for Learners, Tutors and Designers in Online Learning

The design and instructional setup of an OLE has to be informed by the context in which the learners are embedded and by the cultural situatedness of the OLE. An authentic context is necessary for PKD to be effective. It is therefore paramount to ground pedagogical approaches and course design in a relevant culturally situated context and investigate how the context in which the learners are situated impacts on their PKD. The results of this study lead to some implications for learners, tutors and online learning designers.

9.7.1 Implications for Learners

A stronger personalisation of the online learning experience can be one way of making online learning more effective for an individual learner, as this would address their individual set of cultural situatedness better than a one-size-fits-all approach. In other words, both a higher degree of personalisation of the online learning experience and a stronger focus on personal values arguably lead to more effective and more relevant online learning experiences for a given group of learners. However, true personalisation is not achieved easily as an OLE can only attempt to begin to reflect the very needs of an individual learner at any given time. This means that the individual learner has to be flexible enough to adapt to OLEs that differ in their

instructional design and therefore continue to challenge the learner by forcing them to deal with a variety of instructional approaches.

If a particular learner scores relatively low on one or more of the value types of Self-Direction, Stimulation, and Achievement, this might be an indicator that both the intensity of PKD processes and the score on PKD outcomes may be relatively low compared to learners who score high on these value types. Being aware of this possibility, however, could lead the learner to try to become bolder and more self-confident when it comes to exploring the various functions that an OLE provides. This, in turn, can lead to higher PKD outcomes.

9.7.2 Implications for Tutors and Online Designers

Tutors may measure the value orientations of the members of their study cohort – for example by using the PVQ – and use the results as a basis for designing OLEs that are better tailored to the participating learners.

It is argued that OLEs are not culture-free but situated in a particular cultural context. Therefore, if the learner cohort is considerably multi-cultural, examples or concepts have to be meaningful in the various cultures involved or as trans-cultural as possible – avoiding a lack of relevance is crucial. Therefore, cross-cultural differences in the approaches to PKD must be taken into account when designing OLEs. If an OLE is not merely a repository of documents but requires peer-to-peer interaction and communication, cross-cultural differences in the communicative behaviour have to be taken into account as well. It is difficult, however, to decide to which degree contextual variables should be taken into account. As they are closely interrelated, addressing one factor could have a detrimental impact on another. It is suggested that an overly strong emphasis on personalisation is not necessary but that the content that is mediated by the OLE must be relevant for the majority of the learners and the rationale of the online part of the course must be made explicit to the learners at the beginning of the course. Ideally, learners should be consulted as far as this is feasible and tutors must make sure that the learners are clear about the aims of the OLE and what is expected of them in terms of communicating and interacting with peers and tutors. Learners are unlikely to benefit from engaging with online learning if they cannot see the added value for their PKD. Therefore, suggestions should be made explicit by the tutors as to how the students can approach online learning, albeit with allowing them to engage with the OLE in their own terms, otherwise the concept of PKD and its emphasis on *personal* is led *ad absurdum*.

On the level of the actual practice of online learning, the results presented here can be used to make designers of OLEs aware of how a large number of interdependent factors have an impact on PKD and that these differ in importance depending on a given context. This can lead to an improvement of the instructional design in online learning and thus make it more effective.

9.8 Limitations of the Study

The empirical data of this study are based on self-reports and neither include observations by the researcher of interactional data (e.g. online forum discussions, joint working on wikis) nor an analysis of grades of the learners which would provide another perspective on Internalisation, in addition to the self-reports used here.

The issue of scope and generalisability is a difficult one. As the concrete characteristics of the various OLEs that are used by the participants in the online survey is unknown, one cannot rule out that the sample represents a relatively small number of instructional designs of online learning and that the results of the study therefore only apply to exactly these OLE types. However, as the sample was recruited from a relatively large number of countries using various sources, the results are likely to be generalisable to online learning at a higher level.

The results of this research are somewhat generic, as the results from participants in different courses could not be directly compared. However, discriminating by age, gender, academic discipline, perceived level of IT skills, and national cultural background found statistically significant differences regarding scores on the SVS value types and the self-reports of PKD processes for some of these variables.

The model proposed here argues for complexity and dynamics regarding the interrelationships of variables, therefore it is extremely difficult to demonstrate causality. As Cliff (1983, p. 119) argues: "This is to say that the most satisfactory, almost the *only* satisfactory, method for demonstrating causality is the active *control* of variables, so that the complexity of the relations among them may be simplified, at least temporarily." This suggests that causality cannot be demonstrated in this context, because there is no way to simplify the complexity of relations among the various variables; on the contrary, the model proposed here precisely argues that a highly complex and fluid set of interrelationships between variables exists, i.e. no fixed causality of variables is expected.

In other studies, behaviours have been found to be inconsistent with other behaviours and also behaviours can be inconsistent with stated values (Bergman & Coxon, 2005). For example, a learner may score very highly on a value type but her PKD behaviour does not necessarily reflect this in all contexts or in all situations. If one could be sure that PKD behaviours are indeed consistent with personal value manifestations, then one can draw conclusions regarding a value-behaviour relationship. More research is necessary in this area.

Different philosophies of instructional design and setup of OLEs provide different contexts for PKD and therefore influence PKD differently. In this study, it was not possible to compare whether a strong focus on either tacit knowledge or on explicit knowledge in OLEs and the respective instructional designs in which they operate impacts on PKD and if so, to what extent. For example, OLEs that are essentially repositories of information with little interpersonal interaction essentially deal with explicit knowledge, whereas OLEs that focus on discussions in online forums, joint collaboration on wikis, etc., essentially deal with implicit knowledge.

9.9 Suggestions for Further Research

The limitations of the study named above and the questions that could not be addressed lead to some suggestions for further research. Throughout the thesis, a variety of issues concerning the cultural situatedness of the SECI model and the importance of context for using the model appropriately in an organisation have been raised. Unfortunately, there is a distinct lack of reports and case studies dealing with implementing the SECI model or a model based on SECI, and it is even rarer to use the SECI model or an adapted version in the context of *individual-level* PKD. The merit of SECI is its theoretical basis that can potentially be used in practice, but more accounts of empirical research and of practical applications are needed, both investigating SECI and similar models.

There is a lack of empirical research into *ba* in general (Rice & Rice, 2005) and into *ba* for tacit knowledge conversion in virtual environments in particular (cf. Martin-Niemi & Greatbanks, 2010). However, this would be very worthwhile because gaining an insight into how *ba* works and how it can be exploited in order to maximise PKD is a prerequisite to make SECI-related models useful in the context of individual-level PKD in online learning. In particular, a better understanding of *ba* will make it easier to devise suitable PKD processes that are in turn likely to lead to greater PKD outcomes.

Another problem is the difficulty to clearly delineate between explicit and tacit knowledge, making statistical testing difficult (Rice & Rice, 2005). Whereas the research presented here is a starting point, more should be done conceptually and empirically to address these shortcomings. It is suggested here that the use of the measurement instrument in other research settings can further validate it. Moreover, modified versions of EC-I and of the measurement instrument should be devised for use in contexts that are different to online learning.

In terms of Mitchell & Boyle's (2010) taxonomy of knowledge creation measures, the study presented here particularly covered the first of the three models of the knowledge creation value chain, namely process measures. Then, output measures are higher up the value chain than process measures; these have partly been addressed by this study. Finally, outcome measures are placed at the top. This study investigated the process-oriented measures that describe how personal knowledge was developed; this was done by analysing Externalisation and Combination. Furthermore, results dealing with the actual Internalisation of knowledge addressed output-oriented measures, because they assess the end result of the knowledge development processes, namely what a learner has actually learned and whether she has been enabled to use newly acquired skills in practice. However, it is suggested that output-oriented measures should not only be assessed through an actor judgement based on internal criteria (Mitchell & Boyle, 2010), i.e. self-reports of learners, but also through the assessment of exam results etc. made by tutors, i.e. based on external criteria. This would add a broader and more objective view on the results of Internalisation of a given learner. Finally, outcome-oriented measures, i.e. measures that assess changes that result from the creation of knowledge such

as the development of new routines, were not covered in this research. Further research could examine how the results of PKD of an individual impact on her dealing with problems that the online learning courses aimed to address. It is suggested here that, at the individual level, outcome measures allow the researcher to assess whether an individual can suitably and properly apply her newly developed knowledge and skills, whereas output measures can merely measure the existence of knowledge and skills that an individual can potentially trigger and use when faced with a problem in a real-life context.

Further research should also try to establish which balance between explicit and implicit knowledge is likely to maximise PKD in a particular context: natural sciences might not require much collaboration and communication but instead a focus on explicit knowledge, whereas the humanities might benefit more from the sharing of implicit knowledge. This balance may differ from OLE to OLE and from learner cohort to learner cohort, but if broad tendencies for an ideal balance in a PKD setting could be found, then tutors can adapt the OLE design accordingly to make it more effective.

As Web 2.0 and also Web 3.0 technologies enable people to establish and maintain various forms of online communities which aim to facilitate social interaction and information and knowledge sharing, any attempt to apply a model based on SECI in order to study knowledge creation within an online community would help to develop a better understanding of the sustainability of online communities and their contributions to knowledge creation and sharing for a much wider community of Internet users.

This study found that an orientation towards *Openness to Change* is positively correlated with higher scores on the three ECI modes. It would be worthwhile to examine in further research the hypothesis that an orientation towards *Conservation*, i.e. the higher-order value dimension opposite *Openness to Change*, is *negatively* correlated with the scores on the ECI modes. This may also add further support for the structure of the SVS.

In terms of organisational knowledge creation as opposed to PKD in online learning, comparative or multiple-case studies (Yin, 2003) into how specific organisations apply the SECI model or a model based on SECI for their own purposes would be useful. Thus, comparisons of how the model is used and how useful and helpful this is for the particular context can be made. If cases are chosen in the same industry and the same country, organisational or individual factors are likely to cause any observed differences. If subsidiaries in various countries are chosen, national culture arguably has a greater potential impact. These comparisons can be conducted at various levels, the most important levels arguably being national culture, organisational culture, and professional culture.

Finally, in order to maximise the usefulness and effectiveness of blended learning courses and programmes, a comparison of offline learning versus online learning and how the two contexts differ in terms of the impact of personal values on PKD would be worthwhile. This would allow tutors to know how PKD changes from one context to the next and why. It is speculated here that face-to-face modes of learning focus more strongly on tacit knowledge than is the case in purely online-based learning: if there is a strong element of face-to-face learning, the OLE could

emphasise explicit knowledge and documents without the need for focusing too strongly on implicit knowledge, which is often shared in online discussion forums.

9.10 Concluding Remarks

PKD in online learning is highly situated and contextualised. The sheer number, evasiveness and complexity of possible categories for such contextualisation make PKD in online learning a phenomenon which is difficult to grasp, difficult to research, and difficult to manage in practice, as tutors have to take into account concepts as diverse as, for example, the individual with her unique experiences and cognitive background, the subject matter being studied, the context in which that subject matter is being studied, and the medium in which PKD takes place. Understanding the interrelationships between these concepts is a prerequisite for effectively developing one's personal knowledge.

Appendices

Appendix A.1: Exploratory Study: Discussion Forum Questions

**Exploratory Study:
Discussion Forum Questions
and
Cover Letter**

Cover letter

This survey, the Portrait Values Questionnaire, forms part of a PhD research project at the University of Bedfordshire, Luton, UK. The project is entitled "Knowledge Development in Online Learning Environments: A Cross-Cultural Perspective" and focuses on knowledge development processes and learning outcomes in online learning.

The Portrait Values Questionnaire (PVQ) by Shalom H. Schwartz is a tool to determine the cultural-level and individual-level value orientations of the Schwartz Value Survey.

The survey consists of 40 short statements about other people and should take about 10 minutes to complete. You are, of course, free not to participate in this survey if you so wish. In case you have any questions, please don't hesitate to contact me at markus.haag@beds.ac.uk

Your name will not be identified in the reporting of the results. Your responses will remain confidential, and the data will be used only for research purposes.

First, on this page, please state whether you are male or female - you will then be forwarded to the corresponding version of the survey. The forty statements are divided into four pages each containing ten statements. Please make sure that you complete all statements, as this is essential for the analysis of the survey. Finally, there is one page containing some general questions about your personal background.

Thank you very much for your time and co-operation.

Kind regards

Markus Haag

University of Bedfordshire

The ten questions posted for the
'Writing for E-Business Websites' course and the
'IT Project Management' module

1. Do you feel that the discussions in a forum or a chat help you to learn? If so, how do the discussions help you to learn? If not, why do you think they don't help you to learn?
2. **How** does an online course contribute to your learning differently from classroom and training room learning? Please also give reasons.
3. What do you like **most** in an online course? Please also give reasons.
4. What do you like **least** in an online course? Please also give reasons.
5. In order for you to learn best and most effectively in an online learning environment, how should the online environment be designed? You can comment on any aspect you want, for example, on layout, length of course, features and tools, etc. Please also give reasons.
6. Which of the following types of files or features do you use often in an online learning environment: text documents, video files, audio files, quizzes, wikis, discussion forums, chats, e-mail etc.? Are there other features that you use often?

How do you think these types of files or features help you to learn? Which of the features do you think helps you to learn best and why? Which of the features do you think don't help you to learn at all and why?
7. In your opinion, what are the **disadvantages** of online communication in comparison with face-to-face communication?
8. In your opinion, what are the **advantages** of online communication in comparison with face-to-face communication?
9. How many messages do you post in online discussion forums per week?
10. Which types of interaction and communication have you experienced in an online learning environment? You can name a wide variety of types such as, for example, chatting with other learners, being in emotional e-mail discussions, collaborating on wikis, etc.

Date	Thread	Author	Status	Unread Posts	Total Posts
12/3/07 11:11 AM	Portrait Values Questionnaire	Markus Haag	Published	0	5
10/15/07 12:16 PM	Discussions in a forum or chat	Markus Haag	Published	0	19
10/15/07 12:16 PM	How does an online course contribute to your learning?	Markus Haag	Published	0	22
10/15/07 12:15 PM	What do you like most in an online course?	Markus Haag	Published	0	18
10/15/07 12:15 PM	What do you like least in an online course?	Markus Haag	Published	0	16
10/15/07 12:15 PM	Learning best in an online learning environment	Markus Haag	Published	0	16
10/15/07 12:14 PM	Types of files and features of an online learning environment	Markus Haag	Published	0	15
10/15/07 12:14 PM	Disadvantages of online communication	Markus Haag	Published	0	13
10/15/07 12:13 PM	Advantages of online communication	Markus Haag	Published	0	11
10/15/07 12:13 PM	Messages in online discussion forums	Markus Haag	Published	0	13
10/15/07 12:12 PM	Types of interaction and communication	Markus Haag	Published	0	14

Main threads of the discussion forum of the IT Project Management module website

Total views: 74 Your views: 24

Dear all,

As announced in my presentation a while ago, the Portrait Values Questionnaire is now ready and online for you to fill in. Please take a few minutes to complete it. I will analyse your data and let you know how your score on the different values, so you personally benefit from filling in the questionnaire. Please note that it is essential for you to fill in certain fields of the questionnaire - see details below.

Here is the link to the questionnaire:
http://www.surveymonkey.com/s.aspx?sm=2be_2fEUXsBSyl.etq49KOfUzq_3d_3d

This survey, the Portrait Values Questionnaire, forms part of a PhD research project at the University of Bedfordshire, Luton, UK. The project is entitled "Knowledge Development in Online Learning Environments: A Cross-Cultural Perspective" and focuses on knowledge development processes and learning outcomes in online learning.

The Portrait Values Questionnaire (PVQ) by Shalom H. Schwartz is a tool to determine the cultural-level and individual-level value orientations of the Schwartz Value Survey.

The survey consists of 40 short statements about other people and should take about 10 minutes to complete. You are, of course, free not to participate in this survey if you so wish. In case you have any questions, please don't hesitate to contact me at markus.haag@beds.ac.uk

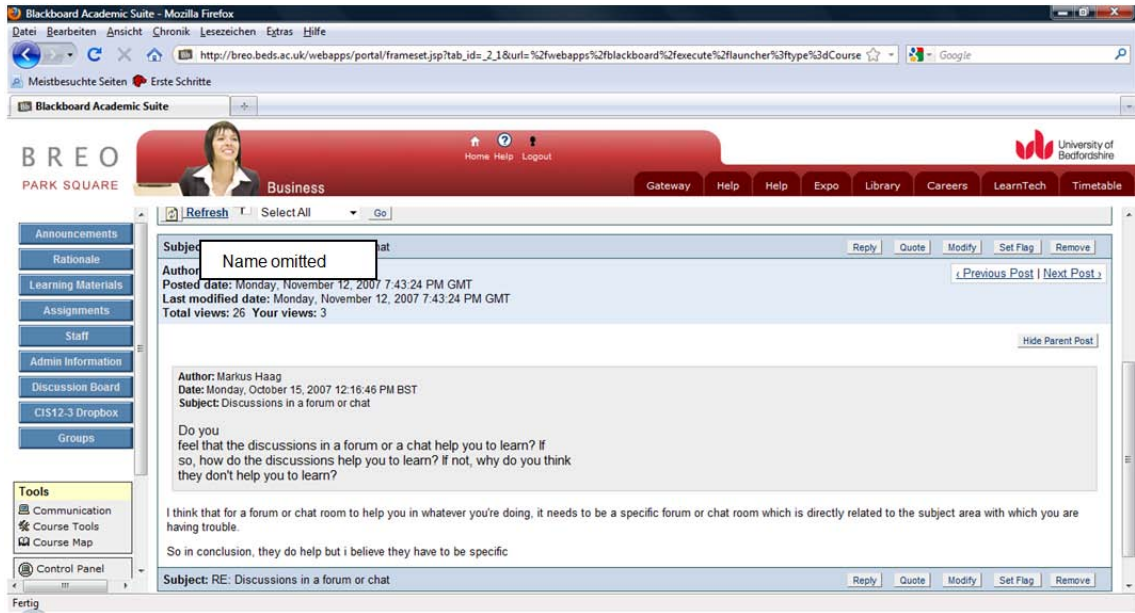
Your name will not be identified in the reporting of the results. Your responses will remain confidential, and the data will be used only for research purposes.

First, on this page, please state whether you are male or female - you will then be forwarded to the corresponding version of the survey. The forty statements are divided into four pages each containing ten statements. Please make sure that you complete all statements, as this is essential for the analysis of the survey. Finally, there is one page containing some general questions about your personal background.

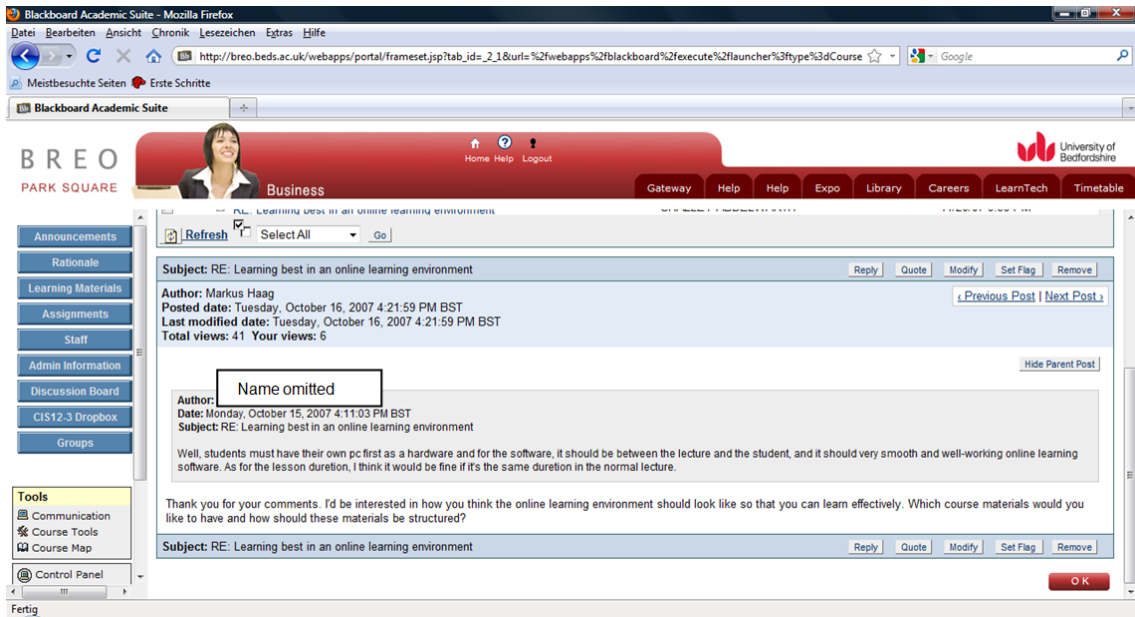
Thank you very much for your time and co-operation.

Kind regards
 Markus Haag
 University of Bedfordshire

Cover letter explaining the Portrait Values Questionnaire to the students of the IT Project Management module



Example of a discussion forum posting -1-



Example of a discussion forum posting -2-

Appendix A.2: Exploratory Study: Follow-Up E-Mail

Subject line: Research project: Your ranking on value orientations

I would like to use this opportunity to thank you for participating in the online discussion about your experiences of online learning.

I also let you know about the Portrait Values Questionnaire which allows you to find out your individual ranking on ten value dimensions. For my research project it would be vital if you could fill in this short questionnaire (which takes about 10 minutes to complete), as this would enable me to link your discussion postings to your value orientations.

This is the direct link to the questionnaire:

http://www.surveymonkey.com/s.aspx?sm=_2be_2fEUXsBSyLetg49KOfUZg_3d_3d

After analysing the data, I will of course send you your personal rankings by e-mail – it is quite interesting to see how oneself scores in a psychometric test.

Please make sure to answer all forty statements of the Portrait Values Questionnaire, as well as indicating your country, e-mail address so that I can send you your results, and other background information.

Thank you very much for your time and cooperation.

Kind regards

Markus Haag

Appendix A.3: Exploratory Study: Answers

Exploratory Study: Answers to Discussion Forum Questions

Discussion forum postings of the exploratory study

Courses 'Writing for E-Business Websites' and 'IT Project Management'

Question 1:

Do you feel that the discussions in a forum or a chat help you to learn? If so, how do the discussions help you to learn? If not, why do you think they don't help you to learn?

Writing for E-Business Websites

- learning English; discussions are good practice
- I improve my language. Also I can learn something interesting from others posts.
- brings much more views to a topic when you hear what others think; really difficult to read it objectively and think of other possible viewpoints to add; one must be very critical when reading posts in online courses and not just simply believe everything someone writes; others' opinions and views are important and can be constructive.
- people tend to use abbreviations, slang and phrases that are not proper English; persons who don't have English as their mother tongue this might result in mistakes and confusions when writing formal language; more the poster has focus the more sentences and phrases are as they should be; I try to pay attention when writing even to random forums; I pay particular attention to grammar and vocabulary. When it comes to postings made by other people I don't give special attention to small typos but on the other hand I hate to read a single post through several times to get what the person is trying to say. It's important to be understood!

IT Project Management

- Yes, in a way to exchange some ideas, and it may help sometimes, but not really a trustworthy source for me.
- yes i think online chat can be useful as sometimes you need to look at things from a different view, which could be introduced to you via speaking to someone online, i agree that it is not the most trustworthy view though.
- yes, as because i didn't know all the things about the project we were working on but the other members did.
- Yes, it helps me to memorise better and understand the subject better.
- I think discussions in forum and chat are helpful because you get to see others point of views which help you see the differences and similarities in things. Also by posting yourself you can sometimes get useful replies which do help.
- Well i feel it helps in some ways in that alots of ideas are been spread around and this can be helpful in creating awareness in certain aspects of the project which maybe someone didn't think of so its a helpful tool
- I find the forums / discussion boards useful as I am able to go over ideas, and also see other peoples and build upon my own knowledge.

- I think that for a forum or chat room to help you in whatever you're doing, it needs to be a specific forum or chat room which is directly related to the subject area with which you are having trouble. So in conclusion, they do help but i believe they have to be specific
- Yes i do think it is good. Its helps to exchange ideas.
- Yes, i feel that having dicussions in a forum do help with learning in some ways when ideas and thoughts of other students are shared amongst everyone so we all get a feel of the various views people hold. However, i do agree that it is not the most trustworthy source of all but is a place for others to express views
- Discussion boards/Forums are Usedul for a learning experiance and it helps users exchange opinions and ideas.
- Discusion forum's can be helpful to develop your own opinion, but they lack facts or evidence just opinions or suggstions; they are good to debate, and see others points of veiw but they cannot be relied upon as a factful source of communication.
- I think that discussion forums are useful as you get alot of different views from different users and you may find your answers their or it might inspire you with new ideas.
- I feel that having dicussions in a forum do help with learning as you have other students views on things. Also you casn use this to discuss different issues which other students can help you.
- Yes, I feel that using a forum or chatting with a friend does help you to learn more about a topic. The main plus to learning in this way is that you have more control over how the content of the questions/answers/conversations/discussions are percieved. When you have a one on one conversation with a friend or a lecturer you are always thinking of your next reply and do not have time to think about it. With an online discussion you do have the time to think about your reply and you have the option to not reply at all, which is a luxury really. As with all discussions, the more opinions you have on the matter the higher the chance there is on covering something you didn't first think of. Even though you may not agree with someones reply, they have shown you an angle you may not noticed to start of with. I could not see online lectures working well as this would seem very boring to me. I fell, having a one on one conversation with your lecturer on a topic is by far more beneficial for the student
- Yes, the discussions in a forum can help you, because other people with greater knowledge can help you with your current problem, but the disadvantage of that is, that this problem must not be urgent, because the repliers may not post a solution for days or weeks.
- This 2nd life virtual environment stuff helped with meetings and one can schedule his time and be doing their task not neccessary being in uni with team mates but holding instant messaging meetings.good idea.
- Discussions in forums can be an invaluable source of knowledge in many subject areas due to the many participants who take part in them. Over time an extensible database of knowledge can be gathered. It can help learning for newer entrants to a subject and it can be helpful to have situations clarified, as the question has usually been asked before so it might only take a quick search to find an answer. If no answer is to be found then it is not usually long before someone posts.

Question 2:

How does an online course contribute to your learning differently from classroom and training room learning? Please also give reasons.

Writing for E-Business Websites

- I find it a bit more challenging to learn stuff online because you have to find all the answer yourself. There is no teacher around who can guide you through task etc.

IT Project Management

- Online course it's new e-learning technic, and I would like to try it to give back my opinion about it. But I think it would be fine by the time becuase it's undirectly learning, it's quit different from the direct learning, which is in classroom.

Follow-up question by researcher:

Could you tell me a bit more what you mean by direct and indirect learning?

Answer to follow-up question:

I meant face to face is a direct between lecturer and student in class

The undirect is through the net and using webcam live like messenger

- How does an online course contribute to your learning? Online learning differs in many things from classroom and training learning. First of all, in online learning you can be anywhere that you like, sign in with your pc or laptop and follow the online lectures along with notes and practical exercises that might be given out to you. Secondly, you could easily record and track back some point that you want to emphasize and pay more attention. Moreover, if you working full time and want some time for yourself and family, online learning is the best way to be home and the same time attend your online lecture. Training learning is totally different in the sense that you going to be somewhere like an office or a meeting room of some firm or company, or even in a trainig centre. There will be some presentation and introduction about what are you going to follow and then some test to evaluate your grid of knowledges. After that you would havde to start a daily base(or every second day) training, which might be payed from the firm that conducting it. It's like signing a contract with the firm to complete succesfully the training and thereafter to work for them or contracting on behalf of them in some other company. Finally, classroom learning is totally different. I don't have to go into details for it. We all know how it is. :-))
- The major difference with Online learning is that is not dependant upon me travelling to the campus in *[place name omitted for reasons of privacy]*. This means that I am able to access the materials from home. Therefore I can use the online materials at my convenience, and so am able to spend a greater amount of time in my academic studies. Online learning is not restricted to a particular time frame or the avaiability of a certain venue, which increases the convenience of my academic studies dramatically.
- online courses help me when i need to take notes as i am reading it i have plenty of time to make my notes, as i am dislesic i need more time to write things down and with online learning i also have a p.c to hand to make my notes, as i have very poor handwriting it helps me to easly read what i have witten. this makes it easier when it comes to studying for an exam.
- I find it sometimes is easier on line especially if I have difficulty I can review the program for couple of time also I can fix in my time table anytime.
- Online course is more interactive and is a good source to memories the content . You can reply the specific content time and time again if you do not understand it with easy.
- major factor of an online course for me is conviennence, you can work from home without needing to have to travel to access reasources, downside can be that ypu have to be very motivated which may not suit everyone.

- The contribution of online courses to my studies here can be compared to reading literatures or books relevant to my course being that i'm a networking student and my course requires more of practicals and hands-on-deck experience. Online course will provide me with the basics the course has to offer and of course without the practical experience ,it might well be thought of as abstract learning.
- Online courses are helpful because for those of whom are introverted people, it gives them more confidence to ask questions or put forward answers to questions, because they are on their own/independently learning.
- First of all, i do not have to be at the university i can be at home. I can access work more than once and in my own time and take notes in my time aswell.
- Online learning is suitable for people that don't have time to go into an institute in order to learn. They can access leaning materials from home at their own convenience and aren't restricted to one particular time and day in which they need to be at an institute. So because of this it is clear that classroom learning and online courses are very different.
- Its definately more interactive and time scheduling would be a lot easier and most importantly you can exchange different ideas and learn more.
- Online course's, are effective for being able to work at your own pace, you may miss information in a lecture, or a handout. With online learning you are able to go back and check your work.
- Online learning allows me to take my time to understand a certain point i can go over apoint again and agian until i have fully understood it before continuing on to the next point. It also allows me to access at anytime of the day allowing me to start learning at an appropriate time to me e.g. when i am fully awake.
- An online course, pretty much allows me access to my course details: lecture notes, assignments, staff contact details, anywhere in the world anytime of day. This is a great bonus for the student. If I just had a lecture with no online material, I would need to make sure I made all of my notes within my lecture time. Also there is the added bonus of time flexibility. I can decide when to go over the lecture notes. I can decide how much time and effort I want to put in. In a training room, there wouldn't be these features for me.
- The main contribution is the tempo or the speed you have to study or acquire information, resources about current topic. The other advantage would be, if the tutor records his lecture with audio/video devices, so that the student will hear/watch and catch every word from the lecturer.
- Learning in a mixed paced environment can sometimes be slightly intimidating or off putting, because most learners absorb information at different speeds and in different views, it also can take longer to process When a learning participant has the ability to stream a course directly into a more comfortable environment and have the ability to pause, rewind and go over missed important items it can only be beneficial for certain groups of users. Online courses can be repeated, executed on demand and be watched from anywhere in the world. This could not be matched in a class room or training room.

Question 3:

What do you like **most** in an online course? Please also give reasons.

Writing for E-Business Websites

- I can study when I have time
- I can work in my own time
- develops time management skills
- help students develop writing skills
- expressing myself in written form is something I have think about a little more than simply talking about a topic in a classroom. When you answer all questions in written form you have to be much clearer than in a classroom discussion
- I cannot really say whether or not it will be less/more effective, but most certainly different than in the normal classroom situation.
- you might be more motivated because you CHOOSE to work.

IT Project Management

- I prefer, if there is alive lecture through the net and using webcam to see the lecturer.

Question by the researcher:

Why exactly do you like having lectures via a webcam? What do you feel are the differences between a face-to-face lecture and a lecture via webcam? Do you think you will learn more or better in a face-to-face lecture than in an online lecture?

Response to researcher's question:

Actually, I like both but if the Uni'll provide e-learning then live lecture is one of this new technics, and it's runnig now with other unis

- I feel as though having all the infomation I need in one place is a major benefit to me as i can access the infomation whenever and wherever i am.
- The best part of online learning is the high avaliability of the learning resources, so I am not restricted to certain times. I can very easily utilise the resources so I am able to work at my own pace and get the most out of the learning experience.
- Online course is more interactive and is a good source to memories the content . You can reply the specific content time and time again if you do not understand it with easy.
- I like the fact that it is very convenient for any student using it for example, students can study online at anytime from anywhere with internet access. Another great aspect of elearning is that you can learn at your own speed and not have to wait for a professor during lectures.
- I need all information to pass my exams without running around for
- It provides me with all the information i need on a topic at a sitting,dont have to browse through different sites or gather different information from which i'll pick out whats relevant to me.
- I like the fact that i am able to learn in my own time and i also like it because i do not have to work from the university. I am able to work from home or where i can get Internet access. It is also useful to communcate with other students.

- I like online courses for the reason that i can learn and study information and materials in my own time, wherever and whenever is most convenient for me. I can be more flexible with my time and i'm not restricted to one time and one day, i can learn when i'm most ready.
- I like the idea of flexibility in an online course. Time Flexibility is most important because you can still learn while away from "the classroom" and still able to interact with others.
- I Like to be able to go back to previous lecture's and recap information provided, also checking up on handin dates is very helpful also.
- The best thing about online course is that you work in your own time. This way you can manage your time to the way you want it. Also you only need internet access which you can do the course from anywere i.e. from home.
- I agree with the other posts. The time flexibility feature is really nice as I can always access my course.
- That I can manage my time by my schedule; Be situated in quiet, safe, not disturbed, relaxed environment; Save time and money when travelling is necessary; The geographical advantage
- The ability to start the course when your time allows rather than having to match a course timetable. People can have complicated life's, but they may still want to learn new things. The internet has opened up many avenues for people who quest knowledge.

Question 4:

What do you like **least** in an online course? Please also give reasons.

Writing for E-Business Websites

- I don't have chance to meet with my teacher in reality
- he/she can't explain all my doubts as well as 'normal' teacher; wait for his/her reply which may not clearly explain my doubts, so then I must write another message and it takes time. I could learn less effectively and I could lose some time to contact with my teacher.
- very little peer learning; it takes much longer to get to know class mates and it is difficult to plan group meetings via e-mail because not everyone checks their e-mail that often. I find that I often don't ask questions that I would ask in a regular class meeting because I start thinking that perhaps it's not such an important question after all; technical problems; sometimes the assignments are unclear or not easy to understand; whereas in a classroom situation you would be more likely to go to talk to the teacher about it. This is the first online course that I have participated in that is so interactive.; positive is the fact that students have to introduce themselves in the beginning of the course and tell a little about themselves. This gives a sense of "knowing" the course mates. As soon as there is that feeling you want to give valuable replies; you have much more opinions than just your own; completely different viewpoint

IT Project Management

- I would like to have alive lecture online. That means, I can see my lecture online and that could help me, especially if I want ask him for anything regarding the lesson he or she would answer me in the same time.; no, I think thats all , but I still folloving the updating news for this new system, especially from Gulf countries (Oman,UAE-Dubai,Kuwait,Qatter,Bahrain,Saudi) and USA
- The aspect of online learning that I like least is the lack of personal contact. I feel that often meeting in person or a discussion between peers is often a valuable tool, and helps to your build social skills. Online learning has the other major drawback of users feeling isolated and alone, working by themselves with no contact (face to face) with others. Communication with Webcams and voice communication is a method of overcomming this.

- The absence of personal contact, especially when you need a topic to be expanded on
- everything.....
- Well the main thing here would be is that there is a lack of face to face communication and there is a possibility that other students may not check their posts so communication may be poor.
- The thing I least like about online courses is the lack of communication between tutors and other students. When learning in an institute we can share our concerns and issues with other students and if we don't understand something we can ask the tutors for help directly. Whereas if your learning from home you have that restriction of not being able to ask the tutors for help personally and not being able to ask other students for advice. One is therefore restricted to technological communication which isn't always reliable.
- The lack of personal "face-to-face" contact between the tutor and other students. Although I'd be able to interact/communicate online, there will be a minimum level of understanding. Personal contact is also a great way to develop soft skills and learn to work well with others.
- Working solely online in education can leave people without the necessary skills to communicate with people in the work place, you don't get the chance to socialise with people who have the same interests.. online learning or lonely learning?
- Not being able to ask questions at the time you are viewing the online material and getting immediate answers.
- The least like for online course is that there is not much communication between the student and the tutor. If there was a problem you would be able to talk to your tutor straightaway.
- Lecturers who rely too much on it. For example they could fill their presentation lecture notes with lots of text and make the lecturers very boring. They could use the 'refer to the online lecture notes' excuse to escape some situations, like when they don't know the answer to a question asked. It maybe the correct answer, but its not very useful for the student.
- The least I like is not able to ask questions at that moment when I need to and there are no advice how to tackle occurred problem or situation.
- The fact that you can not divert from the lesson plan if an interesting point has been touched upon and you would like to know more or look at it in greater depth. There also may be different questions that you may have each time you run the course (if ability provided).

Question 5:

In order for you to learn best and most effectively in an online learning environment, how should the online environment be designed? You can comment on any aspect you want, for example, on layout, length of course, features and tools, etc. Please also give reasons.

Writing for E-Business Websites

- friendly and easy to navigate; layout should be readable; using the environment should be intuitive
- peer pressure factor; teacher's influence; strong inner motivation; following the contributions that are being posted, and intervening with extra explanation whenever problems or misunderstandings arise; deadlines; keep the drop-out rate to a minimum. So participants need guidance, reassurance, encouragement and feedback in order to make it as psychologically difficult as possible for anyone to simply stop participating (ideally!); providing comment and feedback

Comment by the researcher:

Maybe online learning isn't that different to offline learning after all? Maybe all that is different is the way feedback is given, how guidance is provided, etc.?

IT Project Management

- Well, students must have their own pc first as a hardware and for the software, it should be between the lecture and the student, and it should very smooth and well-working online learning software. As for the lesson duration, I think it would be fine if it's the same duration in the normal lecture.

Response to a follow-up by the researcher:

I think learning online it's better for postgraduate students, because they are likely to study and learn, even though online, they would never miss it if they are at home. But for undergraduate students, whom aged below 20 years, I think better for them to attend the Uni campus, Why? the answer is, if they have online learning, the possibilities for them to use this tech. is very low. In other words, I prefer e-learning should be established for postgraduate students.

- To learn effectively the layout needs to be simple, as over complicating the layout could cause a distraction, from experience of doing cisco course they like to have a diagram of what they are explaining next to the text which can prove useful when trying to understand what they are saying in text form. As visual representations can be more useful in understanding certain things.
- Basically, it should be online-realtime, where one can ask questions and get answers immediately
- The environment of an online learning environment should be customised for the individual users. Subjects that the student is taking should be clearly listed with sections listed within this to various resources to assist with the topic. This allows the easy use of the system to quickly retrieve information for the academic modules, that is, the student is studying.
- The online design should be plain, simple and easy to use. If the online environment is not user friendly and over packed with information this may cause confusion amongst people. Plain and simple which is easy to use students will feel more comfortable and relaxed in the online environment.
- I think that the most important thing in order for us to learn best when online is to be user friendly. The reason for this is that if the student cannot access the right material because it is too difficult to use then they will miss out on their learning. It should be designed to meet individual needs and the layout should be designed in a neat and organised fashion with course modules and materials easily accessible.
- The site must be user friendly - Easy to use. The available resources must be easily located by the users. The layout should be consistent.
- There should be more examples available, which would make it easier to understand the material.
- an online learning environment should be interactive easy to use and also pleasing to the eye; there needs to be an online community created so users can exchange ideas about the course; there should be mini test quizzes, and practise practical which can be run from specific servers; also there, should be animation to keep users interest..., but not to much as to make them lose interest.
- It would be good to have a recorded video lecture which can be played in your own time which should include notes and diagrams. notes of the lecture should also be available in text format so that while watching the video you could add points to the written notes to help you understand the lecture more.
- They should have it simple, which the user can understand easily without any problem. They could also have videos of lectures so that the student can listen to it in their own time.
- Till now I haven't seen one good software, which provides such features: easy to navigate, easy to use, simplicity and from the software point: whiteboard, where anyone can write any important formulas can be written down, online conversation e.g mIRC or IRC, and storage of all students study material. Then in that one particular software containing other small software components, the student can customize it for his own needs. The length of the lecture should be 1 hour + break 10min + 45 minutes from my point of view.

- Length of each snippet of a course should be no greater than 45 minutes as Health and Safety should be taken into account. A screen should not be viewed for long periods of time without have a short break away from it. How many snippets together would be dependant on the course subject and the learning ability of the participant or even on their time constraints. It is always a positive to be able to have a copy of any files that the course uses as examples.

Question 6:

Which of the following types of files or features do you use often in an online learning environment: text documents, video files, audio files, quizzes, wikis, discussion forums, chats, e-mail etc.? Are there other features that you use often?

How do you think these types of files or features help you to learn? Which of the features do you think helps you to learn best and why? Which of the features do you think don't help you to learn at all and why?

Writing for E-Business Websites

- quizzes, discussion forums and text documents. I think that they all helps me to learn, but discussion forums helps me learn the most, because you have to response to each other and ask questions, so you go "very deep" into the task and the thing that you are learning at the time.
- We use text documents, wikis, quizzes and discussion forums. We have to read/analyse something and after it - do some interesting tasks. I think that all features help me to learn
- We use text documents, wikis, quizzes and discussion forums. I must analyse some problem and write what I think about it. I must analyse these texts and write answers or in tasks write to forum what I think. When I answer questions I am guided by my teacher and I know what is important (I had to pay attention to it). When I discuss online I can get know others opinions and it can widen my knowledge.

IT Project Management

- I think the only feature could help me to learn online is the vedio file, in one codition, if this vedio is a recorded lecture, which means if you missed any lecture you can use the vedio.

Follow-up question by the researcher:

It is interesting to see that you really seem to like video lectures. What exactly is the main benefit of learning through videos? Do you think videos are more effective than audio files or texts when it comes to learning?

Response to the follow-up question:

[Sentence omitted because of privacy reasons] Anyway, ofcourse the vedio file better than audio and text becuae it's more effective and it has the picture and the sound , (vedio, Audio) togther.

- all; yes; very much; ones with a deadline on them; ones without deadline
- Video files,quizzes,will be most appropriate,video files are closest to experiencing the real,live situation,its more like a practical simmulation of an event
- I quite often use text documents, discussion forums and email in an online learning environment. The combination of these features in the [name of the OLE omitted for reasons of privacy] system allows access to lecture notes, assignments, discussion topics and email. The combination of these features helps me to access the information required for my personal learning. If I was to

identify the best feature I would say discussion boards, as you can comment upon a subject with peer comments. I think the least useful tool are audio files, as they are just to listen to and so are not as interesting as more interactive media types such as videos.

- The features that i use often in an online learning environment is text documents, discussion forums and e-mail. With these features communication with other people is good. With video files for example they are there to be watched and i dont see them as a very good communication feature with other people. E-mail, discussion forums and text documents may be simple communication features but they work and students reply to them in my opinion
- I use text documents, discussion forums and email very often. I find that these features are useful for my learning as they provide me with information to help with my course. *[Name of OLE omitted]* has many features for students to use and I find that checking assignment grades is a very useful feature because you can check the results straight away rather than waiting for them in the post. All features help in some way or another with our learning but I find that text documents, discussion forums and email are the most affect to our learning than the rest. Discussion boards are helpful as they allow us to discuss views and thoughts with others. Email is also a good feature as we can communicate with our tutors in a one-to-one basis. The feature that I find is not very useful is audio because it isn't visually stimulated people may get bored.
- I definately would use text documents, video and audio files and most importantly would be a "discussion forum and chat facilities". The discussion forum and chat facilities would help students to express different ideas. I also like the audio files because you can listen to lectures at anytime. My least favourite would be the video files-I'd personally get bored watching a lecture, I'd rather listen to it on the audio file.
- The video audio and the quizzes are the most effective learning techniques, which enhance my understanding of the material.
- Text documents, discussion boards and email are the best way for me to learn which i use the most. I find that when im reading about something i get a better understanding than watching a video.
- I usually use white papers, text documents, video files, wikis sometimes forums. These types help you gather and store information in your mind various ways, reading text, listening and observing in video file. I don't think there is one way and it is the best, I think the combination of the various types of resources is the key for helpful learning.
- Online learning features I have benefitted from include video and audio files, discussion forums and email support. I use pdf manuals as more content is rich in colour and activity (Flash and hyperlinks around the document). The audio and video features stand out as the best feature for learning, there's nothing quite like someone showing you how to perform a task or action. I am indifferent about wikis as information can be added and moved to suit someone's own beliefs or opinion, but because a wiki can have much knowledge that is interesting when ever I start on a wiki page it is best to double check and clarify the information somewhere else.

Question 7:

In your opinion, what are the **disadvantages** of online communication in comparison with face-to-face communication?

Writing for E-Business Websites

- there's always a risk that you get misunderstood, because you can't see any expressions..
- it's impossible to see if the other party is really paying attention. Online communication has no subliminal messages that can be read through the lines from expressions and gestures in addition to spoken language. It's also hard to use proper language and at the same time not to be too formal.

IT Project Management

- There are many disadvantages of online communication, as follow: 1- Lecture could not be able to know if his student focusing with him or not. 2- Connection disconnecting could happen any time. 3- Health problems with some student, whom could not stay for along time on front of the pc.
- A disadvantage of online communication is that some people might not have access to a computer that is connected to the internet at all times. So they can only view correspondence at intervals, so they might miss important notes.
- time to think about answer; undeniability of answers; record of communication
- The disadvantages of online communication are that, firstly it is hard to gauge the other persons mood when speaking with them. Also face to face communication allows the use of gestures and demonstration, again another feature that online communication is not so good at. I also find online communication to be a little impersonal, face to face contact is always best as then you show willingness to speak with the other person.
- Well online commication means you have to have a computer and some people may not have a compter so that means that commuication can be very poor. On the other hand face to face commication you will know that the the other perosn has recieved the infromation as you would have told them.
- With online communication there is no guarantee that the recipient would have received what the sender is trying to send them so communication in this way is limited. Also, it may be that a person doesn't have a computer so they are limited from online communication in this way also. However, with face-to-face communication one can be sure that the other is listening to what you have said and can therefore provide you with immediate feedback whereas with online communication people tend to take time in replying. Facial expression and gestures are also an advantage to online communication because you can see what the other is feeling, whereas online you cannot.
- The most important thing is to have a PC with an internet connection. Another major disadvantage would be health reasons (I find it difficult looking at the screen for too long) and communication barriers.
- Online-communication is less formal and it is difficult to sometimes get your questions answered effectively, whereas face-to-face is easier to explain the concepts that are most problematic.
- Online communication doesn't allow you to get the expression and feelings from the other user/users you are communicating with this can lead to misunderstandings. You also dont know if a message has been viewed by a user or when it was viewed .
- Online is not very formal. It is harder to understand the information than having a face to face conversation. Face to face is better as you can understand each other and get instant replys from each other.
- Online communication disadvantages are: The student can not observe lecturers body language. Any spontaneous example is hard to implement and to show to everyone. Reliability of the internet must be there 24/7, therefore everything must be recorded in this way that the student can view it after getting internet access. The lecturer is not able to observe are students focused on the presentation or surfing the web.
- when you learn online there is no one there to help with difficult questions when you need help; also sometimes it is best to show someone how to do thing's rather than just telling them or leaving them a message, as even when you are gving instuctions on how to do sometyhing sometimes you dont understand why you are doing what you have been taught..

Question 8:

In your opinion, what are the **advantages** of online communication in comparison with face-to-face communication?

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- Online communication lacks this "solid", rigid and uncomfortable feeling that appears in classroom when new course starts and nobody knows each other..
- For persons who are not easy-going and are that social it's easier to participate.

IT Project Management

- There are many advantages of online communication, as follow: 1- Student do not have to go to the Uni. 2- Save time and money for both sides. 3- improve pc skills for everybody.
- time to think about answer; undeniability of answers; record of communication
- The main key benefits of online communication are: * Quick and easy communication over large geographical areas * Significantly lower cost then equivalent land line phone communications * High accessibility due to increased numbers of users with internet connectivity * Information can be made easily available to a large number of individuals
- With the online communication, users can easily communicate their ideas, interests and opinions which they may find rather difficult when having a face-to-face conversation with the tutor or other students.
- Online communication is useful because it is accessible all the time, especially during exams. Whereas face-to-face interactions are more limited in time, also some people find it difficult to approach the lecturer if they are having problems. This problem is avoided through online communication, so it is more advantageous.
- The key advantages of online communication are: * communicate easily with people in a different geographical area. * easily record and store communication
- I think is that you have much more time to think about things. By this you can give an answer in your own time.
- Reduced traveling cost; Geographical distance doesn't matter anymore, saving time, money. History record, where as not all student have time to record or write down what is said by the tutor. Some students are afraid to ask questions in front of everybody, but online communication eliminates this problem of being modest.
- an advantage of online communication is the fact we don't have to do come into UNI, to access certain types of information. also we can exchange views and opinions with a wide variety of people who would not usually be available.
- An advantage can be that you could be multi-tasking with out causing offense to someone who may think they should have your undivided attention. Online communication can be more cost effective and instant.

Question 9:

How many messages do you post in online discussion forums per week?

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- maybe 3-8
- about 4-7
- about 4-8
- 'bout 2-10 post/week

IT Project Management

- Three messages normaly or four
- many
- Typically I will post 5-10 messages in online discussions / forums every week. I am currently a member of a motorycle club so post most on those.
- I would most many. on a average 5 a week or many be more.
- I'd usually post up about 8-10 messages a week.
- I respond many times in a week.
- I would post between 1-5 per week.
- 1-6 in a week i reply
- not that many. I would say 5-10 a month.
- Unfortunately, I am just learing from those forums (educational), nothing to post yet.
- 1 - 5 a week, if there is any thing to reply to or if i have anything worth saying ..
- Lately since the birth of my children may be one a week. Used to be about between 20 and 30. I was heavily into music forums.

Question 10:

Which types of interaction and communication have you experienced in an online learning environment? You can name a wide variety of types such as, for example, chatting with other learners, being in emotional e-mail discussions, collaborating on wikis, etc.

Writing for E-Business Websites

No contributions.

IT Project Management

- I just e-mail my lecturers right know, I dont have any experince in others
- wiki, irc
- Have used Webct in the past a very similar communication portal like blackboard ,where users can interact via email,discussion board, learning materials etc.
- I have mainly used the following tools: Email - Communication with lectures and peers; Discussion Board- Group work and discussion on topics; Instant Messenger- Discussing topics and also travel arrangements; Online Learning Environment- *[name of OLE omitted for reasons of privacy]*, for many resources such as lecture notes
- E-mail and IM is the type of communiacion i have used at the moment.this is quite similar to using *[name of OLE omitted for reasons of privacy]*.
- Emails, Discussion boards, Chat Forums.
- I have used many online interacting methods, mainly the discussion boards. This is very useful in communicating with others to seek help on problem areas.
- Have used forums, email and IM to communicate.
- Emails, Discussion boards, Chat Forums and Instant Messaging
- I have experienced online communication over various discussion boards, yahoo groups (for learning purposes), various messenger, forums.
- I use, emails, discussions boards & forums, in relations to uni of *[name omitted for reasons of privacy]* i have not had a chance to use video confercing or pre recorded lectures here but im sure if lectur5es where recorded studdents would be very inclined to use this type of interaction.
- I participate in many discussion forums. I also use IRC. That's it.
- I have since used video lectures recored form this module and have found them to interative, yet the focus was more on the lecturer rather than the materials being covered.

Appendix B.1: Delphi Study: Background and Form

Delphi Study:

**Background, Instructions, Relevance of SVS Value Types Form,
Value Types and their Definitions**

Delphi Study

Relevance of the Value Types of the Schwartz Value Survey for Personal Knowledge Development in the Context of Online Learning

Background

Learners' individual-level values in an online learning study cohort arguably influence personal knowledge development (PKD). Investigating the relationship between the value types of the Schwartz Value Survey and PKD is central to a PhD research project conducted by me at the University of Bedfordshire, UK.

PKD denotes changes in the knowledge of a learner during the course of an online learning programme or an online learning activity. Therefore, PKD is defined here as follows:

Personal knowledge development in e-learning environments encompasses idiosyncratic and individualised processes and phases of creating new knowledge, evaluating and modifying knowledge, sharing knowledge, and finally applying knowledge in real-life situations and contexts.

The aim of this Delphi study is to decide which value types are particularly relevant for PKD or have a significant impact – either positively or negatively – in the context of online learning; those value types identified by you through this Delphi study will then be used in my PhD research to investigate to what extent and how these value types influence PKD – either positively or negatively – in online learning environments. Online learning is defined here as follows:

Any structured or partly structured web-based learning activity in a virtual learning environment – for example, merely looking up an article on Wikipedia does not count as online learning in this context.

A Delphi study is an empirical research method for obtaining a reliable consensus opinion from an expert panel. It often consists of two rounds of questionnaires collecting an expert's opinion on a particular issue. The aggregated results of the first round will be presented to every participant. Based on the results of the first round, where necessary, you might wish to re-consider your choice, and this process continues until the experts have reached a substantial degree of consensus.

Please return the filled-in document by e-mail no later than 09 January 2009. Your responses will remain confidential and the results will only be reported in an anonymised and summarised form. I will e-mail you a summary report of the findings.

Thank you very much for your time and co-operation. If you have any questions, please do not hesitate to contact me.

Round 1

Instructions

- Based on the definitions of the value types given after the questionnaire, please tick the boxes by clicking them, thus marking those value types that you consider to be:
 - particularly relevant or not particularly relevant for, or**
 - having a significant impact and effect (either positive or negative) or not having a significant impact and effect (either positive or negative) on****personal knowledge development (PKD) in the context of online learning.**
- Please base your consideration on the presumed relevance in a variety of contexts for a variety of people rather than on your personal preferences or experiences.
- Please tick **no more than 5 value types**. You can, however, tick less than 5, if you so wish.
- Please also state your reasons for naming a particular value type as either particularly relevant or not for PKD in the context of online learning by typing your comment into the last column. If you think a value type has a positive or negative impact on PKD, please give an explanation for this as well.

Background information

Please check that your name and e-mail address are correctly listed here and update them, if necessary. Please also state your job title and select your area(s) of expertise and the type of organisation/employment you are working in.

Name of respondent	
E-mail	
Job title	
Area(s) of expertise (tick all that apply)	Knowledge management and related areas <input type="checkbox"/> E-learning and related areas <input type="checkbox"/> Culture / values and related areas <input type="checkbox"/> Other (please specify)
Type of organization/employment	Institutions of Higher Education <input type="checkbox"/> Other types of educational institutions <input type="checkbox"/> Knowledge management consultant or practitioner <input type="checkbox"/> E-learning consultant or developer <input type="checkbox"/> Other (please specify)

Relevance of SVS value types

Value type	Particularly relevant for / having an impact on PKD in online learning (please tick "Yes" no more than 5 times)		Your reason for naming this value type as either particularly relevant or not particularly relevant for PKD in the context of online learning
	Yes	No	
Conformity	<input type="checkbox"/>	<input type="checkbox"/>	
Hedonism	<input type="checkbox"/>	<input type="checkbox"/>	
Tradition	<input type="checkbox"/>	<input type="checkbox"/>	
Stimulation	<input type="checkbox"/>	<input type="checkbox"/>	
Security	<input type="checkbox"/>	<input type="checkbox"/>	
Self-Direction	<input type="checkbox"/>	<input type="checkbox"/>	
Power	<input type="checkbox"/>	<input type="checkbox"/>	
Universalism	<input type="checkbox"/>	<input type="checkbox"/>	
Achievement	<input type="checkbox"/>	<input type="checkbox"/>	
Benevolence	<input type="checkbox"/>	<input type="checkbox"/>	

Thank you very much for your participation.

Please return this questionnaire no later than **09 January 2009** and return it to me by e-mail. If you have any questions, please do not hesitate to contact me at markus.haag@beds.ac.uk

Value types and their definitions

In the table that follows each of the ten individual-level value types of the Schwartz Value Survey is defined and explained. First, the definition of Schwartz (1992) as well as the values which make up a particular value type is given. Second, in addition to this, a more discursive explanation is given, taken from ChangingMinds.org (2008).

Schwartz, S. H. (1992) Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. Zanna (ed) *Advances in Experimental Social Psychology* (Vol. 25), pp. 1-65. New York: Academic Press.

ChangingMinds.org (2008) *Schwartz's Value Inventory*. Accessed on 17 November 2008 at http://changingminds.org/explanations/values/schwartz_inventory.htm

Conformity	<p>Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms.</p> <p>Politeness: courtesy, good manners Obedient: dutiful, meeting obligations Self-Discipline: self-restraint, resistance to temptation Honoring of Parents and Elders: showing respect (Schwartz, 1992)</p> <p>“The person who values conformity seeks obedience to clear rules and structures. They gain a sense of control through doing what they are told and conforming to agreed laws and statutes.” (ChangingMinds, 2008)</p>
Hedonism	<p>Pleasure and sensuous gratification for oneself.</p> <p>Pleasure: gratification of desires Enjoying Life: enjoying food, sex, leisure, etc. (Schwartz, 1992)</p> <p>“Hedonists simply enjoy themselves. They seek pleasure above all things and may, according to the view of others, sink into debauchery.” (ChangingMinds, 2008)</p>
Tradition	<p>Respect, commitment and acceptance of the customs and ideas that traditional culture or religion provide the self.</p> <p>Humble: modest, self-effacing Accepting my Portion in Life: submitting to life’s circumstances Devout: holding to religious faith & belief Respect for Tradition: preservation of time-honored customs Moderate: avoiding extremes of feeling & action (Schwartz, 1992)</p> <p>“The traditionalist respects that which has gone before, doing things simply because they are customary. They are conservatives in the original sense, seeking to preserve the world order as is. Any change makes them uncomfortable.” (ChangingMinds, 2008)</p>

Stimulation	<p>Excitement, novelty, and challenge in life.</p> <p>Daring: seeking adventure, risk A Varied Life: filled with challenge, novelty and change An Exciting Life: stimulating experiences (Schwartz, 1992)</p> <p>“The need for stimulation is close to hedonism, though the goal is slightly different. Pleasure here comes more specifically from excitement and thrills and a person with this driver is more likely to be found doing extreme sports than propping up a bar.” (ChangingMinds, 2008)</p>
Security	<p>Safety, harmony and stability of society, of relationships, and of self.</p> <p>Family Security: safety for loved ones National Security: protection of my nation from enemies Social Order: stability of society Clean: neat, tidy Reciprocation of Favors: avoidance of indebtedness [Sense of Belonging: feeling that others care about me] [Healthy: not being sick physically or mentally] (Schwartz, 1992)</p> <p>“Those who seek security seek health and safety to a greater degree than other people (perhaps because of childhood woes). Though they may worry about the potential of military force, they welcome the comfort that their existence brings.” (ChangingMinds, 2008)</p>
Self-Direction	<p>Independent thought and action – choosing, creating, exploring.</p> <p>Creativity: uniqueness, imagination Freedom: freedom of action and thought Independent: self-reliant, self-sufficient Curious: interested in everything, exploring Choosing own Goals: selecting own purposes [Self-Respect: belief in one’s own worth] (Schwartz, 1992)</p> <p>“Those who seek self-direction enjoy being independent and outside the control of others. They prefer freedom and may have a particular creative or artistic bent, which they seek to indulge whenever possible.” (ChangingMinds, 2008)</p>
Power	<p>Social status and prestige, control or dominance over people and resources.</p> <p>Social Power: control over others, dominance Authority: the right to lead or command Wealth: material possessions, money [Preserving my Public Image: protecting my ‘face’] [Social Recognition: respect, approval by others] (Schwartz, 1992)</p> <p>“This takes value from social status and prestige. The ability to control others is important and power will be actively sought through dominance of others and control over resources.” (ChangingMinds, 2008)</p>

Universalism	<p>Understanding, appreciation, tolerance and protection for the welfare of all people and for nature.</p> <p>Broadminded: tolerant of different ideas and beliefs Wisdom: a mature understanding of life Social Justice: correcting injustice, care for the weak Equality: equal opportunity for all A World at Peace: free of war and conflict A World of Beauty: beauty of nature and the arts Unity with Nature: fitting into nature Protecting the Environment: preserving nature (Schwartz, 1992)</p> <p>“The universalist seeks social justice and tolerance for all. They promote peace and equality and find war anathema except perhaps in pursuit of lasting peace.” (ChangingMinds, 2008)</p>
Achievement	<p>Personal success through demonstrating competence according to social standards.</p> <p>Successful: achieving goals Capable: competent, effective, efficient Ambitious: hard-working, aspiring Influential: having an impact on people and events [Intelligent: logical, thinking] [Self-Respect: belief in one’s own worth] (Schwartz, 1992)</p> <p>“Value here comes from setting goals and then achieving them. The more challenge, the greater the sense of achievement. When others have achieved the same thing, status is reduced and greater goals are sought.” (ChangingMinds, 2008)</p>
Benevolence	<p>Preservation and enhancement of the welfare of people with whom one is in frequent personal contact.</p> <p>Helpful: working for the welfare of others Honest: genuine, sincere Forgiving: willing to pardon others Loyal: faithful to my friends, group Responsible: dependable, reliable [True Friendship: close, supportive friends] [Mature Love: deep emotional & spiritual intimacy] (Schwartz, 1992)</p> <p>“Those who tend towards benevolence are very giving, seeking to help others and provide general welfare. They are the 'earth mothers' who nurture all.” (ChangingMinds, 2008)</p>

Appendix B.2: Delphi Study: Results

Delphi Study: Results

Results of the Delphi Study on the Relevance of the Value Types of the Schwartz Value Survey for Personal Knowledge Development in E-Learning

Thank you very much for participating in the Delphi study conducted at the University of Bedfordshire. Due to the relatively high consensus among the experts of the panel on the question of which of the ten individual-level value types of the Schwartz Value Survey are particularly relevant for personal knowledge development in e-learning, no further rounds have to be conducted. Please find the results of the study below. I have listed the value types in the order of frequency with which the members of the panel have labelled them as particularly relevant for personal knowledge development in e-learning. A representative selection of the comments that you provided is given as well.

Generally speaking, there are three clusters of value types in terms of percentage of experts on the panel who ranked a value type as particularly relevant:

Stimulation, Self-Direction, and Achievement	72-88%
Hedonism, Benevolence, and Conformity	27-33%
Tradition, Universalism, Security, and Power	11-16%

Thank you very much again for your participation and co-operation. If you have any questions, please do not hesitate to contact me via markus.haag@beds.ac.uk

Kind regards,

Markus Haag

University of Bedfordshire

Value types	Comments from the panel on the relevance of the value types for personal knowledge development in e-learning	Labelling a value type as particularly relevant for personal knowledge development in e-learning	
		Total number of responses: 18	
		No.	Percentage
Stimulation	<p>Positive driver of engagement with and commitment to new form and style of learning</p> <p>exploring new paths of learning (and teaching)</p> <p>Learning is also some kind of challenge</p> <p>The possibilities that online learning offers should make it possible to provide greater stimulation than other means, and so there ought to be a positive effect on the knowledge of those who engage with it. (I have just a slight doubt as to how well learning in general matches this value type.)</p> <p>I am not sure the learner needs to have this value, but the online learning environment MUST be stimulating to the learner. If the learner has an innate curiosity/propensity for discovery, so much the better.</p> <p>Online environment will likely require heightened need for stimulation to generate and maintain interest</p> <p>Desire for novelty and challenge - e-learning is still novel and challenging</p>	16	88.8%
Self-Direction	<p>Control of one's own activity and work rhythm</p> <p>Online learning makes possible individual choices</p> <p>E-Learning need self-direction</p> <p>Online learning is by definition independent and at least partly self-directed. There should thus be a positive effect.</p> <p>Self evident that much online learning demands independence</p> <p>I think that it is very relevant due self-direction is related to freedom, independency and choosing the own goals. The e-learning context provides these properties.</p>	16	88.8%
Achievement	<p>Supports identification with and attachment to the learning objectives and outcomes, would promote engagement with the on-line community through comparison of performance with the learning group</p> <p>Many on-line learners would, for practical or personal reasons, be unable to follow a 'traditional' course; thus, on-line learning supports their need for self-improvement / achievement</p> <p>Goals are a must, students need a mission</p> <p>Those who regard doing well as a challenge should be expected to receive greater benefits.</p> <p>Helps a student determine progress</p>	13	72.2%

	<p>Achievement is less visible in the e-contexts</p> <p>Online PKD will require significant need for personal achievement to be successful</p>		
Hedonism	<p>fun is an important part of socialisation</p> <p>It could be that hedonism is a important value in interactive media but this depends on the degree on which hedonism is being considered as a product of the action coming from the other in which case it does not rest on the pleasure of one's own activity</p> <p>If the system is designed to be enjoyable rather than routine (not all are), then there should be a positive effect from the fun of doing it</p> <p>Process has to be enjoyed to be effective</p> <p>involvement in learning needs to provide satisfaction to the user and self gratification or it will not be continued</p>	6	33.3%
Benevolence	<p>helping others in an effective and efficient way</p> <p>From a provider perspective, this value represents a basic ethical condition of on-line 'learning': i.e. providing people with opportunities for self-actualisation as opposed to merely making money out of on-line education</p> <p>People only change if there is trust and a supporting climate</p> <p>This is the one I am least sure about. Some students in the past have told me, for example, that they prefer to ask questions of me in an individual e-mail rather than an FAQ forum, as the answer is then exclusive to them. This means that there could be a very complicated effect based on things like perceived reciprocity.</p> <p>I suspect successful online environments are driven by traffic from the benevolent.</p>	6	33.3%
Conformity	<p>Potential to motivate engagement with the emerging group norms, but other values more salient.</p> <p>New interactive media are less conformity oriented (towards an outside authority) and further more the autonomy of the person</p> <p>I expect a positive effect. Online learning has to be quite highly structured, but one structure will never suit everyone. Conformists will be happier to make use of the structure provided: non-conformists will be too busy feeling unhappy about the structure to learn much.</p>	5	27.7%
Tradition	<p>new interactive media are by definition less tradition-oriented</p> <p>Traditional values are hard to break, and cause defensive learning routines</p> <p>Online learning already is traditional in some people's view, and alternative approaches to learning have been actively supported for 60 years, so I would not expect any clear effect.</p>	3	16.6%

	Any change makes them uncomfortable (ChangingMinds, 2008). I think it's relevant because fear of the unknown (changes...) is a very common characteristic when people face new challenges, for instance the online-learning process.		
Universalism	<p>Supportive of necessary adjustment to cooperative dimensions of effective engagement with on-line learning environments.</p> <p>yes, in the sense that its all about a community of practice, and shared ideas, shared support.</p> <p>there is a clash of culture between electronic media and protection for the welfare, peace, social justice, unity with nature etc.</p> <p>Would be important in organizations and for advocates of change, perhaps in NGOs</p>	3	16.6%
Security	<p>Could support commitment to the success of on-line engagement, might equally lead to rejection of on-line options for study through risk aversion.</p> <p>new interactive media are less security oriented as the 'player' risks more than in the case he/she is situated within a top-down environment</p> <p>eLearning does not give assurance, it is in some kind a "wild" journey</p> <p>This is important for those who feel they may better their lives significantly by their engagement in e-resources</p>	2	11.1%
Power	<p>For the powerful people it is important to show their authority, they can't do that wie eLearning because it is anomomous</p> <p>The assessment of learning tends still to be shaped by uneven power distribution: i.e. tutors & their institutions are empowered to assess & reward the 'quality' of student learning</p> <p>Probably not widely distributed as a value in the e-context.</p>	2	11.1%

Appendix C.1: Survey: Cover Letter and Follow-Ups

Survey: Cover Letter and Follow-Ups

E-mail cover letter for survey used for the courses at the University of Bedfordshire

Dear Online Learner,

I am contacting you today about taking part in a research project on learning processes and learning outcomes in online learning environments. I am particularly interested how personal values influence these processes and outcomes, and how this determines how effective the online learning activities and functions are for the individual learner. These insights can then be used to improve online learning, something from which you might benefit as well. As you are involved in online learning, your participation in this research is very valuable to me and to the outcomes of the research.

I would like to invite you to fill in a survey which investigates the relationship between personal values and your learning processes results in online learning. This survey is part of my PhD research conducted at the University of Bedfordshire, UK.

The survey should only take about 15 minutes to fill in. Your name will not be identified in the reporting of the results. Your responses will remain confidential, and the data will only be used for research purposes.

Of course, you are free not to participate in this survey if you so wish. In case you have any questions, please do not hesitate to contact me at markus.haag@beds.ac.uk

You can access the Internet survey here:

http://www.surveymonkey.com/s.aspx?sm=b5GG62kCj5E_2fgGnwPkHllw_3d_3d

Thank you very much for your time and co-operation.

Kind regards,

Markus Haag

University of Bedfordshire

Follow-up e-mail distributed by members of staff via e-mail and/or BREO to their students

Dear Online Learner,

Please let me take this opportunity to thank those of you who have completed my Internet survey on personal values and learning processes and learning outcomes in online learning environments. I am still looking for further respondents and if you haven't participated in the survey yet, it would be great if you could complete it as this would be essential for the outcome of my research.

I am particularly interested how personal values influence these processes and outcomes, and how this determines how effective the online learning activities and functions are for the individual learner. These insights can then be used to improve online learning, something from which you might benefit as well. Your participation in this research is very valuable to me and to the outcomes of the research.

The survey is part of my PhD research conducted at the University of Bedfordshire, UK. It should only take about 15 minutes to complete. Your name will not be identified in the reporting of the results. Your responses will remain confidential, and the data will only be used for research purposes.

You can access the survey here:

http://www.surveymonkey.com/s.aspx?sm=b5GG62kCj5E_2fgGnwPkHllw_3d_3d

As a 'thank you' for your participation, you can win one of two book vouchers worth £25 each (€30) by submitting your e-mail address in the box at the end of this survey.

Thank you very much.

If you have any questions, please do not hesitate to contact me at markus.haag@beds.ac.uk

Kind regards,

Markus Haag

University of Bedfordshire

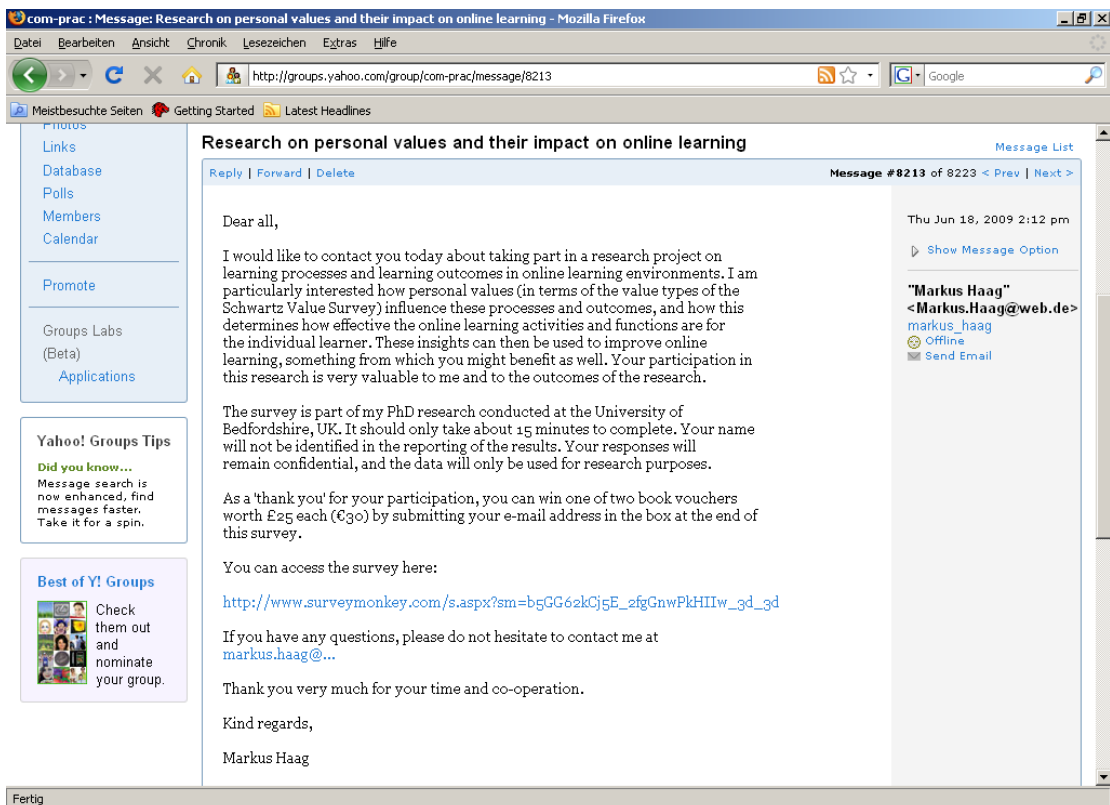
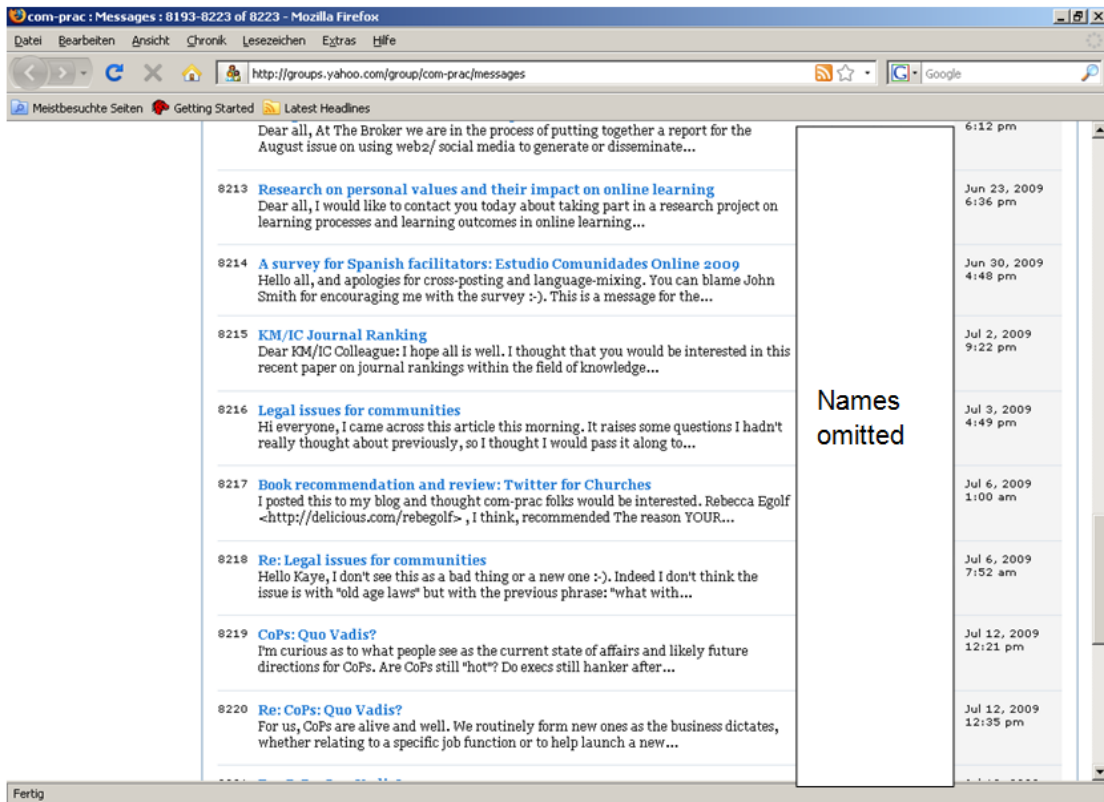
Screenshot of posting on dialogin The Delta Intercultural Academy

The screenshot shows the dialogin website interface. The main content area features a news article titled "Knowledge development and values in online learning by dialogin Reviews Editor Markus Haag". The article text discusses a Delphi study on the relationship between value types and online learning, mentioning a survey with book vouchers as an incentive. It also references a high consensus among experts on achievement, stimulation, and self-direction.

The sidebar on the right contains a "Community" section with options like "Online message", "Find a member", and "New members". Below this is a "Who is online?" section showing the date "10.2.10" and a list of users. A prominent black box with the text "Names omitted" is overlaid on the user list.

At the bottom of the article, there are links to "Access the survey on knowledge development in online learning", "Access Markus Haag's conference presentation 'Knowledge Development in Virtual Work'", and "Access Markus Haag's University of Bedfordshire profile page". The article is dated "published: 29.08.2009".

Yahoo! Groups



interculturalinsights : Messages : 15444-15473 of 15563 - Mozilla Firefox

http://finance.groups.yahoo.com/group/interculturalinsights/messages/15473?viscount=-30&l=1

Names omitted

Message # Go Search: Search Advanced Start Topic

interculturalinsights : Message: Research on personal values and their impact on online learning - Mozilla Firefox

http://finance.groups.yahoo.com/group/interculturalinsights/message/15468

Research on personal values and their impact on online learning

Message # 15468 of 15564 < Prev | Next >

Dear all,

I would like to contact you today about taking part in a research project on learning processes and learning outcomes in online learning environments. I am particularly interested how personal values (in terms of the value types of the Schwartz Value Survey) influence these processes and outcomes, and how this determines how effective the online learning activities and functions are for the individual learner. These insights can then be used to improve online learning, something from which you might benefit as well. Your participation in this research is very valuable to me and to the outcomes of the research.

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You can access the survey here:

http://www.surveymonkey.com/s.aspx?sm=b5GG62kCj5E_afgGnwPkHIIw_3d_3d

If you have any questions, please do not hesitate to contact me at markus.haag@...

Thank you very much for your time and co-operation.

Kind regards,
Markus Haag

Thu Jun 18, 2009 2:05 pm

Show Message Option

"Markus Haag"
<Markus.Haag@web.de>
markus_haag
Offline
Send Email

Links
Database
Polls
Members
Calendar

Promote

Groups Labs (Beta)
Applications

Yahoo! Groups Tips
Did you know...
Want to share photos of your group with the world? Add a group photo to Flickr.

Best of Y! Groups
Check them out and nominate your group.

The screenshot shows a web browser window displaying a list of messages in a Yahoo! Groups forum. The messages are numbered 10512 through 10520. A large white box with the text "Names omitted" is placed over the names of the senders. The messages include titles like "a survey I invite you to complete", "Research on personal values and their impact on online learning", "Check out my photos on Facebook", and "Participation Camp Webcasts - Live this Sat and Sun".

Message ID	Subject	Date	Time
10512	a survey I invite you to complete	Jun 15, 2009	6:27 pm
10513	Research on personal values and their impact on online learning	Jun 18, 2009	3:34 pm
10514	Check out my photos on Facebook	Jun 19, 2009	12:40 pm
10515	introducing me ... and a few quick questions	Jun 25, 2009	6:16 pm
10516	Re: introducing me ... and a few quick questions	Jun 25, 2009	8:43 pm
10517	Re: introducing me ... and a few quick questions	Jun 26, 2009	4:13 pm
10518	Participation Camp Webcasts - Live this Sat and Sun	Jun 26, 2009	4:38 pm
10519	A survey for Spanish facilitators: Estudio Comunidades Online 2009	Jun 30, 2009	6:45 pm
10520	Interesting Blog Post - are we online community folks a "tribe?"	Jul 1, 2009	5:05 am

The screenshot shows a detailed view of message #10513. The subject is "Research on personal values and their impact on online learning". The sender is identified as "Markus Haag" with the email address "Markus.Haag@web.de". The message content includes a greeting, an introduction to the research project, details about the survey's purpose and confidentiality, a reward of £25 for participation, and a link to the survey. The sender signs off with "Kind regards, Markus Haag".

Research on personal values and their impact on online learning

Dear all,

I would like to contact you today about taking part in a research project on learning processes and learning outcomes in online learning environments. I am particularly interested how personal values (in terms of the value types of the Schwartz Value Survey) influence these processes and outcomes, and how this determines how effective the online learning activities and functions are for the individual learner. These insights can then be used to improve online learning, something from which you might benefit as well. Your participation in this research is very valuable to me and to the outcomes of the research.

The survey is part of my PhD research conducted at the University of Bedfordshire, UK. It should only take about 15 minutes to complete. Your name will not be identified in the reporting of the results. Your responses will remain confidential, and the data will only be used for research purposes.

As a 'thank you' for your participation, you can win one of two book vouchers worth £25 each (£30) by submitting your e-mail address in the box at the end of this survey.

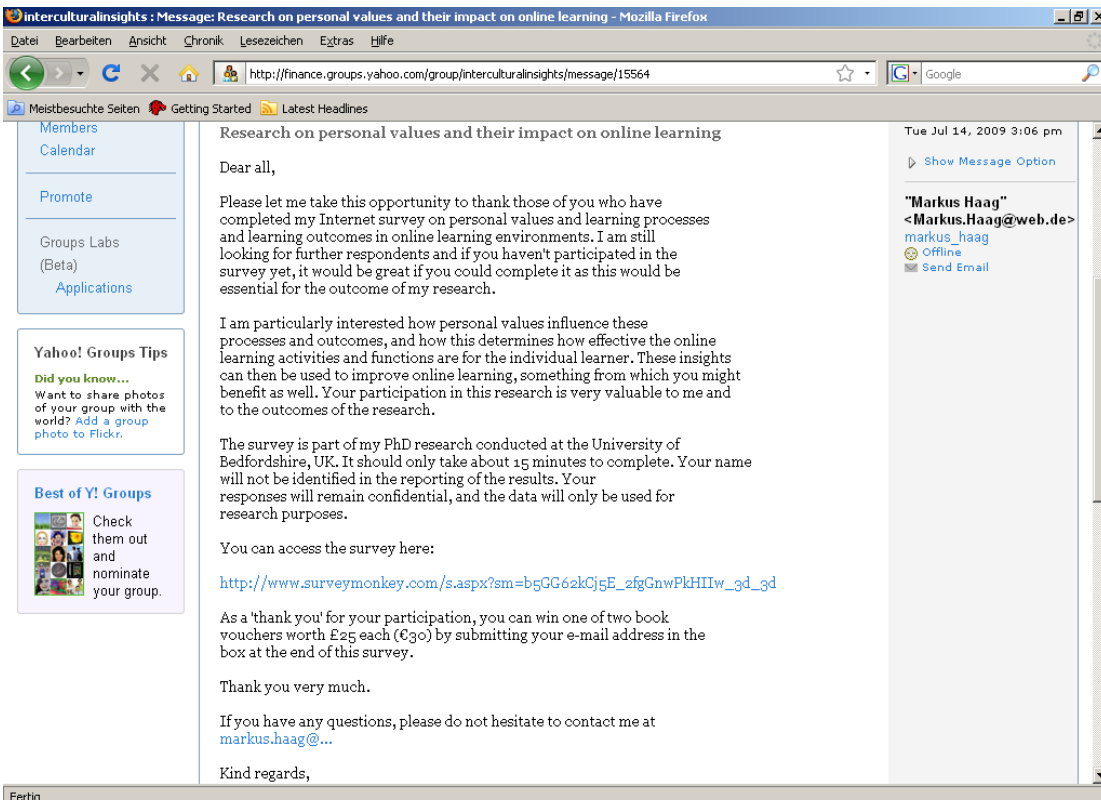
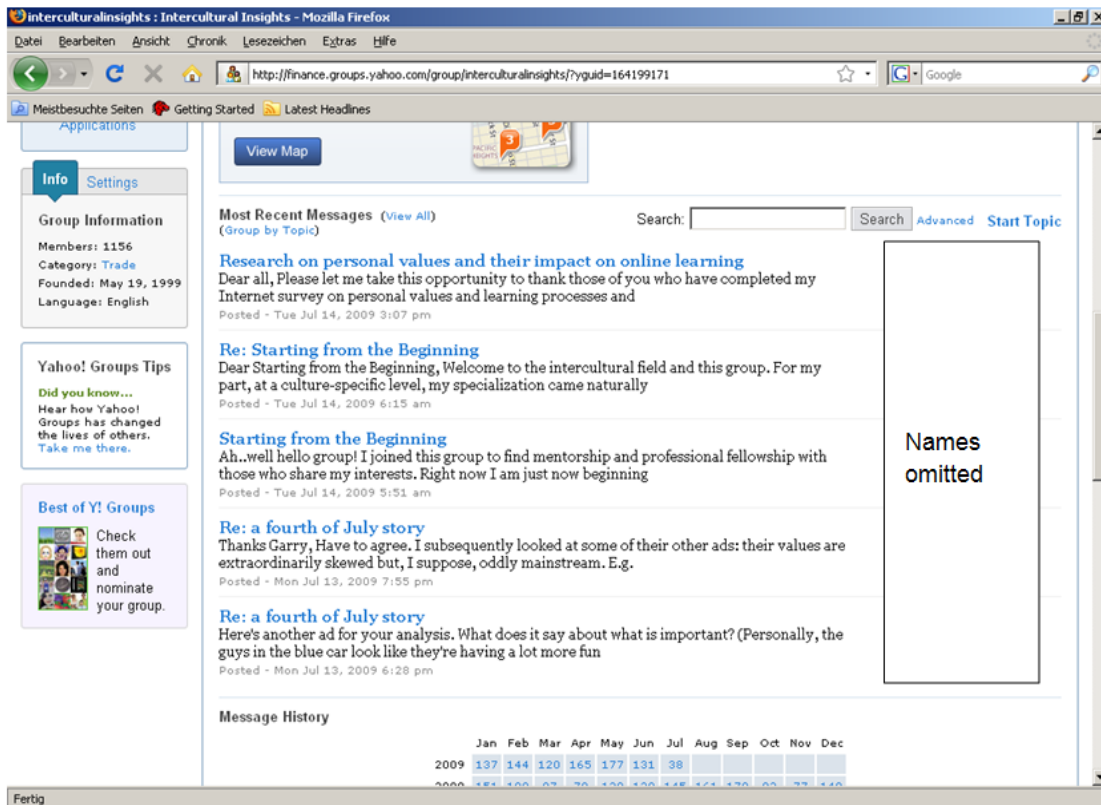
You can access the survey here:
http://www.surveymonkey.com/s.aspx?sm=b5GG62kCj5E_2fgGnwPkHIIw_3d_3d

If you have any questions, please do not hesitate to contact me at markus.haag@...

Thank you very much for your time and co-operation.

Kind regards,
 Markus Haag

Yahoo! Groups: First reminder – sent on 14th July 2009



The screenshot shows a Yahoo! Groups page for the group 'com-prac: Communities of Practice'. The page displays a list of recent messages and a message history table.

Group Information:
 Members: 1671
 Category: Theory and Methods
 Founded: Oct 25, 1999
 Language: English

Most Recent Messages (View All)
 (Group by Topic)

Knowledge sharing across communities
 This question on LinkedIn struck me, and I took a shot at an answer: <http://tinyurl.com/nw96bx> How is knowledge sharing carried out between communities of
 Posted - Tue Jul 14, 2009 11:28 pm

Research on personal values and their impact on online learning
 Dear all, Please let me take this opportunity to thank those of you who have completed my Internet survey on personal values and learning processes and
 Posted - Tue Jul 14, 2009 11:23 pm

Re: CoPs: Quo Vadis?
 Many who say they no longer "use" CoPs have taken the principles and are applying them, - as they foster, measure and invest in relationships that influence
 Posted - Tue Jul 14, 2009 4:57 pm

Re: CoPs: Quo Vadis?
 So what's to be learned about CoPs at this point? * How to squeeze more value out of them? * How to keep IT from forgetting them? * ? John * * John D. Smith -
 Posted - Tue Jul 14, 2009 4:28 pm

Re: CoPs: Quo Vadis?
 thanks Matt interesting maturity analysis and interesting comment from an IT geek in my org from last year - OOPs oh yes I remember them - do people still
 Posted - Tue Jul 14, 2009 7:44 am

Message History

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009	31	11	32	49	5	6	13					
2008	48	42	32	15	20	10	31	31	22	22	12	33
2007	27	36	48	86	100	28	58	72	28	39	36	4

The screenshot shows a detailed view of a message in the Yahoo! Groups 'com-prac' group. The message is titled 'Research on personal values and their impact on online learning' and is dated Tue Jul 14, 2009 2:56 pm.

Message Content:

Dear all,

Please let me take this opportunity to thank those of you who have completed my Internet survey on personal values and learning processes and learning outcomes in online learning environments. I am still looking for further respondents and if you haven't participated in the survey yet, it would be great if you could complete it as this would be essential for the outcome of my research.

I am particularly interested how personal values influence these processes and outcomes, and how this determines how effective the online learning activities and functions are for the individual learner. These insights can then be used to improve online learning, something from which you might benefit as well. Your participation in this research is very valuable to me and to the outcomes of the research.

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You can access the survey here:
http://www.surveymonkey.com/s.aspx?sm=b5GG62kCj5E_2fgGnwPkHIIw_3d_3d

As a 'thank you' for your participation, you can win one of two book vouchers worth £25 each (€30) by submitting your e-mail address in the box at the end of this survey.

Thank you very much.

If you have any questions, please do not hesitate to contact me at markus.haag@...

Sender Information:
 "Markus Haag"
 <Markus.Haag@web.de>
markus_haag
 Offline
 Send Email

onlinefacilitation : Online Facilitation - Mozilla Firefox

http://tech.groups.yahoo.com/group/onlinefacilitation/?yguid=164199171

Meistbesuchte Seiten Getting Started Latest Headlines

Group Information
 Members: 1595
 Category: Cyberculture
 Founded: Aug 12, 1999
 Language: English

Yahoo! Groups Tips
 Did you know...
 Real people. Real stories. See how Yahoo! Groups impacts members worldwide.

Best of Y! Groups
 Check them out and nominate your group.

I apologize for this inconvenience and "controlling nature" of the moderation, but the reality is spammers are wrecking the "commons."
 The list is often high volume, so you may wish to consider the digest option if email is an issue.
 If you choose to quote someone's message from this group to an outside source, please link back to the specific message. A good practice is to ask people if it is ok to use their words in other settings. This is not a rule, just a suggestion!

Most Recent Messages (View All) Search: Search [Advanced](#) [Start Topic](#)

Research on personal values and their impact on online learning
 Dear all, Please let me take this opportunity to thank those of you who have completed my Internet survey on personal values and learning processes and
 Posted - Tue Jul 14, 2009 9:53 pm

Pew Internet's chart of U.S. Internet usage from 2000-2009
 Pew Internet's chart of U.S. Internet usage from 2000-2009 <http://www.pewinter.net.org/Static-Pages/Trend-Data/Daily-Internet-Activities-20002009.aspx>
 Posted - Mon Jul 13, 2009 10:38 pm

Nearly \$14 Million Invested in 5 Virtual Worlds-Related Companies in Q2 2009
 Posted - Fri Jul 10, 2009 2:57 pm

Re: [post] ReadWriteWeb Guide to Online Community Management
 Thanks Tari, for these resources. I've added them to a post I made on Organizational Perspectives. See the story: Community to Promote Real Collaboration
 Posted - Sat Jul 4, 2009 3:10 pm

Re: [of] [post] The Importance of Active Community Management - Pr
 Now THIS article is fabulous. I'll be using his research and report myself! Great job! ... -- Jennifer McChesney Puckett AIM: JJuniper70 Skype: Juniper.Berry
 Posted - Thu Jul 2, 2009 5:56 pm

Add onlinefacilitation to your personalized My Yahoo! page [NY](#) [YT](#) [RSS](#) [What's This?](#)

Fertig

onlinefacilitation : Message: Research on personal values and their impact on online learning - Mozilla Firefox

http://tech.groups.yahoo.com/group/onlinefacilitation/message/10530

Meistbesuchte Seiten Getting Started Latest Headlines

Calendar
Promote
Groups Labs (Beta)
 Applications

Yahoo! Groups Tips
 Did you know...
 Show off your group to the world. Share a photo of your group with us.

Best of Y! Groups
 Check them out and nominate your group.

Research on personal values and their impact on online learning
 Tue Jul 14, 2009 3:10 pm
[Show Message Option](#)

"Markus Haag"
 <Markus.Haag@web.de>
markus_haag
 Offline
[Send Email](#)

Dear all,

Please let me take this opportunity to thank those of you who have completed my Internet survey on personal values and learning environments. I am still looking for further respondents and if you haven't participated in the survey yet, it would be great if you could complete it as this would be essential for the outcome of my research.

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As a 'thank you' for your participation, you can win one of two book vouchers worth £25 each (£30) by submitting your e-mail address in the box at the end of this survey.

Thank you very much.

If you have any questions, please do not hesitate to contact me at markus.haag@...

Fertig

Yahoo! Groups: Second reminder – sent on 12th August 2009

interculturalinsights : Intercultural Insights - Mozilla Firefox

http://finance.groups.yahoo.com/group/interculturalinsights/

Meistbesuchte Seiten Getting Started Latest Headlines

Info Settings

Group Information
 Members: 1162
 Category: Trade
 Founded: May 19, 1999
 Language: English

Most Recent Messages (View All) Search: Search Advanced Start Topic

Research on personal values and their impact on online learning
 Dear all, Please let me take this opportunity to thank those of you who have completed my Internet survey on personal values and learning processes and
 Posted - Wed Aug 12, 2009 12:59 pm

Re: square/curve
 In fact, Carsten, you may not be far from the truth. What you are witnessing in Germany is the insidious spread of that dastardly British plot to dominate
 Posted - Wed Aug 12, 2009 12:14 pm

Re: square/curve
 Thanks for this fascinating subject, as space and culture are surely intricately linked. I'm on holidays at my parents place (Germany) right now and lots of
 Posted - Wed Aug 12, 2009 7:24 am

New file uploaded to interculturalinsights
 Hello, This email message is a notification to let you know that a file has been uploaded to the Files area of the interculturalinsights group. File :
 Posted - Wed Aug 12, 2009 2:10 am

Re: Research on perceptions of quality
 Briley, Donnel A., Michael W. Morris and Itamar Simonson. 2000. Reasons as carriers of culture: Dynamic versus dispositional models of cultural influence on
 Posted - Wed Aug 12, 2009 12:01 am

Message History

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009	137	144	120	165	177	131	141	141				
2008	151	109	97	79	129	128	145	161	178	82	77	149
2007	118	90	152	173	103	72	176	219	136	172	149	96

Fertig

interculturalinsights : Message: Research on personal values and their impact on online learning - Mozilla Firefox

http://finance.groups.yahoo.com/group/interculturalinsights/message/15808

Meistbesuchte Seiten Getting Started Latest Headlines

Members
 Calendar

Promote

Groups Labs (Beta)
 Applications

Yahoo! Groups Tips
 Did you know... Show off your group to the world. Share a photo of your group with us.

Best of Y! Groups
 Check them out and nominate your group.

Research on personal values and their impact on online learning Wed Aug 12, 2009 12:59 pm
 Show Message Option

Dear all,

Please let me take this opportunity to thank those of you who have completed my Internet survey on personal values and learning processes and learning outcomes in online learning environments. I am still looking for further respondents and if you haven't participated in the survey yet, it would be great if you could complete it as this would be essential for the outcome of my research.

I am particularly interested how personal values influence these processes and outcomes, and how this determines how effective the online learning activities and functions are for the individual learner. These insights can then be used to improve online learning, something from which you might benefit as well. Your participation in this research is very valuable to me and to the outcomes of the research.

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http://www.surveymonkey.com/s.aspx?sm=b5GG62kCj5E_zfgGnwPkHIIw_3d_3d

As a 'thank you' for your participation, you can win one of two book vouchers worth £25 each (£30) by submitting your e-mail address in the box at the end of this survey.

Thank you very much.

If you have any questions, please do not hesitate to contact me at markus.haag@...

Kind regards,
 Markus Haag

"Markus Haag"
 <Markus.Haag@web.de>
markus_haag
 Offline
 Send Email

Fertig

The screenshot shows a web browser window displaying a list of messages in a Yahoo! Groups forum. The browser's address bar shows the URL: <http://tech.groups.yahoo.com/group/onlinefacilitation/messages>. The page title is "onlinefacilitation : Messages : 10531-10560 of 10560 - Mozilla Firefox".

The message list contains the following entries:

- 10554 Research on personal values and their impact on online learning**
Dear all, Please let me take this opportunity to thank those of you who have completed my Internet survey on personal values and learning processes and...
- 10555 Happy Birthday!**
Hi Nancy, Happy Birthing Day and thanks for creating and maintaining (the really hard part!) such a stimulating, friendly and forward looking group! Thanks...
- 10556 Happy Birthday!**
Hi Nancy, Happy Birthing Day and thanks for creating and maintaining (the really hard part!) such a stimulating, friendly and forward looking group! Thanks...
- 10557 Re: Needs-based literacies for community builders**
Hi Dave, Thanks for your response. Based on your feedback, and that received from the communities of practice Yahoo group (which also encouraged me to move to...
- 10558 More birthday thoughts**
Hi Nancy and colleagues, I really that my earlier post was far too understated. What I really want to say is that this has been a list that can profoundly...
- 10559 Re: More birthday thoughts**
Hi Nancy, It has been ten years and time indeed flies. I joined this group sometime in the past (I cannot remember when) and have been very happy to see a...
- 10560 Introduction - Brian Burt - MaestroConference (breakout groups by vo**
Per the request I'll introduce myself. I'm very excited to have found this community and am sure we can do some terrific work together. (I'm here related to...

Each message entry includes a timestamp on the right side, such as "Aug 12, 2009 3:54 pm". A large white box with the text "Names omitted" is overlaid on the right side of the message list. At the bottom of the message list, there are search and navigation controls, including "Message #", "Go", "Search", and "Advanced".

The screenshot shows a detailed view of a message in the Yahoo! Groups forum. The browser's address bar shows the URL: <http://tech.groups.yahoo.com/group/onlinefacilitation/message/10554>. The page title is "onlinefacilitation : Message: Research on personal values and their impact on online learning - Mozilla Firefox".

The message content is as follows:

Research on personal values and their impact on online learning

Dear all,

Please let me take this opportunity to thank those of you who have completed my Internet survey on personal values and learning processes and learning outcomes in online learning environments. I am still looking for further respondents and if you haven't participated in the survey yet, it would be great if you could complete it as this would be essential for the outcome of my research.

I am particularly interested how personal values influence these processes and outcomes, and how this determines how effective the online learning activities and functions are for the individual learner. These insights can then be used to improve online learning, something from which you might benefit as well. Your participation in this research is very valuable to me and to the outcomes of the research.

The survey is part of my PhD research conducted at the University of Bedfordshire, UK. It should only take about 15 minutes to complete. Your name will not be identified in the reporting of the results. Your responses will remain confidential, and the data will only be used for research purposes.

You can access the survey here:
http://www.surveymonkey.com/s.aspx?sm=b5GG62kCj5E_zfgGnwPkHIIw_3d_3d

As a 'thank you' for your participation, you can win one of two book vouchers worth £25 each (£30) by submitting your e-mail address in the box at the end of this survey.

Thank you very much.

If you have any questions, please do not hesitate to contact me at markus.haag@web.de

The sender information on the right side of the message view is:

Wed Aug 12, 2009 1:04 pm
 Show Message Option
"Markus Haag"
 <Markus.Haag@web.de>
 markus_haag
 Offline
 Send Email

On the left side of the message view, there is a sidebar with navigation links: "Links", "Database", "Polls", "Calendar", "Promote", "Groups Labs (Beta)", "Applications", "Yahoo! Groups Tips", and "Best of Y! Groups".

This screenshot shows a Yahoo! Groups message list for the group 'com-prac'. The browser window title is 'com-prac : Messages : 8233-8262 of 8262 - Mozilla Firefox'. The address bar shows the URL 'http://groups.yahoo.com/group/com-prac/messages'. The message list contains several entries, with the following details:

Message #	Subject	Text Preview	Date	Time
		Hi All, Thanks so much for the great feedback you've provided on the model I proposed. It forced me to go back to the drawing board and rethink my map. Clearly...		5:05 pm
8257	Research on personal values and their impact on online learning	Dear all, Please let me take this opportunity to thank those of you who have completed my Internet survey on personal values and learning processes and...	Aug 12, 2009	8:00 pm
8258	Re: Needs-based literacies for community builders	Hi Asif, you're welcome, and that's for the attribution. IMHO the map is improved, and the literacies effort is useful.... and seeing you work at mixing...	Aug 13, 2009	9:43 am
8259	Re: Needs-based literacies for community builders	Ok, I finally did it: http://emekaeme.wordpress.com/2009/08/13/how-to-fit-project-management-with-growing-an-in-vitro-community-of-practice/ Can't publish...	Aug 13, 2009	11:36 am
8260	Re: Needs-based literacies for community builders	Salut Miguel, Sitting down and kicking these ideas around would be fantastic (oh, how I wish I could 'transmute' myself -- a la Star Trek -- to where you are...	Aug 13, 2009	4:39 pm
8261	Re: Management of CoPs	Hmm. It seems to me that what you describe is what I would call a "natural" CoP as opposed to a "contrived" CoP. So far as I know, CoPs weren't "managed"...	Aug 13, 2009	7:33 pm
8262	Re: Needs-based literacies for community builders	Asif, Just in relation to the last portion of your posting. You've just captured the problems that any regular profit or non-profit enterprise faces every day,...	Aug 14, 2009	9:46 am

A large white box with the text 'Names omitted' is overlaid on the right side of the message list. At the bottom of the page, there is a search bar and navigation links: 'Messages 8233 - 8262 of 8262', 'Oldest', '< Older', 'Newer >', 'Newest', 'Start Topic', 'MY Y!', 'RSS', and 'What's This?'. A 'SPONSOR RESULTS' section is also visible at the bottom.

This screenshot shows a detailed view of a message in the 'com-prac' group. The browser window title is 'com-prac : Message: Research on personal values and their impact on online learning - Mozilla Firefox'. The address bar shows the URL 'http://groups.yahoo.com/group/com-prac/message/8257'. The message is titled 'Research on personal values and their impact on online learning' and is dated 'Wed Aug 12, 2009 1:07 pm'. The sender is identified as 'Markus Haag' with the email address 'Markus.Haag@web.de'. The message content is as follows:

Research on personal values and their impact on online learning

Dear all,

Please let me take this opportunity to thank those of you who have completed my Internet survey on personal values and learning processes and learning outcomes in online learning environments. I am still looking for further respondents and if you haven't participated in the survey yet, it would be great if you could complete it as this would be essential for the outcome of my research.

I am particularly interested how personal values influence these processes and outcomes, and how this determines how effective the online learning activities and functions are for the individual learner. These insights can then be used to improve online learning, something from which you might benefit as well. Your participation in this research is very valuable to me and to the outcomes of the research.

The survey is part of my PhD research conducted at the University of Bedfordshire, UK. It should only take about 15 minutes to complete. Your name will not be identified in the reporting of the results. Your responses will remain confidential, and the data will only be used for research purposes.

You can access the survey here:

http://www.surveymonkey.com/s.aspx?sm=b5GG62kCj5E_zfgGnwPkHIIw_3d_3d

As a 'thank you' for your participation, you can win one of two book vouchers worth £25 each (£30) by submitting your e-mail address in the box at the end of this survey.

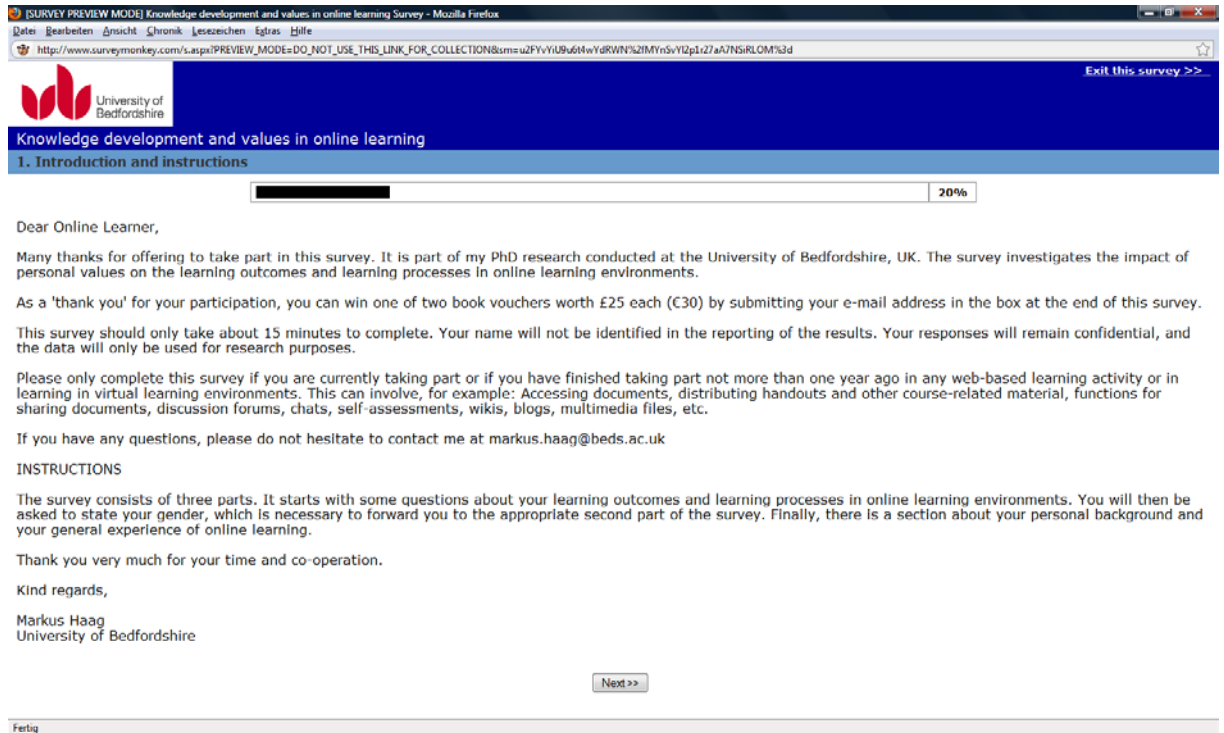
Thank you very much.

If you have any questions, please do not hesitate to contact me at markus.haag@web.de

The page includes a left-hand navigation menu with links to 'Database', 'Polls', 'Members', 'Calendar', 'Promote', 'Groups Labs (Beta)', and 'Applications'. There are also sections for 'Yahoo! Groups Tips' and 'Best of Y! Groups'. The bottom of the page shows the word 'Fertig'.

Appendix C.2: Survey: Questions

Survey: Questions



[SURVEY PREVIEW MODE] Knowledge development and values in online learning Survey - Mozilla Firefox

University of Bedfordshire

Knowledge development and values in online learning

1. Introduction and instructions

20%

Dear Online Learner,

Many thanks for offering to take part in this survey. It is part of my PhD research conducted at the University of Bedfordshire, UK. The survey investigates the impact of personal values on the learning outcomes and learning processes in online learning environments.

As a 'thank you' for your participation, you can win one of two book vouchers worth £25 each (€30) by submitting your e-mail address in the box at the end of this survey.

This survey should only take about 15 minutes to complete. Your name will not be identified in the reporting of the results. Your responses will remain confidential, and the data will only be used for research purposes.

Please only complete this survey if you are currently taking part or if you have finished taking part not more than one year ago in any web-based learning activity or in learning in virtual learning environments. This can involve, for example: Accessing documents, distributing handouts and other course-related material, functions for sharing documents, discussion forums, chats, self-assessments, wikis, blogs, multimedia files, etc.

If you have any questions, please do not hesitate to contact me at markus.haag@beds.ac.uk

INSTRUCTIONS

The survey consists of three parts. It starts with some questions about your learning outcomes and learning processes in online learning environments. You will then be asked to state your gender, which is necessary to forward you to the appropriate second part of the survey. Finally, there is a section about your personal background and your general experience of online learning.

Thank you very much for your time and co-operation.

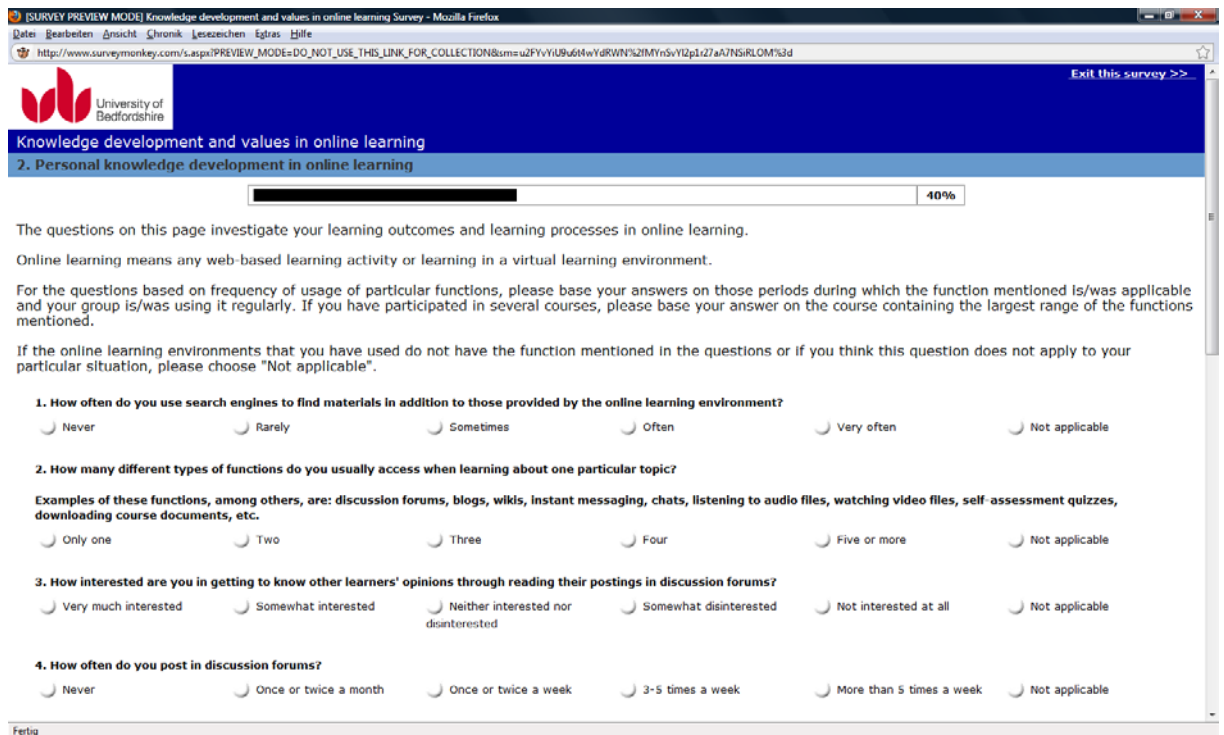
Kind regards,

Markus Haag
University of Bedfordshire

Next >>

Fertig

Introduction and instructions



[SURVEY PREVIEW MODE] Knowledge development and values in online learning Survey - Mozilla Firefox

University of Bedfordshire

Knowledge development and values in online learning

2. Personal knowledge development in online learning

40%

The questions on this page investigate your learning outcomes and learning processes in online learning.

Online learning means any web-based learning activity or learning in a virtual learning environment.

For the questions based on frequency of usage of particular functions, please base your answers on those periods during which the function mentioned is/was applicable and your group is/was using it regularly. If you have participated in several courses, please base your answer on the course containing the largest range of the functions mentioned.

If the online learning environments that you have used do not have the function mentioned in the questions or if you think this question does not apply to your particular situation, please choose "Not applicable".

1. How often do you use search engines to find materials in addition to those provided by the online learning environment?

Never Rarely Sometimes Often Very often Not applicable

2. How many different types of functions do you usually access when learning about one particular topic?

Examples of these functions, among others, are: discussion forums, blogs, wikis, instant messaging, chats, listening to audio files, watching video files, self-assessment quizzes, downloading course documents, etc.

Only one Two Three Four Five or more Not applicable

3. How interested are you in getting to know other learners' opinions through reading their postings in discussion forums?

Very much interested Somewhat interested Neither interested nor disinterested Somewhat disinterested Not interested at all Not applicable

4. How often do you post in discussion forums?

Never Once or twice a month Once or twice a week 3-5 times a week More than 5 times a week Not applicable

Fertig

First part of questions regarding PKD in OLEs

[SURVEY PREVIEW MODE] Knowledge development and values in online learning Survey - Mozilla Firefox

Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

http://www.surveymonkey.com/s.aspx?PREVIEW_MODE=DO_NOT_USE_THIS_LINK_FOR_COLLECTION&sm=u2FYvYU9u6MwYdRWn7%2IMYnSvYI2p1z7aA7NSiRLOM%3d

5. How often do you contribute to a blog (e.g. adding, changing or deleting parts of it)?

Never Once or twice a month Once or twice a week 3-5 times a week More than 5 times a week Not applicable

6. How often do you contribute to a wiki (e.g. adding, changing or deleting parts of it)?

Never Once or twice a month Once or twice a week 3-5 times a week More than 5 times a week Not applicable

7. How often do you take part in Instant Messaging (IM) with other learners or tutors?

Never Once or twice a month Once or twice a week 3-5 times a week More than 5 times a week Not applicable

8. How often do you take part in online chats with other learners or tutors?

Never Once or twice a month Once or twice a week 3-5 times a week More than 5 times a week Not applicable

9. How often do you share information with other learners (e.g. posting links or other documents for them to read, using online communication tools to let them know about something, etc.)?

Never Once or twice a month Once or twice a week 3-5 times a week More than 5 times a week Not applicable

10. How often do you work together with other learners to create new materials (e.g. wikis, blogs, etc.)?

Never Once or twice a month Once or twice a week 3-5 times a week More than 5 times a week Not applicable

11. How strongly do you agree or disagree with the following statements?

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Not applicable
1. I can apply the knowledge that I have acquired in the online learning environment in other contexts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. The functions for self-assessment (e.g. quizzes, tests, simulations) help me to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. The functions of the online learning environment contribute to me acquiring new knowledge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. The functions of the online learning environment contribute to improving my skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Fertig

Second part of questions regarding PKD in OLEs

[SURVEY PREVIEW MODE] Knowledge development and values in online learning Survey - Mozilla Firefox

Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

http://www.surveymonkey.com/s.aspx?PREVIEW_MODE=DO_NOT_USE_THIS_LINK_FOR_COLLECTION&sm=u2FYvYU9u6MwYdRWn7%2IMYnSvYI2p1z7aA7NSiRLOM%3d

Never Once or twice a month Once or twice a week 3-5 times a week More than 5 times a week Not applicable

8. How often do you take part in online chats with other learners or tutors?

Never Once or twice a month Once or twice a week 3-5 times a week More than 5 times a week Not applicable

9. How often do you share information with other learners (e.g. posting links or other documents for them to read, using online communication tools to let them know about something, etc.)?

Never Once or twice a month Once or twice a week 3-5 times a week More than 5 times a week Not applicable

10. How often do you work together with other learners to create new materials (e.g. wikis, blogs, etc.)?

Never Once or twice a month Once or twice a week 3-5 times a week More than 5 times a week Not applicable

11. How strongly do you agree or disagree with the following statements?

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Not applicable
1. I can apply the knowledge that I have acquired in the online learning environment in other contexts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. The functions for self-assessment (e.g. quizzes, tests, simulations) help me to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. The functions of the online learning environment contribute to me acquiring new knowledge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. The functions of the online learning environment contribute to improving my skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Overall, I have learned a lot through the online learning environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 12. The next page contains some questions which are formulated in a gender-specific way. In order for you to be forwarded to the appropriate version, please select whether you are male or female and then click on "Next".

Male Female

<< Previous Next >>

Fertig

Third part of questions regarding PKD in OLEs

[SURVEY PREVIEW MODE] Knowledge development and values in online learning Survey - Mozilla Firefox

http://www.surveymonkey.com/s.aspx?PREVIEW_MODE=DO_NOT_USE_THIS_LINK_FOR_COLLECTION&sum=u2FYvYU6w6MwYdRWn%2IMYnsvY2p1z7aA7NSrLOM%3d

4. Portrait Values Questionnaire - Female version

80%

Here we briefly describe some people. Please read each description and think about how much each person is, or is not, like you. Click on the circle that shows how much the person in the description is like you.

*** 1. HOW MUCH LIKE YOU IS THIS PERSON?**

	very much like me	like me	somewhat like me	a little like me	not like me	not like me at all
Thinking up new ideas and being creative is important to her. She likes to do things in her own original way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It's very important to her to show her abilities. She wants people to admire what she does.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
She thinks it is important to do lots of different things in life. She always looks for new things to try.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to her to make her own decisions about what she does. She likes to be free to plan and to choose her activities for herself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being very successful is important to her. She likes to impress other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
She likes to take risks. She is always looking for adventures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
She thinks it's important to be interested in things. She likes to be curious and to try to understand all sorts of things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
She thinks it is important to be ambitious. She wants to show how capable she is.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
She likes surprises. It is important to her to have an exciting life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Getting ahead in life is important to her. She strives to do better than others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to her to be independent. She likes to rely on herself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Fertig

PVQ – female version

[SURVEY PREVIEW MODE] Knowledge development and values in online learning Survey - Mozilla Firefox

http://www.surveymonkey.com/s.aspx?PREVIEW_MODE=DO_NOT_USE_THIS_LINK_FOR_COLLECTION&sum=u2FYvYU6w6MwYdRWn%2IMYnsvY2p1z7aA7NSrLOM%3d

3. Portrait Values Questionnaire - Male version

60%

Here we briefly describe some people. Please read each description and think about how much each person is, or is not, like you. Click on the circle that shows how much the person in the description is like you.

*** 1. HOW MUCH LIKE YOU IS THIS PERSON?**

	very much like me	like me	somewhat like me	a little like me	not like me	not like me at all
Thinking up new ideas and being creative is important to him. He likes to do things in his own original way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It's very important to him to show his abilities. He wants people to admire what he does.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
He thinks it is important to do lots of different things in life. He always looks for new things to try.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to him to make his own decisions about what he does. He likes to be free to plan and to choose his activities for himself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being very successful is important to him. He likes to impress other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
He likes to take risks. He is always looking for adventures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
He thinks it's important to be interested in things. He likes to be curious and to try to understand all sorts of things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
He thinks it is important to be ambitious. He wants to show how capable he is.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
He likes surprises. It is important to him to have an exciting life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Getting ahead in life is important to him. He strives to do better than others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important to him to be independent. He likes to rely on himself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<< Previous Next >>

Fertig

PVQ – male version

[SURVEY PREVIEW MODE] Knowledge development and values in online learning Survey - Mozilla Firefox

http://www.surveymonkey.com/s.aspx?PREVIEW_MODE=DO_NOT_USE_THIS_LINK_FOR_COLLECTION&cm=u2FYvYU6M4wYdRWN%2MynSvYI2p1z7aA7NSiRLOM%3d

University of Bedfordshire

Knowledge development and values in online learning

5. Personal background and experience with online learning

100%

This final page of the survey contains some questions about your personal background and prior experience with online learning.

1. How do you rate your information technology skills (e.g. standard Office software, Internet, etc.)?

Absolute beginner Some limited knowledge Neither beginner nor expert Relatively advanced knowledge Expert

2. Which academic discipline represents best your online learning experiences that you are reporting in this survey?

Natural sciences Mathematics and computer science Social sciences Humanities and arts Professions and applied sciences Other / Not applicable

3. How old are you?

Under 18 18-23 24-30 31-40 41-50 51-60 Over 60

4. From the drop-down menu, please select the country that characterises your cultural background best.

For example, if you have been living in the UK for two years, but have spent most of your life in Trinidad and feel that this culture represents you best, please select Trinidad.

5. Please describe which features or activities in online learning help you to learn, and why you think this is the case.

6. Please describe which features or activities in online learning act as a barrier to learning for you, and why you think this is the case.

Fertig

First part of questions regarding personal background and experience with online learning

[SURVEY PREVIEW MODE] Knowledge development and values in online learning Survey - Mozilla Firefox

http://www.surveymonkey.com/s.aspx?PREVIEW_MODE=DO_NOT_USE_THIS_LINK_FOR_COLLECTION&cm=u2FYvYU6M4wYdRWN%2MynSvYI2p1z7aA7NSiRLOM%3d

Absolute beginner Some limited knowledge Neither beginner nor expert Relatively advanced knowledge Expert

2. Which academic discipline represents best your online learning experiences that you are reporting in this survey?

Natural sciences Mathematics and computer science Social sciences Humanities and arts Professions and applied sciences Other / Not applicable

3. How old are you?

Under 18 18-23 24-30 31-40 41-50 51-60 Over 60

4. From the drop-down menu, please select the country that characterises your cultural background best.

For example, if you have been living in the UK for two years, but have spent most of your life in Trinidad and feel that this culture represents you best, please select Trinidad.

5. Please describe which features or activities in online learning help you to learn, and why you think this is the case.

6. Please describe which features or activities in online learning act as a barrier to learning for you, and why you think this is the case.

7. If you want to participate in the draw for one of the £25 (€30) book vouchers, please state your e-mail address.

Thank you very much for filling in this survey.
Please make sure to click on "Submit" below.

<< Previous Submit >>

Fertig

Second part of questions regarding personal background and experience with online learning

Appendix C.3: Survey: 'Fostering PKD' and 'Hindering PKD'

Survey: 'Fostering PKD' and 'Hindering PKD' Answers

Fostering PKD:

"Please describe which features or activities in online learning help you to learn, and why you think this is the case."

Hindering PKD:

"Please describe which features or activities in online learning act as a barrier to learning for you, and why you think this is the case."

Comments in the same row are made by the same person.

All contributions are listed verbatim, without corrections made for spelling mistakes, etc.

Fostering PKD	Hindering PKD
easy access to relevant materials.	At times there is too much information and it can be time consuming to sift through it to find the relevant parts.
Interactive resources are extremely helpful. The fact that you can see images together with sound help understanding. In addition sites suggested by tutors can be accessed easily to promote specific skills.	I think the only features or activities that create a barrier are those that overload you with information rather than segment information. The only other problems which sometimes occur is compatibility to the system you are using in addition to problems at times accessing the internet.
Websites where i can research and find out. Places where i get answers quickly e.g. online forums	Things that take a long time to find or are hard to access. Things that i need to rely on others to access
Tutors and other learners are able to list a variety of online resources, databases, websites, and other various literature. It helps when writing assignments and doing further reading for various topics. It also helps when tutors are able to bank different resources what are all about the same subject to save time searching through search engines looking for appropriate literature.	Sometimes there could be too much information on a page or when updating things such as wikis are expected on a student rather than encouraged.
Self-assessments: I suppose it is the feeling that you are taking a "test" that makes you try your best.	Group work: it was so hard to keep the group together while not knowing each other! In my opinion it was not a group working together but merely individuals making individual contributions to the topic before somebody summarizes the discussion and sends in the assignment for the group.
Discussion forums	N/A
Explaining to others, e.g. in a discussion forum or similar, what I have learned from input materials of various kinds.	If the technical features don't work (e.g. links don't open, material to be sent somewhere isn't accepted...)that is very frustrating. Also, the lay-out of the screen is sometimes unclear and makes it hard to know what to do next.
Discussion board maybe other students might have the same question.	none
Book, Research online and social talk form other learners.	Sometimes the reading of texts online as there is too much to read and too little time to read it all in!
I enjoy reading the discussion board for my subject. The questions raised by other students and the tutors answers enable me to clarify the assignment requirements in my own and produce better work.	I've never used the blog or chat facility because I wouldn't know how to. The initial training for Breo was limited. It was not sold as an e-learning platform - just a platform where we access course info.
sharing information: resume, schema,...	difficult or complex access to a site,...
Found some online tests helpful- detailed explanations.	Discussion boards/forums can be quite helpful, though often don't have confidence to post anything myself. Worry about reliability of sources, can make me less inclined to use them.
Vast knowledge and information available in any given topic.	Some website require membership or money to access information, which very disheartening.
Online learning is more stimulating and that makes a point in adapting to it.	Real-time teaching experience is missing.
search engines, financial sites, marketing sites and international news sites	nothing

Fostering PKD	Hindering PKD
always and any where available	Un reliability, content, no interactivity
the use of E books as i am able to use books without paying for them as, as well as not having to wait for them from the library	digital library as the search options are too vast
Listening to others' views. Being able to share ideas from home to a wide audience. Up to date learning resources.	Self-motivation. Occasional lack of help desk services. Not being able to talk face to face. System crashing.
non	am not very good with online research or key word
I could use the WWW at my leisure.	I do not have a problem with this area
na	na
Defining Processes and solving problems	Lack of Subject interest. If I'm not interested in what I do, it's hard to get motivated
Access to business networkng information: informs me on how, where and when to fnd opportunities to network.	N/A
research	none
journals	Use excel
On line published learning materials - guiding me through a planned programme of learning	The above when poorly presented or out of date - several of my modules have had poor online material (poor quality & out of date)
discussion-forum, online-material (links, pdf, video etc.)	—
—	The need to be online much of the time - this is not always possible when traveling, etc. and it can be very costly.
We have to use the discussion boards as it is a blended learning course. This method of discussion does not suit my learning style and myself and others group members participate because it is a requirement of the course. However we recently decided that we gain far more from ftf discussion and meet in addition to workshops and the boards for study.	non participation by some group members and is very linear - not stimulating and difficult to guage what the other person means unless they are very fluent in written english.
Conversational threads, mixture with conference calls...	Time issues, lack of face-to-face contact that encourages learning
learning with and from others, use of online libraries and databases	not enough hours in the day
Discussions, video documents, wikis	tests and quizzes because they are rarely meant to stimulate learning, they reinforce the notion of authority as opposed to curiosity and often give a false representation of knowledge.
A combination of oportunites to collabaorate and share with people who though have not met you are willing to make contribution to your learning. The fact that I was left to learn without a teacher continues to 'compel' me to search deeply so that I could make the best of the opportunities.	I think it is access problems. I mean electricity, poor bandwith etc and newness then to e-learning and the use of LMS.

Fostering PKD	Hindering PKD
the experiential, hands on types of activities are best for me.	transfers from traditional classroom, e.g., slides and lecture.
discussions through the internet: I could see things in different angles from others' opinions.	even though I could exchange messages to others, I sometimes was not sure if I was doing right in my course online.
interactive features that enable real time or delayed time instruction - they inspire more ideas and make me test out perceptions, thoughts as well as integrate them with others	-minimal context to understand intent: people don't like to take too long for one example or story, therefore, variables are uncertain -some like to brag which takes so long and is a turn off to me
Discussion forums in breo help to feed off other students' experience and knowledge	The discussion boards are not 'online' (live) because its not easy to coordiante the presence of students at particular times. However, it anbles reflection. Otherwise it becomes a chatroom.
Interactive discussion; the pool of ideas it produces. Webinars which are well run that help me to think and find different ways of doing things.	Lots of statistics - too many facts and figures and technology jargon and overload can be a barrier.
Assignments, dialogues	Internet speed in SA
Testing and quizzes	Digitised text books are too difficult to read online
discussion boards where my classmates can share feedback on my activities/projects ... they too are professionals and I see them as learning resources that are as great or greater than the instructor and/or materials provided	The classes I took were for a Master's degree and was actually a hybrid where we met once or twice per class for an evening but the rest was online. This was ideal because it afforded great flexibility but also the opportunity to have live interaction and discussion.
Assessments, varied modes of getting info - word docs, video clips and the convinience of time flexibility	The lack of live interpersonal contact
Interactive features (quizzes, tasks where you have to make choices). These pull me in as a learner and therefore engage me with the materials. I also find multisensory features (e.g. audio/video) to be enhancing as they give you another way to learn.	Static materials - e.g. a lot of reading, or PPT. While the content can be good, it does not feel most effective for me as a learner.
I like exchange ideas, comments, info with other student using instant messengers, forums.	—
For me the most important thing is having contact with fellow learners from all over the country and the world. I learn a lot - most - from the experiences of students in widely varying situations.	Most quizzes and self-assessment tools I have encountered online are very primitive as educational tools: true/false and multiple choice tests have little value pedagogically, and only may serve as a "fun" activity in some cases.
Education websites. University library. Revision websites.	Too much to sift through on search engine results. Links not always specific enough to find what I'm looking for.
A combination of audio-visual materials, creating some kind of emotional reaction in addition to pure cognitive transmission of knowledge	stupid flash animation which seems to be childish, boring ppt's.
all materials (like ppt or doc from classes) informations about everyweek topics	I will not blog I hate writing what i think without reason - I mean situation, like at work . I do not always check mail, so it's a problem with therms. I'm not systematic, so it's a nightmare before "deadlines"
Lots of places to explore and find new information; easier to look up authors and materials but I may then get stuff in print	I love books and printed formats. If something is very long, I prefer to read in paper.
Access to resources--it's like having an up-to-date encyclopedia always on hand.	Some of the advanced tools--still learning all the new things.
INteractive learning	Lack of flexibility

Fostering PKD	Hindering PKD
online library and documents for access to current academic papers. access to worldwide databases and information repositories. Skype as we frequently discuss our assignment challenges in the evenings.	Wikis and blogs. people still don't know how to use them properly so whilst we have tried to use it once in group work we reverted back to multiple emails and skype calls
foren, cause people speak native, not abstract	I don't like Wiki's , cause everybody, even if he knows nothing can write an article
managing things, social abilities in working with other cultures. These are my tasks in my studies.	new technical abilities I have to learn first
discussions with other learners	unstructured platforms because i can't find things
the combination of texts and videos; IM. Don't know why. In videos you can see AND hear, maybe that's what's helping me. IM is for discussing with the others, getting to know other points of view, I need that for learning -> thinking about opinions again and again	?
the availability at any time	the fact that you sit in front of a monitor... gets me tiered when I have to read a lot
discussion forums, because you can get different ideas	—
tests - because here I see best, what I don't know yet	exercises, where you repeat the same thing all the time, but you already understood the grammar part at the beginning- this is boring
Interactivity in online learning and the possibility to share thoughts and questions with fellow learners.	Sometimes I do need another person explaining me "live" the subjects I'm studying -- something which you rarely get in online learning, except than through video conferences.
searching engines as a major feature as it gives a wide range of possible solutions to what you're searching for.	this has also to be the searching engines, as it often provides too many answers, and often not relevant answers too. One major point is, that people can easily write and publish things without checking the knowledge, so "false" knowledge can be passed on.
futuretvnetwork for Arabic. Basically free audio visual support to learn Spanish. Googlebooks and wikipedia or Gutenberg- Reading them. I look at the comments posted below youtube to challenge my feeling of authenticity.	Authenticity. I would like to learn Modern Standard Arabic but I doubt whether Layoamal in future tvnetwork is of MSA. Again I am discouraged as people say that all that is in Wikipedia is not necessarily accurate. However it is the only multilingual search tool I know.
After each lesson, several exercises enable to evaluate how well we learnt the lesson. These exercises were a concrete application, which is really helpful in online learning.	There were no correction for exercises. We had to report to the lesson, but without any guidelines. so in case of mistake, it was very hard to find it and to correct it.
i can learn anything without time limitation	I have no access to update information
For me it's important that learning is FUN and so much of the online material (it seems) is dull and uninspiring. I like the interactive elements, although I may not actively participate, and anything which can make a topic come to life.	—
clear structures; a very good manual, not to have to spend much time to understand it	—
exercises in which i can fill out blanks myself	—

Fostering PKD	Hindering PKD
I feel whatever is on the internet right now is already very good. I love to just surf around and read about new stuff and of course learn about new things in this world. The internet already has a huge variety of all kind of information. Everybody just has to contribute a little bit and that will help the next person. Whether it is some online tests or just a plain text/online newspaper or maybe even some kind of learning game, it helps me a lot in a lot of situations. I wish universitys and colleges would use the internet more then just putting up some scripts and some information about the university.	I don't really think there are a lot of barriers. If you are really interested in something of course you going for it. But some essays or parts of books are just way too boring to read on the internet. In that way I love to just open a book and read it on actual paper. looking way too long on my monitor make my eyes feel tired. So internet, sum it up at in your own words (a lot of those books are too old anyways) and please get rid of all those way too long essays and plain texts, go for some modern/new ways.
Online Dictionaries, Test Reports about articles; General Information	ebooks and the huge amount or unrated sites in search engines
Its important for me that i can access information from anywhere, this way I can have my own time schedule. I also like that it makes it possible for people to work together even with a long distance.	If there is one, is that is virtual. Some cases I like to experience what i learn in real life. One can have more techniques for learning in person, or face to face.
I like the samples of letters, emails etc.	Sometimes very confusing and not clear, what the exercise is about, like minutes
blogs	—
The freedom to learn at one's own timing and the issue of self discipline in learning. Intercultural set up in eLearning.	Our band width is a barrier to eLearning. Sometimes connectivity is so low.
online test, quizzes	just simple plain papers
Materials posted online bytutors as it allows for easy access and reference at any time of the day. Discussion forum on BREO to keep in touch with other people and share views on topics and online sources.	Wikipedia I refuse to use as theinformation can bebiased and not alwys credible. Not recommended to be used asa valid reference in academic work. Today, tutors continue to express the feeling that internet sources are not sufficient enough for academic research and that more books than online resouces are recommended, which can be difficult to find certain information as books in thelibrary are dated.
Language courses with videos, many examples and activities that help students without the pressure of examns or tests.	Some sites, require prior subscription, one does it and it function as a social network rather than an online learning community. Many others are presented in limited languages that can only aply for people on countries that speak those languages.
Chatting because it is real time, or online conferences with people, like over Skype. Also because I work with people from different countries and it is cheaper and easier to arrange for a Skype conference than in person or on the phone.	Anything too complicated or that takes a lot of time
Video tutorials, solved examples with solving procedures available, access to bibliography	Lack of real and recent information. Pay for some important information.

Fostering PKD	Hindering PKD
Feedback from course tutors, searching for additional information.	I have never done well with group work in traditional learning situations, and therefore find that online group learning experiences have also been difficult.
—	Software problems sometimes
mainly search engins help find what i am looking for, and online communication with the other students in the course to help colabrate on cooperative work	I do not like Blogs, I find the time I spend reading and looking through them is not werth what i get in return
I can chose specific topics (e.g. language studies: business letters). I get the results instantly- see exactly where I did major mistakes.	I get distracted easily. It's hard to concentrate on something on the screen...don't like to read lots of information/text online.
—	If there are too many experts, I feel overwhelmed. Sometimes information shared is too abstract for me and sometimes there is so much information that it's hard to find exactly what you need.
"documents" with numerous related links. material that is sequenced in difficulty with side-links offering simpler explanations or even examples. threaded discussions rather than date sequential.	poorly laid out "documents"
Engaging with others in online discussions. Most productive to get your questions answered and to deepen the learning through conversation and share your own thinking.	none act as a barrier for me...just prefer the ones with higher levels of engagement
Online conversations - synchronous or asynchronous. Twitter Wikis	Threaded bullitin boards - culture is mroe of posting than of conversation
exersize	—
vast amount of subjects, exposure to different types of cultures, values and knowledge	not easy to find a reliable source, difficult to judge where other participants get their knowledge from (blogs, wikis, etc)
- getting the team together: online teamwork during a webinar or meeting. Focus is here on teh team not on the content. -earning from observing group dynamics. -research: learning to look at a topic/subject from different angels/ different cultures. -Learning how to get the most out of the internet.	-Webinar- Content learning,impersonal, takes great effort to keep focussed -Webinar- Participative learning during a webinar: impersonal. takes great effort to keep focussed How to discover what is true and not true?
great variety of information	I need to talk face to face to other learners, otherwise I feel quite uncomfortable. It's not really personal. Hard to differ useful from useless information.
Watching or listening to all the videos without a TV or a tape recorder is nice!	Some contents of our course (videos, exercises) were only viewable with the MS Internet Explorer or on MS Windows, but the majority of my fellow students, including me is using other browsers like Firefox, Opera, Safari etc.
Conversations: construction of knowledge in context Videos or podcasts if well done: human	Linear & sequential layout typical of some courses and software: I'm an abstract/random ideas person. BTW, many Qs about frequency are very context dependent. This may limit the specificity or accuracy of your findings.

Fostering PKD	Hindering PKD
google website,because google website has answers to almost all my questions.	nothing
Self-paced and ability to revise and review ensures understanding Multi-media format makes it interesting	Lower contact with classmates and tutor makes it isolating
Search engines and online database are very important as source of useful academic and general knowledge	unreliable and high costs of internet networks in developing countries, for example in Tanzania it is very expensive to have internet connection, and most of the time is very slow hence is a barrier to learning. Also validity of the information found in the internet; in some cases the information is not true of not updated
Having direct access to the opinions of the whole cohort, hearing everyone not just the outspoken ones.	Knowledge is often tied to the context. Online it is often difficult to connect and build human relationships.
Have not really done on-line learning - class based	—
The ease to find online material via data bases such as Ebsco.	contributing to blogs and wikis as I havent had many oportunites to work in this area
wikis: give a clear picture of a topic and refer you to more specific articles you might be interested in discussion forum: give different (controversial) views on topics; help getting deeper into a topic and the issues surrounding it	—
platforms or blogs as there are other learners who might help you if there are any problems arisen	to much and badly structured information as the learner is not able to cope with it then
Online communication and trial/error processes	Online connection limitations such as payable reports and subscriptions
Option to review in my own time. I need time to take assimilate information.	-
discussion boards sharing with other students and tutors, wiki pages for reference material.	Sometimes the written word i unclear and could benefit form a briefing/tutorial on line to help understnad how to structure commnts/postings.
—	I prefer books or journals, although will read e-journals - but I suppose I am slightly old-fashioned, and online learning is not a natural medium!
online journals provide the latest thinking on topics of interest to me. Forums show me the most current debates.	some sites and blogs are not user friendly, even though the content is good
It's easier to get some information from an online source, as from a book. Learning online corresponds to the modern way of life, which first of all means "the life is getting faster".	Scanned texts. They are still better then usual books, but it's impossible to work with them (copy-paste, search (important!), save-and-edit).
Animations: through visualising things I can remember them in a better way	Unstructured layouts. I normally do not like too much working on the pc. If a site has a structured layout I can handle e-learning much better if this is not the case
tests, forums, It s the advantage of communication with other people, sharing information experience knowledge etc., discussing. It s interactive :)	motivation to turn on computer :) missing face to face contact with others, sometimes it s just easier and more comfortable to see the lecturer/co-students face to face

Fostering PKD	Hindering PKD
The listserves (or online discussion groups)-- facilitates easy reach of fellow academics no matter how distant they are in the world Online Books and Journals--avail one with scholarly articles and chapters including very current ones which one would otherwise be unable to access. Chat Resources (like Yahoo Messenger) enables instant correspondence, exchanges, and transmission of ideas online. Search Engines (like Research Navigator, EBBSCO, etc) guarantee access to large collections of different journals, books, and other scholarly resources which would otherwise be inaccessible.	It is rare to find a single search engine with subscription to all journals or materials. The computer can be very boring sometimes and one may feel more comfortable with printed materials. Internet servers may sometimes develop technical problems making accessibility to the internet impossible
discussion boards, learning resources centre, able to access information quickly and easily, share ideas etc.	can't say that anything acts as a barrier.
Instant access, can be intercative	Can take time to find exactly what you want as there is so much information out there.
being interactive	type too slow
—	We are not very well trained. The university did not conduct a complete training on the IT resources available. Only a printed booklet is not enough for this type of Program
- the ability to download lectures and read them at my own pace. I prefer this to sitting in a classroom. -my program is project based, not test based. I prefer to spend time getting a project right and sending it in than to take a timed test.	Although online tutoring is available and there I can e-mail a question to the instructor, it doesn't work well. It takes too much time to get a response, and if they didn't understand the question it is not helpful in a useful time frame. I miss the ability to point something out in a the book and have a 'real-time' discussion about something I don't understand.
Online learning has a more interactive, problem solving feel. It allows more active learning than standard textbook learning. Also, feedback is often instant, or at the very least quicker.	They can seem more impersonal than class room based learning.
Self-assessment because it connects the prior content to information I should recall. Although, interactivity with a human is nice because you want to ask questions about the content and possibly challenge that content as well.	A webinar where no questions and answer session is available. I tune out, and I can't interact one-on-one. Listening to someone talk is terrible without being able to respond.
Class presentations as it enables me to understand the subject that was taught on a particular lesson.	The ability to confidently email in order to participate in discussions and blogs.
—	Gcse bitsizes, past papers , online books
ebooks and journals - ease of access, availability, variety of sources. Teachers TV great source of information and ideas. Can keep going back to the i	Too much information is available on line - can't tell which sources are reliable.
Anything that encourages the possibility of contact with other people helps me learn: through exchange of experience, building of relationships--all the social and human aspects that go into learning are extremely important for me. I know I need the interaction with others as much as possible. I actually prefer face-to-face interactions nin general to online, but find that I learn well online if the human element is as pronounced--e.g., through chats, written exchanges with others, etc.	When it's just very information-driven, with little interaction with others. I could not successfully learn if learning online on my own--if I do need to learn online, it needs to be with as much opportunity to get in touch with people virtually! Purely online learning does not allow for exchange of information, experience, etc., with others but, rather, serves only as a means to access information.

Fostering PKD	Hindering PKD
<p>Reading material, research papers, published articles etc are helpful as they give a wider background & perspective to the individual subject matter & enable one to critically assess the material objectively & make up their own opinion about the subject; this helps increase my learning & gives me a wider understanding & application of the subject & embeds the learning more deeply than using the online course material alone. Virtual classrooms are also helpful as one gets a feel for others views & opinions, & also an opportunity to debate with others online. Very convenient rather than travelling 40 miles to attend a classroom setting. However, I would not like online classrooms to replace traditional classroom or face-2-face learning; I find building relationships with others & the tutors in a face-to-face environment is the best way and most enjoyable way to learn. Online learning, in my opinion, is best when it supports traditional learning.</p>	<p>Online learning itself can be a barrier as it depends on time & place to connect online. Connection speed can also be a barrier & frustrating if slow. Search terms can also act as a barrier & take up precious time; it is often easier to use books.</p>
<p>interaction--drag and drop, Q/A, games reflection and application--Q/A, journal</p>	<p>glorified powerpoints, talking heads</p>
<p>First and most important for me is the amount of information I can access online which saves time and provides me with alternative methods I might otherwise not consider. For example, if I needed to rely solely on Libraries, I might miss opportunities relevant to a particular subject or area of interest. Using a search engine gives me more information. Collaborating with people worldwide is another benefit to helping me learn online. It is interesting to get expertise from people in many different cultures. I also find accessing knowledgeable people through online sources (via blogs, email, and other social media venues) much easier to get a response.</p>	<p>Although I have been successful in online learning in the virtual world, at times, I feel sometimes a "face to face" meeting would add to my experience. It definitely is connected to the way I perceive others and they, me. It is most likely from years before the Internet was available and most likely old patterns resurfacing. For younger generations as in anything else, this should not be a barrier.</p>
<p>quizzes, 'powerpoint'-type presentations (visuals, quick descriptions, outlined/bold passages), chat sessions</p>	<p>I don't like Skype-type conversations, the quality tends to be too low, and I get frustrated not to have non-verbal cues; I'd rather chat.</p>
<p>What helps me the most are 1) questions from other learners, 2) short case studies with some questions in the end, 3) self-assessment quizzes and 4) links to delve in the topic. All of these things help me really mastering a topic as opposed to mere knowledge of facts, definitions, numbers, etc. It's important for me to find my own solutions and carve my own understanding so I need the stimulation that questions provide.</p>	<p>Real-time chats and events because they don't allow me time to reflect, which would help me better organize my knowledge.</p>
<p>Information and resource searches expose me to a range of knowledge, ideas, developments, and other people's experiences that simply cannot be accessed any other way. I like that I can talk to others about their experiences and what they have learned, and what information / resources they have found to be helpful. Sometimes it's good to hear that others can be just as perplexed as I am in trying to understand a concept, or find a clear definition or description of a theory, or theoretical terms. I can study independently whilst feeling part of a greater part of a community of scholars, no matter how familiar or anonymous we all may be to each other.</p>	<p>Not being able to have that face-to-face discussion where non-verbal language can infer so much, can hasten the progress of the exploratory conversation, can bring about a feeling of isolation if not sought regularly. Some space engagement enables scholars to brainstorm an idea, with pen and paper, diagrams, mindmapping, all being a part of that experience. We so much still need to maintain that connection. I don't believe that we can generate that energy in any other way. Those shared "eureka" moments define humanity for me - no matter how small or seemingly insignificant. I achieve so much more in a teacher-student half-hour, as the student, on all levels.</p>

Fostering PKD	Hindering PKD
Wikis, forums for collaborative research and learning Blogs for reflective learning Videos, podcasts, presentations, slideshare, search engines, Elluminate etc. For information Flickr for creativity RSS feeds for keeping in contact with my network Of all these features/activities - those that involve writing and sharing that writing help my learning the most, i.e. the exchange of ideas, seeking clarification of those ideas, consolidating the ideas, having the ideas challenged and so on. Facebook, Ning for social networking and sharing information	Trolls - i.e. people who behave badly in online discussion, are rude, offensive or superior Feelings of over-exposure can sometimes act as a barrier to my learning, i.e. those that ask me to reveal more than I want to about myself Too much information can make me feel overwhelmed Technology itself can sometimes (but not often) prevent me learning, e.g. if I can't get into Elluminate for a live session
When using an online environment, the most effective are the activities that allow us to collaborate and to engage in mutual building of knowledge. It doesn't matter what the TOOL is, it matters what purpose it is used for.	Thank heavens we don't do online quizzes and tests or those would be the greatest barriers. By the way, you left Taiwan off of your list of cultures. Being Taiwanese is very different from Chinese and, due the political climate, most Taiwanese will not fill out a survey where they couldn't state they are Taiwanese.
Access to other learners through message boards and blogs - builds community, helps me understand where I am compared to others, easy to ask questions	my eyes get tired after looking at a computer screen all day
Online learning can provide richest source of materials from all over the world. I can search what I want and get to know the latest information with no limitation of time and region. It is fast, feasible, and convenient to participate via multi-media tools on the Internet.	1. Because online learning is a virtual environment, the reliability of the materials is a question. Sometimes those information cannot all be trustworthy for it is possibly not true, neutral or objective. 2. In order to protect the authors' IPR, sometimes web users are prohibited to read through the whole essay, let alone to download for learning purpose. This really acts as a barrier to exchanging ideas and studying from each other.
I think watching videos is very good o improve my communication skills, and to see how people over the world face the same issues as me, and overcome them	I don't like forum because I don't trust them
Tests and examples where I can test my knowledge.	At most ocassions there's noone to point out the most important/difficult thins - contact with tutor (if any) is limited.
VIDEOS AS ITS SIMTHING TO VISUALISE	DOWNLOADING ACADEMIC MATERIALS ETC AS YOU HAVE TO PAY ALOT OF MONEY FOR IT
features and activities that involve visuals and interactivity. A lot of senses should be involved (video, audio, etc). When there is a game element or humor involved it even helps better.	too much text! I just loose interest when I have to read too much. It just doesn't work for me.
Website learning and online course	the difficulty of accessing information, online learning in not user-friendly
Clear instructions; attractive graphics; easy navigation - basically everything Mac :)	Glitz, jumble, mess, unreliability, slowness, out of date info - basically everything PC :(
When there are examples to do. I learn best when putting the knowledge to practice. If I only learn the theory, I will easily forget it.	Like I stated above, just facts and rules don't stay in my memory.
I learn a lot from chats with people, skype, email from the people who hire me, job experience, trying things on my own. I have a group of friends who know me inside out, and have come to respect me.	Long, egotistical blog posts, where the focus is on the writer and how professional he or she is, and where the language is not real. The writer reveals nothing. He or she writes through a mask. I never read that crap.
Discussions and team work, simulations, problems. I think this activities can improve a creative and reflective thinking	Exams.

Fostering PKD	Hindering PKD
independent learning as much time as I need to process freedom to choose what and how much and what form of learning	internet accessibility isolation and lack of f2f interaction - especially when no response is received
Ready knowledge. Interaction with available others. Ability to introduce and follow opinions on topics that beg development.	Limited computer memory and slow internet access.
I appreciate forum contributions the most... often there is a solution or thought which one hadn't considered prior to engaging the forum. Further, they assist in the formation of ideas based on those tidbits provided by others	slow and unreliable equipment
assignment deadlines as it forces me to look through all venues for info.	—
Blogs and discussion boards. Because it gives me access to ideas and knowledge.	None really except the vast amount of information.
Course Documents and digital library	We had very limited introduction/tutoring on the online learning and I am not one to have time to spend just exploring. An indepth manual would have been helpful.
bbc revision sites; other academic sites	sometimes time consuming to find relevant information
Looking at visual presentations as it engages me.	Over-complex websites/wikis etc. Keep it simple, extremely clear and quick.
search bars, message boards. i like hearing other peoples opinions and ideas of different things.	search bars (sometimes) do not always get the best results.
online library because it is easy to access	not knowing the right words to use when searching for books in the online library; it can take a long time to find what you are looking for.
chatting to others helps as we bounce ideas off each other	problems with looking up journal entries on line for research purposes
video clips	no particular barrier, just the amount of time spent on looking for a particular site that is relevant, valid, reliable and applicable to my study
The learning materials posted weekly.	The journal library can be frustrating as many articles can not be opened.
blogs and discussion boards- sharing thoughts and opinions helps you understand how different people think, what is important to them and helps you look critically at your own practice	how to access and use all the different applications- if i find this difficult/confusing i will go somewhere else
Bfeo- helpful to studies Face book- catch up	None
Really not sure.	Really not sure.
using search engines to find additional information	lack of computer skills - properly missing out on finding important information
Looking on google for facts about topics we teach in class	Don't like watching video's online, as I feel I do not retain the information.
online searchable text well laid out lots of what space, video, webinars	online discussion, bores me rigid
Online blogs with other learners and tutors help to air questions and bounce ideas off one another whilst still being at home meaning I do not need to arrange child care for my 2 children	n/a
Using the online learning environment helps when researching information about an assignment and the support from fellow students through blogs and discussion boards is encouraging and motivating and can often be a great help.	N/A
I download the notes from each session and add to them notes I made during the session to create a fuller picture	—

Fostering PKD	Hindering PKD
Interactive Q & A - MCQ	Lack of instant feedback
Quizzes and pictures	When the technology is difficult to work, complex process to run or when things go wrong which is beyond my IT skills to fix. Needs to be simple step by step.
various media at disposal and the ability to choose from as you want	Overload of media, info overkill, too many at disposal to be able to use them all
—	Not keen on spending too much time on the computer, and don't have enough time. I like to underline in books, so prefer reading books than on the internet.
Interactivity: online learning takes getting used to, the better and more effective the interactivity is embedded, the better the learning results. facilitated blended learning: participatory learning in both f2f and online learning stimulates knowledge generation. discussion fora: asynchronous contributions allow for more reflection and higher output levels	Cluttered LMS, non-challenging learning content no or ineffective instructional design No or insufficient tutor or course management support Biggest barrier: online training not embedded in Institutional policies and missions, antiquated hierarchical management structures. (welcome to contact me at address below for case studies in Africa)
Reading research papers; Reading other people's works; How to videos	Clunky or slow on-line library systems
activities specifically designed for distance learners and quizzes	being directed to read long texts
Video lectures because I am a visual learner	Discussion groups/forums because the student body at my university in Finland is not openly talkative. It's a cultural thing.
journal articles, institutional websites newspapers, lectures on video, learning activities developed by other. All these are prolific and immediate. I have a vast corpus to choose from. In addition, specific items that I wish to learn more about are very often hot links. If they're not I can always google them up. It is a rolling process of learning. You know where you start, but you can never know where it will lead you to.	Non user friendly websites where the information is not always accessible due to technicalities. Another barrier is websites for which there is a charge.
forums. discussions always seem a good way to know what other people do and think, and learn from that. Blogs are also useful as resource places.	the technology itself, not to know how to use it or the logic behind it.
audio together with reading materials. Audio makes it feel more like classroom learning	too much information at once.
choice of timing, flexibility, working environment - home, quiet, choice of music. ability to self-assess progress	still novice at searches, and find them frustrating
Internet and student website	—
I found the Wiki and the Discussion forum very useful. The wiki gave us ownership of the task which in turn made me take great pride in trying to do a good job. The discussion forum helped me look at the same article via a different perspective. I found out that I wasn't the only one confused and struggling with a particular assignment.	None. The barriers I had were due to the lack of confidence I had in making my opinion public or failing to engage in a dialogue with my trainer.
Groupwork (contribute to the ability to learn from more experienced co-learners); Online presentations (perhaps due to my first experiences made while at the West Georgia University-what a presenter it was!)	Timezone differences which affect online communication drastically

Appendix D.1: ECKM 2007: Knowledge Development and Culture

Haag, M., Duan, Y. & Mathews, B. (2007) *Knowledge Development in e-Learning Environments: A Cross-Cultural Perspective*, 8th European Conference on Knowledge Management, Barcelona, Spain, 6th-7th September 2007, Vol. 1, pp. 391-397.

Knowledge Development in E-Learning Environments: A Cross-Cultural Perspective

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Abstract

Individual learners' cultural values and assumptions may constitute their knowledge acquisition and development behaviour in an e-learning environment. Therefore, it is important to examine cross-cultural differences and their relation to knowledge development and learning processes and outcomes in e-learning. However, literature studies reveal that these issues have been somewhat neglected by research to date. It is argued that both national cultural aspects and individual learning styles and experiences are related to an individual's knowledge acquisition and sharing behaviour and thus impact on an individual's experience of knowledge development in e-learning environments.

The aim of this paper is to discuss differences in the ways in which individuals with a different national cultural background develop their personal knowledge in e-learning environments, and to discuss differences in the ways in which they communicate and interact with peers and tutors and how this may be related to differences in their knowledge development. It will draw on a literature review of knowledge development and sharing, e-learning and cultural value dimensions, for example individualism-collectivism. It then develops research propositions on what are the most important characteristics of national culture that may have an impact on knowledge development and sharing behaviour in e-learning. Hypotheses are derived by drawing on Hofstede's cultural dimensions and on Hall's high context-low context distinction, using secondary data from previous research. The paper will also outline some preliminary characteristics of a tentative conceptual framework depicting the relationships between cultural variables, knowledge development and sharing activities, and e-learning behaviour. This conceptual framework involves both concepts and elements that are particularly important for integrating the concept of culture into knowledge development in e-learning environments and hypotheses based on the four knowledge conversion modes and corresponding *ba* of Nonaka's SECI model.

This modified SECI model can act as a theoretical framework for future empirical investigation, and has the potential to be further refined to a practical guidance tool. This tool will help e-learning designers and developers understand the cultural variables involved in online learning, thus enabling them to design such systems in a more culturally aware way. It can also help e-tutors with guidelines on how to improve the instructional strategies and methods to make e-learning more effective and enjoyable for a multicultural student population.

Keywords: Knowledge development, e-learning, culture, SECI, learning experience, learning outcome

1. Introduction

National cultural values and cross-cultural differences influence learning and knowledge development processes (Hofstede 1986). This presumably also holds true for e-learning or virtual environments. For example, Johnston and Johal (1999) argued that the Internet is a culture of its own and, therefore, not culture-free. However, knowledge management initiatives or e-learning environments seldom take culture into account as an influencing variable. So how is culture defined in this paper? It is proposed to use the following broad definition by Hofstede (Hofstede and Hofstede 2005): [culture is] "the collective programming of the mind that distinguishes the members of one group or category of people from others" (p 4).

Much research has already been done on culture and online learning (e.g. Selinger 2004; Carr-Chellman 2005), and on culture and knowledge management (e.g. Ardichvili *et al.* 2006; Michailova and Hutchings 2006). However, according to Ford and Chan (2003), there is a gap in research on the triad of online learning, culture and knowledge management. This paper aims to contribute to closing this gap. It is argued that one should look at the knowledge development of individuals – since knowledge cannot be shared or managed by organisations but only by people within them (Nonaka and Takeuchi 1995).

In the context of this paper, it is argued that the term 'knowledge creation' as used by Nonaka and Takeuchi (1995) to denote the cycle of the four knowledge conversion modes does not cover sufficiently the changes in the state of knowledge of e-learners. Therefore, we suggest to use the term 'knowledge development' to define the whole of several distinct yet interdependent phases of knowledge development, one of them being knowledge creation, as mentioned by Bhatt (2000) and Gauvin *et al.* (2005). In short,

our definition of knowledge development is as follows: Knowledge development in e-learning environments encompasses processes and phases of creating new knowledge, evaluating and modifying knowledge, sharing knowledge, and finally applying knowledge in real-life situations and contexts.

Some remarks on the role of culture in e-learning will be given. This is followed by a discussion of the cultural value dimensions that we think are particularly important in the context of knowledge development in e-learning. Then, a short overview about the role of culture in knowledge management processes will be presented. The main part of the paper will outline some preliminary characteristics of a tentative conceptual framework for integrating the concept of culture into knowledge development in e-learning. This conceptual framework involves both concepts and elements that are particularly important for integrating the concept of culture into knowledge development and hypotheses based on the four knowledge conversion modes and corresponding *ba* of Nonaka's SECI model.

2. Culture and e-learning

E-learning software and virtual learning management systems continue to be designed primarily by US and Western European companies with a 'Western' cultural background and values. Since learning is highly situated (Lave and Wenger 1991) and relevant only in a mutually shared and negotiated context, learners from outside this dominating culture will be less likely to make full sense and use of the learning materials provided.

Different learning styles and different educational systems in various countries presumably also have an impact on individual knowledge development and should be taken into account. For example, Yamazaki (2005) used several cultural typologies – some of Hofstede's cultural value dimensions and Markus and Kitayama's (1991) distinction between independent and interdependent self, among others – to investigate potential relationships between certain cultures and one of Kolb's (1984) four learning styles.

Some of the possible cultural models needed to describe and to categorise cultures are the value dimensions by Geert Hofstede (Hofstede and Hofstede 2005), Fons Trompenaars (Trompenaars and Hampden-Turner 1997), Edward T. Hall's (1976) high context/low context distinction, among others. Although there is some criticism on the dimensions listed above (for example by Voronov and Singer 2002, who criticise the reliability of individualism-collectivism as a tool for explaining cultural differences), they still form a valuable tool for distinguishing and describing cultures. From these higher order dimensions, one can derive cross-cultural differences that are particularly important for knowledge development processes and outcomes, such as differences in student-teacher interaction due to high power distance versus low power distance (Hofstede 1986), or different attitudes towards in-groups and out-groups due to the individualism-collectivism dimension (Markus and Kitayama 1991).

Research on whether the Internet or global virtual communication and, in the end, e-learning, is contributing to a divergence or convergence of national cultural differences is inconsistent (Zahir, Dobing and Hunter 2002). For example, Johnston and Johal (1999) have ranked the Internet as a "virtual cultural region" using Hofstede's (Hofstede and Hofstede 2005) dimensions and concluding that this cultural region is converging. In their research on Internet portals, Zahir, Dobing and Hunter (2002) found both aspects of cross-cultural convergence and divergence. Hofstede (1986) claimed that there are indeed substantial cross-cultural differences in learning – these may or may not be enhanced by online learning environments. He lists:

- differences in social positions of teachers and students
- differences in the relevance of the curriculum/content
- differences in profiles of cognitive abilities, and
- differences in expected patterns of teacher/student and student/student interaction

3. Cultural value dimensions

In research to date, a substantial number of cultural value dimensions have been used to investigate the impact of national culture on learning (Hofstede 1986). There are a considerable number of cultural aspects that have been identified as influencing knowledge management and learning (see, for example, Ardichvili *et al.* 2006, Bhagat *et al.* 2002, Carr-Chellman 2005, Michailova and Hutchings 2006, Yamazaki 2005). However, a full discussion of a substantial number of them is beyond the scope of this paper. The following dimensions arguably have a particularly strong influence on knowledge development processes and outcomes and will therefore be discussed more in-depth in this paper:

- The individualism/collectivism dichotomy (Hofstede and Hofstede 2005)
- The high-context/low-context dichotomy (Hall 1976)
- Power distance (Hofstede and Hofstede 2005)

3.1 Individualism-collectivism

Arguably the most widely discussed cultural value dimension is individualism-collectivism. Triandis (1995) identified four universal dimensions of this construct, which can be used to investigate possible effects of the individualism-collectivism dimension on individual knowledge development in e-learning:

- independent versus interdependent self-construal (originally presented by Markus and Kitayama 1991)
- priority of personal goals versus priority of collective goals
- people from individualist cultures focus more on their personal needs, rights and attitudes versus people from collectivist cultures focus more on social norms, duties and obligations
- people from individualist cultures are more oriented towards achieving a task, also at the expense of a harmonious relationship with others versus people from collectivist cultures are more concerned with maintaining harmonious relationships

For example, learners from an individualist culture may want to excel in their course – and show this openly to their peers – whereas learners from a collectivist culture might hold back to not stand out of the crowd (Hofstede 1986), thus creating a potential for misunderstanding and disharmony.

3.2 High context-low context

Hall (1976) describes differences in the use of contextual information in communicative behaviour, which can also be linked to referring to being either a more indirect or more direct way of communicating, respectively.

For example, one might expect that learners from a high-context culture such as China might feel uncomfortable interacting with peers in asynchronous discussion forums, because they feel that a lot of contextual cues and information about other posters are missing, such as age, status of the others, etc. Furthermore, the use of e-mail in intercultural communication in an e-learning environment is a prime example of low-context communication, because all information is transferred by text, without other contextual cues, such as body language or knowledge about the status of the person one communicates with.

3.3 Power distance

Hofstede and Hofstede (2005) define power distance as “*the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally*” (p 46).

For example, one can argue that learners from a high power-distance culture such as China will not be very likely to challenge views of their teachers (Hofstede 1986). In asynchronous discussion forums, however, most online instructors coming from a low-power distance culture will probably expect students to comment on and also encourage them to disagree with statements made by the teachers.

4. Culture and knowledge management

Zhu (2004) claims that knowledge management is not a universal concept, but argues instead that it is essential to jointly construct and share cross-cultural contexts for knowledge management to be successful. He posits that knowledge management “will benefit not from a universal concept, but from an interactionist strategy that facilitates the construction, connection and sharing of cross-cultural contexts, through which cultural differences and diversity are important sources for [knowledge management] competence rather than obstacles to be overcome” (p 67). While Zhu (2004) refers to organisational knowledge management, it is argued in this paper that his claim is valid in the context of individual knowledge management as well.

Different aspects of knowledge management have been researched from a cultural point of view. For instance, Abou-Zeid (2005) proposes a model of inter-organisational knowledge transfer stating that the “four levels of cultural context that influence the social behavior of those who are involved in each stage of knowledge transfer process are *societal, national, corporate, and operating/occupational*” (p 148). In a recent paper, Ang and Massingham (2007) propose a conceptual model for exploring whether one should standardise or adapt knowledge management processes in multinational companies. Bhagat *et al.* (2002) look at organisational knowledge transfer across cultures from the four cultural patterns of horizontal individualism, vertical individualism, horizontal collectivism and vertical collectivism.

Others have also looked at the influence of cultural aspects on knowledge management: Ford and Chan (2003) looked on knowledge sharing in a multicultural context, whereas Ardichvili *et al.* (2006) studied knowledge sharing in online communities of practice looking at the impact of factors such as collectivism, saving face, ingroup/outgroup distinction, and power and hierarchy on knowledge sharing across cultures. Javidan *et al.* (2005) report on cross-border knowledge transfer, and McDermott and O'Dell (2001) investigate how to overcome cultural barriers in knowledge sharing.

5. Adaptation of SECI model for integrating the concept of culture into knowledge development in e-learning environments

5.1 The SECI model and its application in knowledge development and e-learning

It is argued that the SECI model (the acronym stands for four modes of knowledge conversion, namely *socialisation*, *externalisation*, *combination*, *internalisation*) by Nonaka and Takeuchi (1995) is a promising framework for investigating knowledge development processes and outcomes in e-learning environments because it puts knowledge creation and conversion processes – and, in the end, learning – in the centre.

SECI describes four modes of knowledge creation through a continuous interaction between explicit and tacit knowledge. Socialisation is defined as a “process of sharing experiences and thereby creating tacit knowledge such as shared mental models and technical skills” (Nonaka and Takeuchi 1995, p 62). After this conversion process from tacit knowledge to tacit knowledge, this tacit knowledge is being made explicit in the externalisation mode. This mode “is typically seen in the process of concept creation and is triggered by dialogue or collective reflection” (Nonaka and Takeuchi 1995, p 64). This explicit knowledge is then combined with other explicit knowledge in the combination mode. Finally, that explicit knowledge is then converted into tacit knowledge in the internalisation mode, which is closely related to learning by doing.

Nonaka and Konno (1998) later adapted the concept of *ba*, which they consider “to be a shared space that serves as a foundation for knowledge creation” (p 40). Although the SECI model was originally conceived as pertaining to organisational learning, it is argued here that it can be adapted for the knowledge development of individuals, especially in connection with *ba* which Nonaka and Konno (1998) claim provides “a platform for advancing *individual* [emphasis by the authors] and/or collective knowledge” (p 40). Furthermore, it can also be argued that *ba* is the place and cultural context for learning according to Lave and Wenger’s (1991) notion of ‘situated learning’, thus making it a suitable concept for investigating learning processes.

Glisby and Holden (2003) criticised SECI and posited that it is not universally applicable because it stems from a particular – Japanese – context. Some researchers, for example Li and Gao (2003) have argued that the term ‘tacit’ is used differently from Polanyi’s (1967) work. However, discussing the implicitness-tacitness distinction and the criticism of Nonaka’s use of ‘tacit’ (see, for example, Li and Gao 2003) is beyond the scope of this paper. Weir and Huchings (2005) acknowledge that SECI is not universally applicable, but also claim that SECI does have some relevance to knowledge management cross-culturally.

5.2 Important elements involved

This section describes some of the important elements involved in integrating the concept of culture into knowledge development in e-learning environments.

Arguably, the following concepts in particular are related to knowledge development in e-learning environments from a cultural point of view:

- Cultural value dimensions
- Offline learning and its context
- Online learning and its context
- Learning styles (cultural and individual)
- Interpersonal communication across cultures
- E-learning system usability

In addition to the cultural value dimensions discussed above, we would like to briefly comment on the concepts of situational context, learning styles and e-learning design and usability.

Henning (2003) argues that it is important to view online learning processes in the whole learning and cultural context, i.e. taking face-to-face sessions and the local learning paradigms into account. In other words, online learning must not be seen as a stand-alone activity, but has to be regarded as one part of the blended learning context, in the sense of Lave and Wenger’s (1991) notion of ‘situated learning’. Therefore, it is proposed to include the variables involved in the offline part of the learning context in the framework and show their relationships with the online learning context and its characteristics.

Learning styles have been described as differing across cultures (e.g. Yamazaki 2005) and Hofstede (1986) argued that individuals learn differently and, as a consequence, should be taught differently, using his value dimensions to explain such differences. Mestre (2007) calls for a diversity of learning approaches in online environments so that students can choose those approaches that suit their own learning style best. Therefore, learning styles have to be taken into account both for the conceptual framework and for the design of e-learning systems that are appropriate for a multicultural learner group.

It is also important to be aware that there are cross-cultural differences in experiencing the usability of an e-learning system, as, for example, mentioned by Downey *et al.* (2005), among others.

We posit that all the concepts and factors mentioned are highly interdependent and become either more salient or less salient in the learning experience, depending on the context and situation the learners are in and depending on their individual characteristics and cultural backgrounds.

6. Research hypotheses based on SECI's knowledge conversion modes

6.1 General assumptions and modified modes and *ba*

It is generally accepted that national cultural values determine behaviour in all areas of life. Learning does not take place in a vacuum, but is contextualised and situated in the concrete life-world of individuals (Lave and Wenger 1991). In addition to national culture, other levels of culture must be taken into account. Hofstede and Hofstede (2005) distinguish between six, namely: national, regional/ethnic/religious/linguistic, gender, generation, social class and organisational or corporate.

The following sections present some hypotheses based on the four knowledge conversion modes and corresponding *ba*. The hypotheses presented in this paper are derived from an extensive literature review of previous research. No original data has so far been collected by us. However, it is intended to investigate knowledge development processes within several national cultures as the research develops. In other words, only secondary data has been used for deriving hypotheses. It is argued that the phenomena and behaviour in e-learning cannot always be grouped into one conversion mode or *ba*, sometimes overlaps are possible and desirable. This view is supported by Nonaka, Toyama and Konno (2000) who emphasise the plurality of *ba* and that it can be connected to other *ba*. Table 1 presents a re-conceptualisation of the SECI modes and corresponding *ba* for them to become relevant in the context of e-learning.

Table 1: Re-conceptualisation of the SECI modes and corresponding *ba*

Mode and <i>ba</i>	Offline context (description based on Nonaka and Takeuchi 1995)	E-learning context
Socialisation mode and originating <i>ba</i>	Socialisation is about sharing experiences and "shared mental models" (p 71). Originating <i>ba</i> is a space for physical contact and interpersonal interaction where this sharing takes place	Socialisation primarily happens via e-mail, chats, asynchronous discussion forums, instant messaging and other online media. Interpersonal contact is not face-to-face, but mediated through online communication channels. These channels can either be used to transfer information or to create interpersonal rapport online expressing feelings, empathy, etc. The socialisation and externalisation modes overlap and are somewhat fuzzy.
Externalisation mode and interacting <i>ba</i>	Externalisation is about making tacit knowledge explicit and creating concepts by dialogue and interaction. Interacting <i>ba</i> is the place where this happens	Externalisation happens via online submission of course work, discussion and communication via e-mail, chats, asynchronous discussion forums, etc., but also through a joint working on wikis. The socialisation and externalisation modes sometimes overlap and are somewhat fuzzy.
Combination mode and cyber <i>ba</i>	Combination is primarily about synthesising, aggregating and combining different kinds of explicit knowledge. Cyber <i>ba</i> is the place where this happens	E-learners make a deliberate choice about what information and content to use. For example, they might focus on audio materials or texts or hyperlinks or videos or online quizzes or other documents. Cyber <i>ba</i> is the context enabling e-learners to make a deliberate choice about how to use the different materials and about the structure of these elements.
Internalisation mode and exercising <i>ba</i>	Internalisation is closely linked to learning by doing. Exercising <i>ba</i> acts as the shared place where this can happen	The creation of an online learning diary gives e-learners an opportunity to reflect on their learning experiences and to make sense of them. The crucial thing is to apply the newly created knowledge, expertise and skills in an offline environment, i.e. in real-life situations (transfer from online context to offline context).

6.2 Hypotheses based on the socialisation mode and originating *ba*

According to previous research (cf. Hofstede and Hofstede 2005), learners differ in their willingness to speak up in class. Therefore, in an e-learning context, our hypothesis S.1 reads: E-learners from countries high on collectivism prefer to communicate or to post comments in asynchronous discussion forums or communicating when invited by their in-group to do so, whereas e-learners from countries high on individualism assert their individual opinion openly.

Markus and Kitayama (1991) report on cross-cultural differences regarding feelings and emotions. Therefore, in an e-learning context, our hypothesis S.2 reads: E-learners from countries high on collectivism are less likely than e-learners from countries high on individualism to express feelings, emotions and attitudes in asynchronous discussion forums or other online communication channels.

Hofstede (1986) argues that there are cross-cultural differences in criticising and contradicting others. Therefore, in an e-learning context, our hypothesis S.3 reads: E-learners from a high power-distance culture are less likely than e-learners from a low power-distance culture to challenge the views of e-tutors.

Hofstede and Hofstede (2005) argue that people from cultures high on individualism place particular emphasis on the task, whereas people from cultures low on power distance are put more importance on maintaining harmonious relationships. Therefore, in an e-learning context, our hypothesis S.4 reads: E-learners from countries high on individualism focus more on the task in hand whereas e-learners from countries high on collectivism strive to maintain harmonious interpersonal relationships, also at the expense of achieving a task, if necessary.

6.3 Hypotheses based on the externalisation mode and interacting *ba*

In previous research on cultural values (e.g. Hofstede and Hofstede 2005), a classic distinction is made between people from individualist cultures who focus on individual achievement and people from collectivist cultures who focus on a joint group effort. Therefore, in an e-learning context, our hypothesis E.1 reads: E-learners from countries high on individualism prefer to work through the learning materials (e.g. texts, hyperlinks, audio and video files, etc.) on their own, whereas e-learners from countries high on collectivism prefer to work in groups, interacting with peers using online facilities.

People from countries high on collectivism place a higher importance on face and intra-group harmony than do people from countries high on individualism (Hofstede and Hofstede 2005). In an e-learning context, our hypothesis E.2 reads: E-learners from countries high on collectivism are less likely than e-learners from countries high on individualism to criticise peers openly in chats or asynchronous discussion forums.

People from high-context cultures put particular emphasis on contextual cues in communication (Hall 1976). In an e-learning context, our hypothesis E.3 reads: E-learners from a high-context culture feel more uncomfortable than e-learners from a low-context culture when they interact with peers via online channels (e.g. e-mail and asynchronous discussion forums), because online channels lack contextual cues.

6.4 Hypotheses based on the combination mode and cyber *ba*

Analogous to what Hofstede (1986) found for learners in a traditional face-to-face learning context, applied to an e-learning context, our hypothesis C.1 reads: E-learners from countries high on individualism prefer educational content (texts, videos, quizzes, other exercises, etc.) that tells them the 'why' and 'how', whereas e-learners from countries high on collectivism prefer to learn the 'what'.

Hofstede and Hofstede (2005) argue that people from a high uncertainty avoidance culture prefer explicit rules and structures. Therefore, in an e-learning context, our hypothesis C.2 reads: E-learners from a high uncertainty avoidance culture prefer structured learning experiences (e.g. a linearly-structured online course), whereas e-learners from a weak uncertainty avoidance culture prefer self-guided and open learning experiences.

Students from a high power distance culture expect and accept to be told what to do by teachers (Hofstede and Hofstede 2005). Therefore, in an e-learning context, our hypothesis C.3 reads: E-learners from a high power distance culture are more likely to prefer tasks set and discussions moderated by an e-tutor rather than one's peers than e-learners from a low power distance culture.

6.5 Hypothesis based on the internalisation mode and exercising *ba*

Lave and Wenger (1991) regard learning as highly contextualised and situated. Therefore, in an e-learning context, our hypothesis I.1 reads: E-learners make a different use of their newly acquired knowledge, expertise and skills, because their individual cognitive background and their situational context is different. Arguably, one will find cross-cultural patterns and/or differences in regard to this context and the application of knowledge and skills.

6.6 Conceptual framework based on the SECI model

Figure 1 illustrates the four knowledge conversion modes and corresponding *ba* together with the hypotheses identified above. The important elements involved in integrating the concept of culture into knowledge development in e-learning environments that have been identified in the paper form the context and 'frame' of the model and are therefore grouped around the SECI model itself.

Offline learning and context Learning styles	Cultural value dimensions		Online learning and context Usability
	Socialisation (originating <i>ba</i>) Tacit to tacit Hypotheses: S.1, S.2, S.3, S.4	Externalisation (interacting <i>ba</i>) Tacit to explicit Hypotheses: E.1, E.2, E.3	
	Combination (cyber <i>ba</i>) Explicit to explicit Hypotheses: C.1, C.2, C.3	Internalisation (exercising <i>ba</i>) Explicit to tacit Hypotheses: I.1	
	Interpersonal communication across cultures		

Figure 1: Modified SECI model in the context of the impact of culture in e-learning

7. Conclusion

The paper draws attention to the concept of culture and its impact on knowledge development processes and outcomes in general, and learning via e-learning systems in particular. We have argued that e-learning environments are not culture-free, but situated in a particular cultural context, since they are both primarily developed and designed in the so-called West but at the same time used by students from different cultures. Thus, examples or concepts have to be meaningful in the various cultures involved or as trans-cultural as possible – avoiding a lack of relevance is key. Therefore, cross-cultural differences in ways of learning and processing information must be taken into account when designing e-learning courses. If an e-learning system is not merely a repository of documents but requires peer-to-peer interaction and communication, cross-cultural differences in the communicative behaviour have to be taken into account as well.

We have also shown that the SECI model can be a promising model to investigate knowledge development in e-learning. Further research with a larger sample population, stemming from a wide variety of national cultures is suggested. Relationships between the factors involved, such as national culture, organisational culture, etc., should also be explored. It is hoped that an insight into how all these factors impact on e-learners knowledge development and learning experience will lead to ways of improving e-learning for a multicultural student population or workforce.

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Appendix D.2: ECKM 2008: Trial Application of the SVS

Haag, M., Duan, Y. & Mathews, B. (2008) *Trial Application of the Schwartz Value Survey on Personal Knowledge Development through e-Learning*. Proceedings of the 9th European Conference on Knowledge Management (ECKM 2008), Southampton, UK, 4th-5th September 2008, Vol. 1, pp. 257-266.

Trial Application of the Schwartz Value Survey on Personal Knowledge Development through E-Learning

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Abstract: Learners' individual-level values and cross-cultural differences in an e-learning study cohort arguably influence knowledge development and learning. Therefore, it is suggested that it is essential to examine both values at an individual level and potential cross-cultural differences and their relation to knowledge development and learning processes and outcomes in e-learning.

This paper presents and discusses the results of an exploratory pilot study in the context of doctoral research on knowledge development in e-learning environments. The focus is on how the e-learners themselves experience the learning processes in e-learning environments, such as working through texts and audiovisual materials, communicating in asynchronous discussion forums, and how this impacts their knowledge development, i.e. the learning outcomes. Learners from two different e-learning courses took part in asynchronous discussions held within their respective e-learning environment. In addition to that, they completed Schwartz' Portrait Values Questionnaire (PVQ), which measures the rankings of the ten individual-level values of the Schwartz Value Survey (SVS).

The contributions in the two asynchronous discussion forums were then analysed with the assistance of the computer-assisted qualitative data analysis software NVivo. Clusters of similar responses were created and then correlated to the results of the ten individual-level values of the SVS. For instance, interactivity, a high degree of interaction between peers, is mentioned more frequently by students who score relatively high on the value of 'stimulation' – which can be regarded as involving variety and novelty in an e-learning course – than by those who score relatively low on this value. On the other hand, most students, regardless of their respective ranking on values, mention flexibility concerning time and place as one of the prime advantages of e-learning as opposed to learning in a face-to-face setting. This might suggest that some perceptions of learning processes in e-learning are shaped by individual-level values, whereas other perceptions are rather due to the e-learning environment itself or other factors. Further correlations are reported in this paper.

Furthermore, the results are also linked to Nonaka's socialisation, externalisation, combination and internalisation (SECI) model. SECI forms the framework of the interaction between tacit and explicit knowledge and is used in this paper to discuss the impact of values and culture on personal knowledge development.

Keywords: e-learning, culture, values, SECI, knowledge development

1. Introduction

There has been a substantial amount of research on culture and online learning (e.g. Selinger 2004; Carr-Chellman 2005), and on culture and knowledge management (e.g. Ardichvili *et al.* 2006; Michailova and Hutchings 2006). On an epistemological level, Nisbett *et al.* (2001) argue that the differences that exist among cultures have an influence on theories of knowledge and on what can be labelled as knowledge and also determine cognitive processes (see also Nisbett 2003). In addition to this, human behaviour has often been researched by using value orientations, often in cross-national comparisons, of which Hofstede's dimensions (e.g. Hofstede 1994) are still arguably the most widely used. This paper brings 'culture' and 'values' together in order to get an insight into personal knowledge development processes.

It is suggested to use the term 'personal knowledge development' to define the whole of several distinct yet interdependent phases of knowledge development, one of them being knowledge creation, as mentioned by Bhatt (2000) and Gauvin *et al.* (2005). Our definition of personal knowledge development is as follows: Personal knowledge development in e-learning environments encompasses idiosyncratic and individualised processes and phases of creating new knowledge, evaluating and modifying knowledge, sharing knowledge, and finally applying knowledge in real-life situations and contexts.

This paper reports the findings of an exploratory pilot study in the context of a doctoral research project on knowledge development in e-learning environments. Both findings and lessons learned in terms of methodology and the difficulties in researching such a multi-layered concept as culture will be presented. Deliberately, the focus will be on the theoretical background of culture and values, but common themes that the respondents mentioned in the discussion and lessons learned in terms of methodology will also be presented. It is hoped that the comments on the methodology of the presented research and the difficulties experienced in researching the complex concepts of culture and values will stimulate debate and discussions.

First, the concepts of 'culture' and 'values' will be introduced and defined, including the Schwartz Value Survey (SVS) and Portrait Values Questionnaire (PVQ) which constitute the value system and the measurement system, respectively. Second, the setup and methodology of the exploratory study will be presented, as well as lessons learned. Third, the learners' experiences of e-learning and the relationships between these experiences and the value system will be described. Fourth, relationships between values and personal knowledge development and potential impacts of values on the Nonaka's (1994) four knowledge-conversion modes socialisation, externalisation, combination and internalisation (SECI) will be discussed. Finally, a conclusion is given.

2. Culture and values

2.1 The concept of culture

In research to date, a substantial number of cultural value dimensions have been used to investigate the impact of national culture on learning (Hofstede 1986). There are a considerable number of cultural aspects that have been identified as influencing knowledge management and learning (see, for example, Ardichvili *et al.* 2006, Bhagat *et al.* 2002, Carr-Chellman 2005, Michailova and Hutchings 2006, Yamazaki 2005). All of these define culture as national culture – it is argued in this paper, however, that *national* culture only accounts for some variations in behaviour across people, but a more individualised and contextualised notion of culture is desirable. The definition of culture that we use for the purposes of this paper is given here, following the broad definition by Hofstede (Hofstede and Hofstede 2005): [culture is] "the collective programming of the mind that distinguishes the members of one group or category of people from others" (p 4). It is necessary to explain two notions of this definition, namely 'collective' and 'programming of the mind'. 'Collective' is a joint and shared experience of life within a particular social context shared with a particular group of people. Such a group of people can be the family, friends, colleagues, acquaintances, people from the same geographical region, people from the same country – other groupings are possible. 'Programming of the mind' can be described as the whole of an individual's experiences in life that are interrelated and define her personal ideals, moral concepts and how things should be done.

2.2 Values

2.2.1 General background

The concept of values has been extensively used in researching and comparing behaviour across cultures – Hofstede's (1994) dimensions presumably being the most widely used. Rokeach (1973) states that a value is something that is personally or socially preferable. This distinction between personally preferable and socially preferable suggests that values are both held at an individual level and at a social/group/cultural level – hence the importance of taking into account both the concept of culture and values, rather than focusing on one concept only. Rokeach (1973) points out the difficulties and inconsistencies in defining values and categorising them. He also contrasts values with related concepts such as attitudes, social norms, and needs – a thorough discussion of these differences, however, is beyond the scope of this paper. Instead, we would like to point the reader to one of the more well known and classic treatises of values and value orientations is Kluckhohn and Strodtbeck's (1961). Their definition of values is used for this paper:

"Value orientations are complex but definitely patterned (rank-ordered) principles, resulting from the transactional interplay of three analytically distinguishable elements of the evaluative process—the cognitive, the affective, and the directive elements—which give order and direction to the ever-flowing stream of human acts and thoughts as these relate to the solution of "common human problems."" (Kluckhohn and Strodtbeck 1961, p 341)

2.2.2 Schwartz Value Survey (SVS) and Portrait Values Questionnaire (PVQ)

It is proposed to use a set of individual-level dimensions for the present research as opposed to cultural-level dimensions such as Hofstede's (Hofstede 1994, Hofstede and Hofstede 2005).

In this exploratory study, Schwartz' ten individual-level dimensions of the Schwartz Value Survey (cf. Schwartz 1992, Schwartz and Bilsky 1987, 1990) were used. The advantage of this value set is that it conceives of individual values as both the product of a shared culture and a product of an individual's experience (Schwartz 1994). It not only identifies the values as such, but specifies a circular structure of relations among – and oppositions between – them (Schwartz *et al.* 2001).

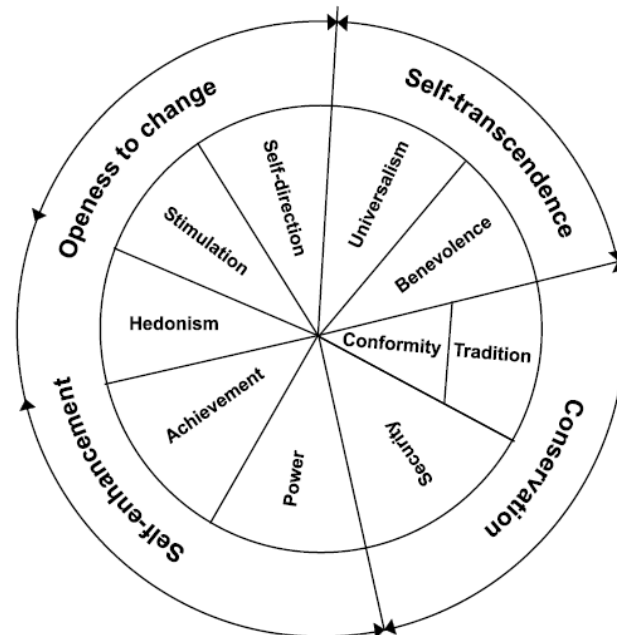
The ten individual-level values can be measured by both the Schwartz Value Survey questionnaire (Schwartz 1992) and the Portrait Values Questionnaire (Schwartz *et al.* 2001). According to Schwartz *et al.* (2001), the SVS as an instrument of measurement demands a high level of abstract thinking, which can lead to less valid results in less-educated samples – this was presumably the reason for a considerable deviation of 5% of the samples in some less-developed nations that Schwartz and colleagues investigated. Table 1 lists the ten values and its definitions.

Table 1: Individual-level values and definitions

Value	Definition
Power	Social status and prestige, control or dominance over people and resources
Achievement	Personal success through demonstrating competence according to social standards
Hedonism	Pleasure and sensuous gratification for oneself
Stimulation	Excitement, novelty, and challenge in life
Self-Direction	Independent thought and action—choosing, creating, exploring
Universalism	Understanding, appreciation, tolerance, and protection for the welfare of all people and for nature
Benevolence	Preservation and enhancement of the welfare of people with whom one is in frequent personal contact
Tradition	Respect for, commitment to, and acceptance of the customs and ideas that traditional culture or religion impose on the self
Conformity	Restraint of actions, inclinations, and impulses likely to upset or harm others and to violate social expectations or norms
Security	Safety, harmony, and stability of society, of relationships, and of self

These ten value types can be arranged into two bipolar higher-order dimensions (Schwartz *et al.* 2001). One, Openness to Change (made up of Self-Direction and Stimulation) versus Conservation (made up of Conformity, Tradition, and Security). Two, Self-Transcendence (made up of Universalism and Benevolence) versus Self-Enhancement (made up of Achievement and Power). Hedonism is a special case, as it is related to both Openness to Change and Self-Enhancement (Schwartz 1994).

Figure 1 (taken from Burgess 2005) shows the structure and conflicting as well as congruent relations between the indivi

**Figure 1:** Structure of relations among the ten individual-level values

The closer two given values are the more similar their underlying motivations are; the more distant two given values are the more antagonistic their underlying motivations are. Except for Tradition, the structure is a circumplex (Schwartz *et al.* 2001). The two opposing higher-order dimensions are also depicted: Openness to Change versus Conservation and Self-Enhancement versus Self-Transcendence.

3. Methodology

3.1 General background

The objective of the pilot was to investigate potential links and relationships between the responses in the asynchronous discussion forums and the score of the respective learners on the ten values as determined by the PVQ, thus making assumptions of whether there are correlations between individual-level values and students' experiences of online learning. These assumptions or hypotheses were supposed to be tested later; the pilot was also meant as a trial run for subsequent data collection.

An exploratory study into learners' experiences of online learning was conducted involving two multicultural student groups: 16 students from the Writing for E-Business Websites course run exclusively via the learning management system Moodle (Cole 2005) at the TAMK University of Applied Sciences, Tampere, Finland, and 86 students from the IT Project Management module run at the University of Bedfordshire, Luton, UK. The students were asked to fill in the Portrait Values Questionnaire (PVQ) (Schwartz *et al.* 2001) and take part in discussions in asynchronous forums in the respective online learning environments of the courses.

3.2 Data collection

3.2.1 Asynchronous online discussion

Ten questions were put to the students in the two asynchronous discussion forums of their respective courses. One of the topic areas that the discussion covered was communication and interaction online. The students were asked whether and how online discussions in a forum or chat help them to learn, how many messages they post on average per week, which types of interaction and communication they have experienced online, and, in particular, what they think are the advantages and disadvantages of online communication in comparison with face-to-face communication.

A second area of interest was which types of files and features learners use often in an online learning environment and how these help them to learn and why. Getting an insight into students' preferences helps one to determine which features are likely to be more effective in transferring information.

Thirdly, the students were asked how, in their opinion, an online course contributes to their learning differently from classroom and training room learning and how the online learning environment should be designed in order to make the learning experience as effective as possible, and, finally, what they like most – and least – in an online course.

The students then shared their opinions and experiences of the areas mentioned above in the asynchronous discussion forum. Follow-up questions were used by the researcher in order to try to clarify some responses, and prompts were employed to encourage other students to participate.

3.2.2 Portrait Values Questionnaire

The Portrait Values Questionnaire (PVQ) was briefly described above, but this section intends to report the structure and the setup of the questionnaire in a bit more detail.

The PVQ contains 40 short verbal portraits of people and takes about 10 minutes to complete. Each portrait describes the person's goals or aspirations. For example, "Thinking up new ideas and being creative is important to him. He likes to do things in his own original way". Respondents are then asked: "How much like you is this person?" and they are supposed to answer this on a six-point Likert-type scale with the labels "very much like me", "like me", "somewhat like me", "a little like me", "not like me", and "not like me at all" (Schwartz *et al.* 2001). The score of one's individual-level values is thus derived from the respondents' self-reports and is arrived at by calculating the mean of the portraits that correspond to a value. The number of portraits for each value is due to the breadth of its conceptual definition (cf. Schwartz 1992).

Some basic background questions were asked at the end of the PVQ in order to be able to link the responses to gender, age group, level of experience in information technology, and level of experience in e-learning.

3.3 Data analysis

In total, 19 students both participated in the online discussion and filled in the PVQ (2 of the Writing for E-Business Websites course and 17 from the IT Project Management module). The discussion forum postings were then coded in NVivo using content analysis (cf. Neuendorf 2002) and then linked to the rankings of the learners on the ten individual-level values. After a round of free coding, axial coding was conducted in order to categorise learners' responses and to come up with higher-level codes. Hypotheses – originally hoped to be tested already at this early stage in the research – would only be formulated later. Thus, section 4 on results does not contain a list of hypotheses and their confirmation or disconfirmation, but general patterns in the learners' responses.

3.4 Lessons learned

While analysing the results, it was difficult to link the ten individual-level values with the discussion postings. The low sample size of 19 students in total did not allow for statistically significant findings. Some comments were made by less than five people who scored both high and low on a particular value – a link between the value rankings and the discussion postings could therefore not be established and the findings in this respect are inconclusive. A too-strong focus on communication aspects of online learning in the online discussions might also be a reason why it was difficult to link comments to values such as tradition, for example.

As a result of the experiences of the exploratory study, the questions posed in the exploratory study should be modified to

- focus less strongly on communication, and
- be more suitable to explore differences in learning processes and outcomes from the point of view of each of the ten individual-level values.

4. Results

Even though the responses in the asynchronous discussion forums could not be linked to the corresponding value rankings investigated in the research, there have been a number of valuable comments about general aspects of online learning in terms of communication and technology that we think are worthwhile being presented here. Generally speaking, taking the results of the online discussion as a basis, it is argued that – in terms of constructivist approaches to learning – online learning environments that lead to effective and engaging learning are

- rich in content,
- diverse in the presentation of content, for example via different media such as mere text, videos, audios and further stimulated by taking quizzes and sharing views and ideas in forums or chat rooms, and
- involve a good deal of interaction and communication with peers in terms of legitimate peripheral participation (Lave and Wenger 1991).

Flexibility of learning – both in terms of time and place – are mentioned as advantages. The technical characteristics of the Internet enable this flexibility – one could therefore argue that mentioning it as an advantage is due to its inherent characteristics rather than the ten motivational values. This is supported by the data, as participants who mentioned this scored both high and low on a particular value. In other words, flexibility of learning does not seem to be correlated with the individual-level values.

Other technical or general aspects of online learning that are widely mentioned are the need for a clear and consistent layout, the need for easy-to-use and reliable software, and mentioning a digital divide in the availability of technology.

Several people mentioned that sharing views and opinions and discussing with peers is important. However, no reasons were given as to why this is the case. If possible, potential reasons for this should be explored in later stages of this study.

Some learners state that postings in discussion forum must be critically assessed and not be taken at face value. One could argue that scoring high on security (checking if postings are correct) and self-direction (independent thought) is positively correlated with emphasizing a critical assessment of contributions. This should be explored later in the study.

Generally, students valued the interactive possibilities of online learning, particularly in terms of communication with peers. They also claim that it does take longer to get to know fellow students via an online learning environment than in a face-to-face setting. However, some students mentioned that being able to communicate and share their own opinion in a discussion forum rather than face-to-face is positive for more introvert students as they will feel less threatened.

5. Discussion

5.1 Values and personal knowledge development

Only very few assumptions about relationships between values and learning experiences and personal knowledge development were supported by the results of the exploratory study. This might mean that the specific context of an e-learning experience is more important and salient than the individual-level values of the learners at a particular point in time. Learning styles, differences in interpersonal communication across cultures and the setup and design of the e-learning system might have a stronger effect on personal knowledge development in e-learning environments than individual-level values. Hills (2003) also points out that individual learners respond differently to a particular e-learning design. He argues that some of these differences are due to the learners' skills and competencies, but that personality and learning style impact more strongly on individual e-learning preferences (Hills 2003). In other words, different levels of culture have different effects on the learning processes and outcomes, and some levels might be more salient at a particular point in time and in a particular context, thus making the learning online a very fuzzy and un-clear-cut phenomenon to observe and research.

5.2 The impact of culture and values on the SECI modes

Although the empirical results of the exploratory study cannot be directly linked to the SECI model, it is argued that culture and values have indeed an impact on the SECI modes, which is worthwhile mentioning here, after a brief description of the SECI model.

SECI describes four modes of knowledge creation through a continuous interaction between explicit and tacit knowledge. Socialisation is defined as a “process of sharing experiences and thereby creating tacit knowledge such as shared mental models and technical skills” (Nonaka and Takeuchi 1995, p 62). After this conversion process from tacit knowledge to tacit knowledge, this tacit knowledge is being made explicit in the externalisation mode. This mode “is typically seen in the process of concept creation and is triggered by dialogue or collective reflection” (Nonaka and Takeuchi 1995, p 64). This explicit knowledge is then combined with other explicit knowledge in the combination mode. Finally, that explicit knowledge is then converted into tacit knowledge in the internalisation mode, which is closely related to learning by doing. Nonaka and Konno (1998) later adapted the concept of *ba*, which they consider “to be a shared space that serves as a foundation for knowledge creation” (p 40). It can be argued that *ba* is the place and cultural context for learning according to Lave and Wenger’s (1991) notion of ‘situated learning’, thus making it a suitable concept for investigating learning processes.

The discussion of how strongly SECI is shaped by culture (e.g. Glisby and Holden 2003; Weir and Hutchings 2005) and the introduction of the concept of *ba* as a place and cultural context suggests that SECI is indeed heavily influenced by value dimensions and context. This is further supported by Vygotsky (1978) who argues that learning is not a solely internal process, but that culture and context are strong factors that impact on both learning processes and outcomes. Therefore, as SECI is a model of knowledge creation and, in the end, learning, it is argued that culture, value orientations and context have an impact on the characteristics and processes of the four SECI modes. It is hoped that later stages of the study can shed more light on how – and how strongly – this is the case.

In the context of research into scaffolding mechanisms in e-learning environments, Bryceson (2007) proposed a model of knowledge acquisition in e-learning environments called ESCIE, based on the SECI model. The acronym represents the five stages of the model – explicitisation, socialisation, combination, internalisation, and externalisation. The e-learning cycle begins with the making explicit (explicitisation) of the lecturer’s knowledge of the course contents. In the second phase, socialisation, students then discuss their ideas in an online forum, and they combine various pieces of information such as the discussion postings, texts, videos, etc. (combination). Internalisation of new knowledge is the next step, and, finally, this internalised knowledge can be made external again (externalisation) through report writing (Bryceson 2007). Further stages of the research presented here will investigate the suitability of SECI, ESCIE and other potential variants of the SECI model in adequately describing personal knowledge development in e-learning environments.

5.3 Exploratory study and related research

Although it is not the primary focus of this paper, related research will be presented briefly and how it links with the exploratory study discussed above. For example, Salmon’s (2004) five-stage model of teaching and learning online looks at the online learning experience from the point of view of e-tutors and e-moderators. The model also discusses issues such as access to the e-learning environment and how to motivate learners to participate, among others. Salmon (2004) points out that it is essential to share a certain online culture which enables learners to interact freely in a non-threatening environment. Interestingly, she argues that it is very difficult for e-moderators to really understand someone else’s culture and to adapt accordingly – instead, she suggests that learners are usually capable of handling cross-cultural differences successfully themselves (Salmon 2004). This is in line with our suggestion that some perceptions of learning processes in e-learning are shaped by individual-level values, whereas other perceptions are due to national culture. It is therefore imperative for e-tutors to not only address national-cultural differences within their student cohorts, but remain open to individual differences as well.

Wang and Reeves (2007) discuss how instructional design is a product of culture and how adapting a particular design to a specific culture can be counter-productive, because different cultures may have conflicting ideas of how an effective instructional design should look like. This dilemma suggests that there should be a focus on the individual learner, something we have argued in this paper and which we are investigating by linking individual-level value dimensions to e-learning experiences. For further discussion of a variety of impacts of the concept of culture on e-learning see Edmundson (2007).

6. Conclusion

The paper discussed the concept of ‘culture’ and ‘values’ and the relationship and impact on personal knowledge development in e-learning environments. The Schwartz Value Survey / Portrait Values Questionnaire was used to elicit the individual-level values of e-learners. Students were asked about their experiences of e-learning and how it contributed to their personal knowledge development.

Only some assumptions regarding a relationship between a particular individual-level value and the e-learning experience were confirmed. This seems to suggest that there are several other factors that determine e-learning behaviour and knowledge development and that these factors differ in their importance and salience, depending on the characteristics of a given context.

We suggested that the learning processes in the SECI model and the model itself are determined by culture and values. In turn, one can argue that personal knowledge development is situated in a specific cultural context and not de-contextualised. Therefore, the design and instructional setup of an e-learning environments has to be informed by the value orientations and cultural context of the individual learners. A stronger personalisation of the e-learning experience is one way of making e-learning more effective for a given group of learners. Tutors can also measure the value orientations of the members of their study cohort – for example by using the Portrait Values Questionnaire – and take the results as a basis for designing e-learning environments that are better tailored to the participating learners.

It is suggested to extend this study with a larger sample, taking into account and isolating other factors that have an impact on learning behaviour. Having a larger sample will also allow to generalise from the findings rather than restricting the conclusions drawn to the particular context of the exploratory study presented here. A thorough, in-depth look into these factors and their interrelatedness can lead to an insight into how one can design and implement e-learning environments that are culturally situated, in other words, that are effective and adequate for a given context and a given student population.

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Appendix D.3: ECKM 2009: Delphi Study: Relevance of Personal Values

Haag, M., Duan, Y. & Mathews, B. (2009) *Which Personal Values are Most Relevant to Knowledge Development through E-Learning? Insights from a Delphi Study*. Proceedings of the 10th European Conference on Knowledge Management (ECKM 2009), Vicenza, Italy, 3rd-4th September 2009, pp. 356-363.

Which Personal Values are Most Relevant to Knowledge Development through E-Learning? Insights from a Delphi Study

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Abstract: This paper focuses on one of the factors that influences personal knowledge development in e-learning environments, namely personal values. It outlines a Delphi study in which the participating experts were asked what they consider to be the most relevant value types of the ten individual-level values of the Schwartz Value Survey (SVS) in the context of personal knowledge development in an e-learning environment.

It is argued that due to the contextual situatedness of learning processes, the value types of the SVS differ in terms of importance and relevance to knowledge development through e-learning. In order to determine which value types are particularly relevant, a Delphi study was conducted. Particular care was taken to identify experts from the three main topic areas involved, namely knowledge management, personal values, and e-learning. The experts were presented with definitions of all ten value types and asked to identify a maximum of five types as being particularly relevant for knowledge development through e-learning.

The results of the Delphi study show that the ten value types can be grouped into three clusters in terms of differing degrees of relevance for knowledge development in the context of e-learning. A high consensus was found among experts in that Achievement, Stimulation and Self-Direction were regarded as being particularly relevant in the investigated context. Less agreement was found for the value types of Hedonism, Benevolence and Conformity, which are considered to be particularly relevant by roughly a third of respondents. Finally, Tradition, Universalism, Security and Power are only relatively rarely regarded to be particularly relevant.

The results suggest that the impact of personal values in a given context differs due to the characteristics of that particular situation. The findings help to understand the relevance of personal values to knowledge development through e-learning and the implications for the design of effective knowledge management systems as there is no one right way of designing them for different people, particularly if they are from different countries. An awareness of personal values and their impact on knowledge development is crucial to make knowledge management initiatives more effective and successful.

Keywords: knowledge development, e-learning, values, Schwartz Value Survey, Delphi study

Introduction

There has been a considerable body of research on culture, knowledge management and e-learning (e.g. Selinger 2004; Carr-Chellman 2005). Johnston and Johal (1999) argued that the Internet 'embodies' a culture of its own and is not void of culture. This 'cultural situatedness' of the medium Internet – and, similarly, of e-learning environments – is therefore essential to take into account when one examines personal knowledge development in e-learning environments. However, when designing e-learning environments, the concept of culture is rarely considered (cf. Edmundson 2007). It is suggested here that *national* culture only accounts for some variations in behaviour and that it is essential to take into account other levels of culture and values as well, rather than merely national cultural values (e.g. Hofstede 1994). In addition to the six levels of culture mentioned by Hofstede & Hofstede (2005), namely national, regional/ethnic/religious/linguistic, gender, generation, social class and organizational or corporate. One can conceive of individual-level values as one further level of shaping behaviour. Behaviour in all areas of life is contextualised and situated in the specific life situations of individuals (Lave & Wenger 1991) and it does not exist in a black box unrelated from everything else.

The national level of culture and its impact on learning (see, for example, Hofstede 1986) has been explored in a wide variety of studies (e.g. Ardichvili *et al.* 2006, Bhagat *et al.* 2002, Carr-Chellman 2005, Michailova and Hutchings 2006, Yamazaki 2005). However, the impact of individual-level values, i.e. personal values, on learning in general and e-learning in particular is still insufficiently described and analysed.

This paper will contribute to closing this gap, in that we examine the impact of the ten individual-level value types of the Schwartz Value Survey (SVS) on personal knowledge development in the context of e-learning. In this research, we define personal knowledge development as follows: Personal knowledge development in e-learning environments encompasses processes and phases of creating new knowledge, evaluating and modifying knowledge, sharing knowledge, and finally applying knowledge in real-life situations and contexts.

First, the cultural and contextual embeddedness of knowledge and learning is discussed. Second, the concept of values in general is introduced and the SVS as one example of a value system is described. Third, the Delphi method is presented. The research methodology and setup of the Delphi study on the relevance of the SVS values for personal knowledge development in e-learning are discussed. Fourth, the results of the Delphi are presented. Fifth, the impact of the results on the structure of the SVS is pointed out. Finally, a conclusion is given and the impact of the results on knowledge development in e-learning is discussed.

Cultural situatedness of knowledge and learning

Several strands of research pointed to the cultural situatedness of the concept of knowledge and the process of learning, i.e. personal knowledge development is not a universal process but deeply rooted in and influenced by the concrete situation the learner is in.

It is worthwhile to point out some of the elements that suggest that cultural situatedness indeed exists. For example, according to Nisbett, Peng, Choi & Norenzayan (2001), cultural differences have an impact on theories of knowledge and therefore also constitute cognitive processes (Nisbett, 2003). Nisbett *et al.* (2001) claim that “the cognitive processes triggered by a given situation may not be so universal as generally supposed, or so divorced from content, or so independent of the particular character of thought that distinguishes one human group from another” (p 307).

Furthermore, learning styles have been described as differing across cultures (e.g. Yamazaki 2005, Hofstede 1986) argued that individuals learn differently and, as a consequence, should be taught differently. Mestre (2007) calls for a diversity of learning approaches in online environments so that students can choose those approaches that suit their own learning style best. This further suggests that personal knowledge development is situated (cf. Lave and Wenger 1991) and influenced by context. We argue that more conventional measures such as Hofstede’s (1994) national-cultural-level values are too ‘catch-all’ and undifferentiated to take the personal and contextualised nature of personal knowledge development into account: individual-level, i.e. personal, values seem better suited to describe personal knowledge development and learning. Gould and Grein (2009) criticise the privileging of national culture when differences are explored and assessed and argue that this predominant view “fails to adequately account for either micro-level variables, such as personal experience or lifestyles” (p 239). In order to precisely bring that personal experience and individual characteristics to the fore, personal values are likely to be a suitable way of conceptualising this experience. Therefore, the concept of values in general and the ten individual-level value types of the Schwartz Value Survey will be introduced in the following section.

Values and the Schwartz Value Survey

The concept of values has been extensively used in researching behaviour across cultures. One of the more widely used definitions of values and value orientations is from Kluckhohn and Strodtbeck (1961):

Value orientations are complex but definitely patterned (rank-ordered) principles, resulting from the transactional interplay of three analytically distinguishable elements of the evaluative process—the cognitive, the affective, and the directive elements—which give order and direction to the ever-flowing stream of human acts and thoughts as these relate to the solution of “common human problems”. (Kluckhohn & Strodtbeck, 1961, p 341)

Rokeach (1973) states that a value is something that is personally or socially preferable. He points out the difficulties and inconsistencies in defining values and categorising them.

In the context of the Delphi study reported here, Schwartz’ ten individual-level dimensions of the Schwartz Value Survey (cf. Schwartz 1992; Schwartz and Bilsky 1987, 1990) were used. It not only identifies the values as such, but specifies a circular structure of relations among – and oppositions between – them (Schwartz *et al.* 2001). Table 1 lists the ten value types and their definitions.

Table 1: Individual-level values and definitions

Value type	Definition
Power	Social status and prestige, control or dominance over people and resources
Achievement	Personal success through demonstrating competence according to social standards
Hedonism	Pleasure and sensuous gratification for oneself
Stimulation	Excitement, novelty, and challenge in life
Self-Direction	Independent thought and action—choosing, creating, exploring
Universalism	Understanding, appreciation, tolerance, and protection for the welfare of all people and for nature
Benevolence	Preservation and enhancement of the welfare of people with whom one is in frequent personal contact

Tradition	Respect for, commitment to, and acceptance of the customs and ideas that traditional culture or religion impose on the self
Conformity	Restraint of actions, inclinations, and impulses likely to upset or harm others and to violate social expectations or norms
Security	Safety, harmony, and stability of society, of relationships, and of self

These ten value types can be arranged into two bipolar higher-order dimensions (Schwartz *et al.* 2001). One, Openness to Change (made up of Self-Direction and Stimulation) versus Conservation (made up of Conformity, Tradition, and Security). Two, Self-Transcendence (made up of Universalism and Benevolence) versus Self-Enhancement (made up of Achievement and Power). Hedonism is a special case, as it is related to both Openness to Change and Self-Enhancement (Schwartz 1994).

Figure 1 (taken from Burgess 2005) shows the structure and conflicting as well as congruent relations between the individual-level values.

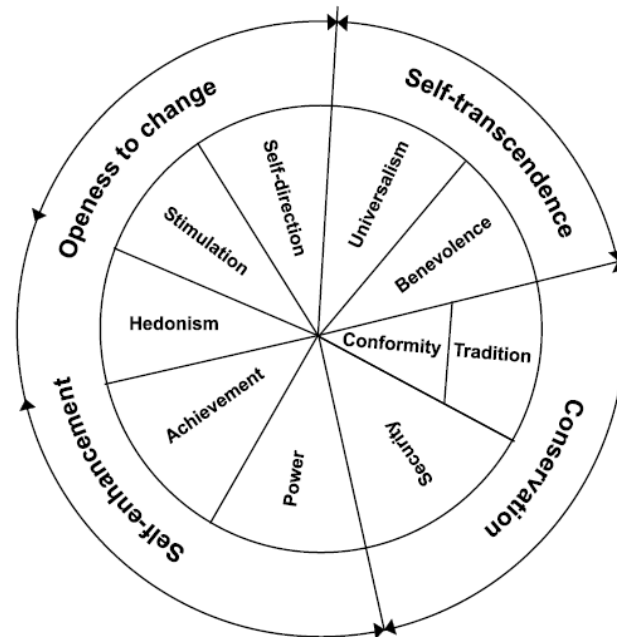


Figure 1: Structure of relations among the ten individual-level values

The closer two given values are the more similar their underlying motivations are; the more distant two given values are the more antagonistic their underlying motivations are. Except for Tradition, the structure is a circumplex (Schwartz *et al.* 2001). The two opposing higher-order dimensions are also depicted: Openness to Change versus Conservation and Self-Enhancement versus Self-Transcendence.

Research method

A Delphi survey method was adopted in this research. This method can be characterised as a useful communication tool to systematically collect and aggregate informed judgements from a group of experts on specific questions or issues (Linstone and Turoff 1975). Dalkey and Helmer (1963) state that the method is to obtain the most reliable consensus of a panel of experts, by putting them into a series of in-depth questionnaires, interspersed with controlled feedback. The Delphi method is a structured procedure involving group communication among a panel of experts (Adler and Ziglio 1996). It has been used extensively in research and described in detail (see, in particular, Linstone and Turoff 1975). A Delphi study usually comprises a series of questionnaires sent to a pre-selected group of experts in the subject areas under investigation. These questionnaires are designed to elicit and develop individual responses to the problems posed and to enable the experts to refine their views as the group's work progresses in accordance with the assigned task. Delphi studies are usually carried out over several rounds, with Turoff (1970) arguing that two rounds can be sufficiently effective in terms of reaching consensus. Furthermore, some have argued, however, that a one-round study can sometimes be sufficient (see Skulmoski, Hartman and Krahn 2007).

The aim of the Delphi study presented here was twofold: One, to confirm the research assumption that some of the value types are more relevant in the particular context of e-learning than in other contexts, and, two, to determine which of the ten SVS value types could be regarded as being more relevant than the others.

The key to a successful Delphi study mainly lies in the selection of participants, who are knowledgeable and willing to contribute valuable ideas. As the Delphi method uses a panel of experts who have

experience or knowledge of the subject being studied, the panel is not generally selected randomly and persons who are likely to contribute valuable ideas are essential to include. There is diverging evidence regarding the suggested minimum number of participants to ensure validity of results. For example, Brockhoff (1975) suggests that panels with only four experts can produce valid results. His experiments using different panel sizes also did not find clear distinctions regarding accuracy (Brockhoff 1975).

As there are three main topic areas involved in the presented research, the experts were selected from these areas: knowledge management, values, and e-learning. Particular care was taken to try to identify experts who are preferably knowledgeable in more than one of the aforementioned areas. Experts were identified through an Internet search for people who have a demonstrated expertise in the subject areas involved and through an analysis of some of the main writers of academic papers in the field. It was considered to be important to have experts from both an academic background and from a more applied and practical background in the panel. Thus, experts were recruited not only from universities but also from, for example, e-learning consultancies. Potential participants were chosen from a variety of countries in order to reduce any cultural bias. Particular care was taken to locate experts with a demonstrated knowledge of more than one of the three areas of expertise involved. This selection was based on the description found on their institutional website and on their bibliographies, if available.

In the document e-mailed to the sample, the selected experts were asked to state both their areas of expertise and the type of organisation they are working for. They were allowed to acknowledge more than one area of expertise. In total, 13 listed knowledge management and related areas, 11 e-learning and related areas, and 8 listed culture/values and related areas as their areas of expertise. 11 listed two or even all three subject areas as their personal area of expertise, which supports our view that all relevant areas of expertise were sufficiently represented in the sample. In terms of type of organization and employment, more than one category could be ticked. 14 listed institutions of higher education, 2 listed other types of educational institutions, 2 listed knowledge management consultant or practitioner and 6 listed e-learning consultant or developer. There is some spread in terms of country origin as well, with the responding experts coming from the United Kingdom, Germany, Spain, Austria, France, USA, New Zealand and Finland. Overall, we believe that this constitutes a sufficiently diverse and sufficiently exhaustive representation within the Delphi panel in terms of areas of expertise, type of organization and employment and country.

Based on the abovementioned criteria, 36 experts in total were contacted by e-mail and asked to participate in the study. Out of the 36 experts that were contacted, 18 returned the questionnaire by e-mail. The response rate of 50% suggests that experts involved in the topic areas consider it important to investigate the relevance of the ten individual-level SVS value types on personal knowledge development in e-learning.

The experts were provided with our definition of personal knowledge development: "Personal knowledge development in e-learning environments encompasses idiosyncratic and individualised processes and phases of creating new knowledge, evaluating and modifying knowledge, sharing knowledge, and finally applying knowledge in real-life situations and contexts." and also with a definition of online learning in the context of this study: "Any structured or partly structured web-based learning activity in a virtual learning environment – for example, merely looking up an article on Wikipedia does not count as online learning in this context". Providing all experts with these definitions ensured that the whole panel were aware of the same description of both the matter being investigated – personal knowledge development – and the context in which this takes place – online learning.

The sample was then asked to mark those value types of the SVS that they consider to be particularly relevant or having a significant impact and effect (either positive or negative on personal knowledge development in the context of online learning. They were allowed to choose a maximum of five value types and were encouraged to provide comments about why they had chosen or not chosen a particular value. The definition of the SVS value types (Schwartz 1992) were provided to all experts in the questionnaire itself, thereby ensuring that they all had the necessary knowledge to respond to the questionnaire in an informed way.

Results of the Delphi study

Due to the high consensus among the experts of the panel on the question of which of the ten individual-level value types of the Schwartz Value Survey are particularly relevant for personal knowledge development in e-learning, no further rounds were conducted. The reason for this was that the aim of the Delphi study, namely finding a widespread agreement on the relevance of the value types was already met after one round. The value types are listed below in Table 2 in the order of frequency with which the members of the panel have labelled them as particularly relevant for personal knowledge development in e-learning.

Table 2: Value types and relevance for personal knowledge development in e-learning

Value type	Labelling a value type as particularly relevant for personal knowledge development in e-learning	
	Total number of responses: 18	
	No.	Percentage
Stimulation	16	89%
Self-Direction	16	89%
Achievement	13	72%
Hedonism	6	33%
Benevolence	6	33%
Conformity	5	28%
Tradition	3	17%
Universalism	3	17%
Security	2	11%
Power	2	11%

From the results presented in Table 2, three clusters of value types in terms of agreement of experts on the panel who ranked a value type as particularly relevant can be identified:

High agreement:	Stimulation, Self-Direction, and Achievement:	72-89%
Medium agreement:	Hedonism, Benevolence, and Conformity:	28-33%
Low agreement:	Tradition, Universalism, Security, and Power:	11-17%

Three value types – Stimulation, Self-Direction and Achievement – are labelled as being particularly relevant by at least 72% of the experts consulted. This is a substantial agreement rate, all the more so if one considers these are the results of a one-round Delphi study. In addition to the high absolute percentage of agreement, the considerable gap between the aforementioned three values and those two values that rank on a joint fourth place, needs to be pointed out. Only 33% of experts regard Hedonism and Benevolence as particularly relevant, which is substantially less than the third-ranking value type Achievement. Since the primary aim of the Delphi study was to find out the *relative* importance of the ten SVS value types in relation to each other, this gap between the three highest-ranking value types and the seven remaining values is particularly interesting.

In order to illustrate the reasons of the expert panel to labelling Stimulation, Self-Direction and Achievement as particularly relevant, some of the comments that the experts made will be reported here. For example, it was pointed out that Stimulation represents a “[p]ositive driver of engagement with and commitment to new form and style of learning”, which as a consequence contributes positively to personal knowledge development. Another participant emphasised that one has to have a “[d]esire for novelty and challenge - e-learning is still novel and challenging”. Furthermore, it was suggested that “online learning offers should make it possible to provide greater stimulation than other means”, thereby raising the chances that e-learners will become actively engaged with the e-learning environment and its materials. For Self-Direction, it was pointed out that “[o]nline learning is by definition independent and at least partly self-directed”, a statement which suggest a direct link of this value type and its assumed relevance with online learning. Finally, another participant stated that Achievement “would promote engagement with the on-line community through comparison of performance with the learning group”, thus suggesting a relationship between a desire to achieve and the intensity of engaging with fellow learners.

The wide spread of agreement levels of which of the value types has a particular relevance in the context of e-learning was surprising. Whereas differences were certainly expected, the spread between 11% and 89% was largely unexpected. This suggests that, although values are considered to be relatively stable across time (Rokeach 1973) and applicable across contexts (Schwartz and Bilsky 1987), there are indeed differences in their salience and *relative* importance across situations and contexts (Schwartz 2006). This is important to note: Personal values *can* strongly constitute personal knowledge development behaviour, but a specific set of ‘cultural situatedness’ may reduce the impact of personal values in a given situation. Interestingly, as Bardi and Schwartz (2003) point out, that there is disagreement whether values generally guide behaviour or do so only at times and for some people. They specify this by suggesting that values affect behaviour only in some situations, particularly when there is a conscious choice involved (Bardi and

Schwartz 2003), which arguably is the case when e-learners are actively involved in personal knowledge development processes.

Discussion

The SVS is more than a mere accumulation of values that are unrelated to each other. On the contrary, a certain structure and conflicting and congruent relations between the various value types were identified and described (Schwartz *et al.* 2001). The reader is reminded of Figure 1 (taken from Burgess 2005) above, which shows the structure of relations of the value types. Values which are shown opposite each other have antagonistic underlying motivations.

In the context of the research presented here, one would therefore assume that those value types which are situated directly opposite of Stimulation, Self-Direction, and Achievement are not regarded to be particularly relevant. This assumption is based on Schwartz *et al.* (2001) who argue that value types that are displayed at the opposite end of the circumplex structure of the SVS value types are in a conflicting relation to each other.

Let us now examine the relation of Stimulation, Self-Direction, and Achievement with their respective oppositional value types one by one. First, the value type Security, which is opposite to Stimulation (89%), is considered to be particularly relevant by only 11%, ranking last in the Delphi study – this supports the structure of the SVS. Second, Power and Security, which are both opposite to Self-Direction (89%), are both considered to be particularly relevant by only 11%, again ranking last. This also supports the circumplex structure of the SVS. Third, Benevolence, which is opposite to Achievement (72%), is considered to be particularly relevant by 33%, ranking in the medium agreement group – partially supporting the SVS structure (Schwartz *et al.* 2001).

Hedonism is related to both Openness to Change and Self-Enhancement (Schwartz 1994), and also ranks neither in the high agreement nor low agreement group of the Delphi study results, and is thus not considered here. Two of the three value types in the high agreement group belong to the higher-order dimension of Openness to Change (Schwartz *et al.* 2001). One can therefore calculate the agreement rate for Openness to Change by calculating the mean of the scores for Stimulation and Self-Direction. This agreement level for Openness to Change as being particularly relevant for knowledge development in e-learning is 89%. For the conflicting and opposing higher-order dimension called Conservation, the agreement level consists of the mean scores for Conformity, Tradition, and Security, and is a mere 19%. This is a strong indicator that having values aligned with the Openness to Change dimension is considered to be very important for an effective and efficient personal knowledge development in e-learning environments. On the other hand, having values aligned with the Conservation dimension may be considered to hamper or hinder personal knowledge development.

The average agreement rate of the two remaining higher-order value dimensions – Self-Enhancement and Self-Transcendence – do not differ as strongly as the Openness to Change versus Conservation distinction. The average agreement level for Self-Enhancement is 42% (mean for the scores of Achievement and Power – without taking Hedonism into account), whereas the corresponding level for Self-Transcendence is 25% (mean for the scores for Universalism and Benevolence). At a glance, here is the comparison of the average scores for the four higher-order dimensions.

Openness to Change vs Conservation: 89% vs 19%, and
Self-Enhancement vs Self-Transcendence: 42% vs 25%

Conclusion

The results of the Delphi study suggest that the ten individual-level SVS values differ in terms of their *relative* impact on personal knowledge development in e-learning. Furthermore, contextual factors – which we subsumed under the heading ‘cultural situatedness’ – have been shown to have a strong relation to personal knowledge development behaviour. This is an important finding, as it suggests that one has to take into account both personal value orientations and characteristics of e-learning environments and other contextual factors when designing relevant e-learning environments and courses.

The Delphi panel provided significant support that the value types of Stimulation, Self-Direction and Achievement are particularly relevant and have a significant impact and effect on personal knowledge development in e-learning environments. Considering the higher-order dimensions of the SVS, an orientation towards Openness to Change values seems to foster effective and efficient personal knowledge development processes in e-learning.

This is of particular interest to providers of e-learning courseware, as well as e-tutors and other stakeholders involved in e-learning. In other words, both a higher degree of personalisation of the e-learning experience and a stronger focus on personal values arguably lead to more effective and more relevant e-learning experiences for a given group of learners.

Findings from the Delphi study form an important basis for future research. A large-scale survey will be carried out to empirically test and validate the extent of the impact of the three most relevant personal value types on personal knowledge development in e-learning.

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Appendix D.4: Impact of Culture on the Application of the SECI Model

Haag, M., Duan, Y. & Mathews, B. (2009) The impact of culture on the application of the SECI model. In D. Harorimana (ed) *Cultural Implications of Knowledge Sharing, Management and Transfer: Identifying Competitive Advantage*, pp. 26-47, Hershey, PA: Information Science Reference.

The Impact of Culture on the Application of the SECI Model

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Abstract

The concept of culture and its relationship with Nonaka's SECI model, a widely used model of organizational knowledge creation, is discussed in this chapter. Culture, in various forms, is argued to impact on the SECI model and the model itself is embedded in a certain context. This context determines the characteristics of the knowledge creation modes as described by SECI and therefore makes the model either more, or less, pertinent in a given context. This is regardless of whether that context is primarily determined by national culture, organizational culture or other factors. Differences in emphases in a given contextual environment on either tacit or explicit knowledge also impacts on knowledge creation as defined by SECI. Finally, it is emphasized that being conscious of the cultural situatedness of the SECI model can lead to a more adequate use of the model for organizational knowledge creation.

Keywords: SECI, knowledge management, knowledge creation, tacit knowledge, implicit knowledge, explicit knowledge, organizational learning, culture, organizational culture, national culture, values, cultural values, cultural differences

Introduction

The objective of this chapter is to explore how the SECI model is influenced by, and relates to, the concept of culture at various levels. Cultural phenomena such as value orientations, and national, organizational, and other levels of culture arguably have an impact on the SECI model. Our main premise is that the SECI model – as other models and theories – was conceived in a particular cultural and value context. Thus, context shapes the model and determines how it can be applied in a different context, e.g. in a different culture, in a different organization or in a different department or team.

Knowledge and the ability to create new knowledge, share it and use it in organizational processes and routines is of paramount importance in order for organizations to survive in an increasingly competitive global marketplace (Nonaka & Toyama, 2003). In addition to sharing and applying existing knowledge, one of the key activities companies have to engage in is the creation of new knowledge through organizational learning (Argyris & Schön, 1978, 1996). Senge (2006) also emphasized the importance for organizations to engage constantly in learning.

Organizational knowledge creation has often been described using the SECI model (Socialization, Externalization, Combination, Internalization), first developed by Nonaka in 1991, and expanded and adapted further by, for example, Nonaka (1994), Nonaka & Takeuchi (1995), von Krogh, Ichijo & Nonaka (2000), and Takeuchi & Nonaka (2004). It is suggested here that it is worthwhile investigating this model from the point of view of culture in order to try to understand the model better and to make it more applicable and relevant across a wide variety of contexts. Furthermore, it is important to note that research into knowledge management has mostly been conducted in the Western world, particularly the USA, and therefore has a Western cultural bias to it (Pauleen, 2007). Applying a model which stems from a non-Western context can help to gain a fresh and different perspective on knowledge creation.

In order to discuss the cultural situatedness of the SECI model, we will start by addressing problems of defining the concepts of culture and values. Culture should not only be thought of as being primarily national, but one should also take other levels of culture into account as well. Then, the dichotomy of tacit and explicit knowledge, which is a central element of the SECI model, will be discussed and the SECI model itself described. It will be suggested that knowledge management itself and its tools and methods are determined and shaped by culture and a given situational context. The universal applicability of the SECI model and the impact of culture and context on knowledge creation and the SECI model and its applications in a business setting will be discussed. Focusing on three main levels of culture, rather than giving an exhaustive account of the many potential aspects of culture, we will explore a) the national level using two of Hofstede's (1980, 1994) dimensions, b) organizational culture using two management practices of KEYS, a tool for assessing the climate for creativity in an organization (Amabile, Conti, Coon, Lazenby & Herron, 1996), and c) the individual-level values using two values of the Schwartz Value Survey (Schwartz, 1992, 1994). By way of example, we illustrate a range of potential impacts these three levels of culture can have on applying the SECI model in a business context. Finally, conclusions and suggestions for further research are given.

Culture and values

This section introduces the concept of culture, highlighting the importance of taking into account several levels of culture and provides a deliberately broad definition of culture for the purposes of this chapter. The concept of values will briefly be discussed since it is closely related to culture.

Arguably, culture determines behaviour in all areas of life. Behaviour does not take place in a vacuum, but is contextualized and situated in the concrete life-world of individuals (Lave & Wenger, 1991). There is a considerable number of cultural aspects that have been identified as influencing knowledge management (e.g. Ardichvili, Maurer, Li, Wentling & Stuedemann, 2006; Bhagat, Kedia, Harveston & Triandis, 2002; Carr-Chellman, 2005; Michailova & Hutchings, 2006; Yamazaki, 2005). All of these define culture as national culture. However, it is suggested here that *national* culture only accounts for some variations in behaviour across people, and that a more individualized and contextualized notion of culture is desirable. For example, Hofstede & Hofstede (2005) distinguish between six levels of culture: national, regional/ethnic/religious/linguistic, gender, generation, social class and organizational or corporate. We suggest that all of these, depending on the situation and context, have the potential to determine behaviour to various degrees. In other words, in a particular situation gender differences could have a greater impact on the interaction and communication of people than differences in national culture. In turn, this means that it would be desirable to take into account all levels of culture as they are potentially important. Nevertheless, there appears to be no consensus on the relative impact or importance of the various levels of culture and so we therefore argue that it is counter-productive to provide a rank order as this would prevent having an open-minded and unbiased view of those levels of culture which are deemed to be less important in the hierarchy.

A substantial number of cultural value dimensions have been used to investigate the impact of national culture on behaviour, with Hofstede's dimensions arguably the most widely used (Hofstede, 1980, 1994; Hofstede & Hofstede, 2005). Nevertheless, as culture is such a complex and dynamic concept, these dimensions have often attracted criticism. Hofstede's dimensions have been criticized as not necessarily being exhaustive representations of national culture and not fully representing the wide variety of national cultures around the world (Schwartz, 1994). Furthermore, Schwartz (1994) criticizes that the IBM employees used in Hofstede's sample are not adequately representing the general population. Furthermore, Voronov & Singer (2002) voice criticism of the arguably most widely employed dimension of Hofstede, individualism-collectivism (Hofstede, 1994), concerning the reliability to distinguish cultures and describe them. Nevertheless, as Hofstede's dimensions have been widely applied world-wide (cf. Triandis, 1995) and are generally known to managers and entrepreneurs, this set of dimensions was chosen here to illustrate national culture and its relationship to knowledge creation. Some of the other cultural models that describe and categorize cultures are the value dimensions by Trompenaars (Trompenaars & Hampden-Turner, 1997), Hall's (1976) high context/low context distinction, among others.

It is not in the scope of this chapter to discuss and compare specific cultural values in depth. However, it is important to understand the concept of culture in general and the role of values in cross-cultural research and practice. For the purpose of this chapter culture is defined by using the broad definition by Hofstede & Hofstede (2005): [culture is] "the collective programming of the mind that distinguishes the members of one group or category of people from others" (p. 4). It is necessary to explain two notions of this definition, namely 'collective' and 'programming of the mind'. 'Collective' is a joint and shared experience of life within a particular social context shared with a particular group of people. Such a group of people can be the family, friends, colleagues, acquaintances, people from the same geographical region, people from the same country – other groupings are also possible. 'Programming of the mind' can be described as the whole of an individual's experiences in life that are interrelated and define her personal ideals, moral concepts and how things should be done.

The concept of values has been extensively used in researching and comparing behaviour across cultures. Rokeach (1973) states that a value is something that is personally or socially preferable. This distinction between personally preferable and socially preferable suggests that values are both held at an individual level and at a social/group/cultural level – hence the importance of taking into account both the concept of culture and values, rather than focusing on one concept only. One of the more well-known definitions of value orientations is Kluckhohn and Strodtbeck's (1961):

Value orientations are complex but definitely patterned (rank-ordered) principles, resulting from the transactional interplay of three analytically distinguishable elements of the evaluative process—the cognitive, the affective, and the directive elements—which give order and direction to the ever-flowing stream of human acts and thoughts as these relate to the solution of "common human problems". (Kluckhohn & Strodtbeck, 1961, p. 341)

After having introduced the first main topic area, culture and values, we will now move on to the second topic area and provide an overview of the concept of knowledge and the SECI model.

Knowledge and the SECI model

The categorization of knowledge into tacit and explicit knowledge is only one of a large number of possible categorizations. We have to restrict our discussion to the tacit-explicit distinction, but the interested reader is referred to Lee, Foo & Goh (2006) who provide a discussion of several different types of knowledge, such as knowledge as an object or as a process, among others. In order to understand properly the functioning of the SECI model it is essential to know where these concepts come from, what they mean and, in particular, how they are used by Nonaka & Takeuchi (1995) in the context of SECI.

Tacit knowledge is considered to be a “cultural, emotional, and cognitive background, of which we are only marginally aware” (Stenmark, 2001, p. 10). Nonaka & Konno (1998) argue that there are two dimensions of tacit knowledge: a technical dimension which involves personal skills and is referred to as know-how, and a cognitive dimension which “consists of beliefs, ideals, values, schemata, and mental models which are deeply ingrained in us and which we often take for granted” (p. 42).

According to Nonaka (1991), explicit knowledge is knowledge that can be expressed, codified, stored in databases or as text in books or articles, transferred, shared and managed by knowledge management tools. In contrast, Nonaka (1991) defines tacit knowledge as highly personal, hard to formalize and, as a consequence, difficult to communicate, transfer or share. He suggests that tacit knowledge is deeply linked and only relevant in a specific context (Nonaka, 1991). As culture is arguably one of the prime determinants of context, tacit knowledge itself is shaped by culture as well, be it the national cultural background of the employees or the organizational culture of the firm. He goes on to say that tacit knowledge consists of both technical skills or know-how and of taken-for-granted mental models and beliefs (Nonaka, 1991).

It is important to note that Nonaka (1991) does not regard tacit and explicit knowledge as opposed, separate and mutually exclusive, but as mutually complementary entities. In other words, knowledge is *not* either completely tacit nor completely explicit. This is in line with Johnson, Lorenz & Lundvall (2002) who suggest that tacit knowledge and explicit knowledge should be regarded as being complementary rather than in contradiction with each other. Knowledge at the extreme explicit side of the continuum should therefore be called information rather than knowledge as it does not require a particular context and situation to be given meaning. For example, a verbalized account of the specifications of a machine may be called information even if there is no concrete context or *ba* present. If these specifications are read by an engineer, made sense of and used to assemble this machine, we do have a concrete context and *ba* and the information becomes knowledge. Therefore, when applying the SECI model or when modelling knowledge creation and conversion processes using the model, one should be aware that in some situations or contexts, there is a strong emphasis on the explicit end of the knowledge type continuum, whereas in other contexts the emphasis is on the tacit end.

Hildreth & Kimble (2002) criticize the Externalization phase of SECI arguing that, if tacit knowledge cannot be articulated, then it cannot be made explicit, i.e. externalized. They propose a duality of knowledge in which all knowledge is both ‘hard’ and ‘soft’ (more explicit rather than tacit and more tacit rather than explicit) at the same time, with a varying degree of hardness and softness (Hildreth & Kimble, 2002). This seems to be a useful way of avoiding the mutual exclusiveness of tacit and explicit knowledge in which the two types of knowledge are seen as being at the extreme ends of a continuum. Tsoukas (2003) argues that they are “not the two ends of a continuum but the two sides of the same coin: even the most explicit kind of knowledge is underlain by tacit knowledge” (p. 425). Furthermore, externalizing or making explicit of fully tacit knowledge is by definition not only not possible, but not necessary – as Tsoukas (2003) suggests that it is essential “to find new ways of talking, fresh forms of interacting, and novel ways of distinguishing and connecting” (p. 426) rather than externalize tacit knowledge.

Socialization is defined as a “process of sharing experiences and thereby creating tacit knowledge such as shared mental models and technical skills” (Nonaka & Takeuchi, 1995, p. 62). In this mode, knowledge is acquired mainly by observation, imitation and learning by doing, similar to an apprenticeship (Nickols, 2000). Let us take the example of learning how to ride a bicycle. It is essential for the learner to observe how somebody rides a bicycle. This gives the learner an initial idea how to do it herself. This is the conversion process from tacit knowledge to tacit knowledge.

Externalization as a knowledge conversion mode is “typically seen in the process of concept creation and is triggered by dialogue or collective reflection” (Nonaka & Takeuchi, 1995, p. 64). The person who already knows how to ride a bike can explain it to the learner via dialogue, for example, explaining the importance of keeping balance. This is the conversion process from tacit knowledge to explicit knowledge.

Combination as a knowledge conversion mode “involves combining different bodies of explicit knowledge” (Nonaka & Takeuchi, 1995, p. 67). This is done by individuals exchanging and combining this knowledge in the forms such as documents. Combining texts about how to ride a bike with drawings that illustrate it is one example. This is the conversion process from explicit to explicit knowledge.

Internalization is defined as the process in which knowledge becomes valuable when “[it] is internalized in individuals’ tacit knowledge bases through shared mental models or technical know-how” (Nonaka, Toyama & Byosière, 2001, p. 497), and it is closely related to learning by doing (Nonaka & Takeuchi, 1995). Practising riding a bike will give the learner more and more confidence and she will be in control of the bike more and more. Thus, knowledge and skills become embedded into an individual’s mind and are used by her in daily routines in a specific context. This is the conversion process from explicit to tacit knowledge.

Nonaka & Konno (1998) introduced the concept of *ba*, which they consider “to be a shared space that serves as a foundation for knowledge creation” (p. 40). *Ba* is the place and cultural context for learning according to Lave & Wenger’s (1991) notion of ‘situated learning’, thus making it a suitable concept for investigating learning processes. Nonaka & Konno (1998) also argue that *ba* provides “a platform for advancing individual and/or collective knowledge” (p. 40).

The terms of the four *ba* are as follows: originating *ba* for the Socialization mode, interacting *ba* for the Externalization mode, cyber *ba* for the Combination mode, and exercising *ba* for the Internalization mode. However, other terms have been used for the Externalization mode, namely dialoguing *ba* and for the Combination mode, namely Systemizing *ba*. All four *ba* are briefly defined here:

In the originating *ba* of the Socialization mode, tacit knowledge is being shared. It is a context where feelings, emotions and mental models are shared and it relies heavily on direct face-to-face interaction. It is also a place from where trust among peers can develop (Nonaka, Toyama & Byosière, 2001).

In the interacting *ba* or dialoguing *ba* of the Externalization mode, “individuals’ mental models and skills are converted into common terms and concepts” (Nonaka, Toyama & Byosière, 2001, p. 500) through dialogue and reflection.

Systemizing *ba* or cyber *ba* of the Combination mode is virtual rather than set in real time and space and it is where new explicit knowledge is created through combining elements of other explicit knowledge. It can be facilitated by information technology and online collaborative environments and particularly involves group-to-group interaction (Nonaka, Toyama & Byosière, 2001).

Finally, exercising *ba* of the Internalization mode relies on “continuous learning and self-refinement through on-the-job training or peripheral and active participation” (Nonaka, Toyama & Byosière, 2001, p. 501).

Figure 1 shows the four SECI modes and their corresponding *ba*.

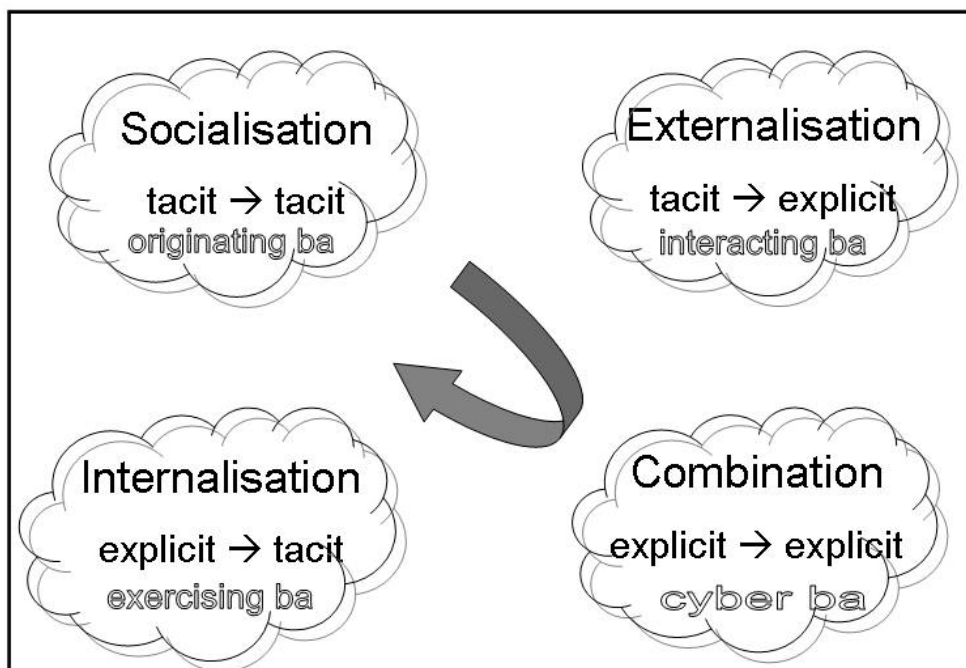


Figure 1: SECI modes and corresponding *ba* (Adapted from Nonaka & Konno, 1998, p. 46)

In addition to the level of the four SECI modes and the corresponding *ba*, the model was further expanded and enriched by the concept of knowledge assets. Nonaka, Toyama & Byosière (2001) defined assets as

“firm-specific resources that are indispensable to the creation of values for the firm, and many researchers today agree that knowledge is precisely such an asset” (p. 501). They categorize knowledge assets into four groups: experiential knowledge assets are shared tacit knowledge through joint experiences such as individual skills and know-how. Conceptual knowledge assets, then, are “explicit knowledge articulated as concepts through images, symbols, and language” (Nonaka, Toyama & Byosière, 2001, p. 502) such as brand equity, product designs or product concepts. Systemic knowledge assets are explicit knowledge in the form of documents, patents, licenses, manuals, etc., and are therefore transferable relatively easily. Finally, they identified so-called routine knowledge assets, which are “tacit knowledge that is routinized and embedded within the actions and practices of an organization” (Nonaka, Toyama & Byosière, 2001, p. 502). Organizational culture, routines and know-how of the day-to-day work fall into this category.

The SECI model is popular and widely used by researchers into knowledge management and knowledge creation, but there are few reports by practitioners of how they applied the model and its four modes. However, this is not necessarily a weakness of the model itself, but suggests that the concepts involved in the model may be difficult to apply and research. This chapter cannot provide a thorough critical evaluation of the SECI model, but for criticism concerning the empirical basis of the model, the reader is referred to Gourlay (2004). We believe that the strength of the SECI model is that it brings together a wide variety of important concepts in knowledge creation: the two types of knowledge – tacit and explicit –, *ba* as the context of knowledge creation, and the four modes of knowledge conversion. It is also a process model thereby outlining what actually *happens* in knowledge creation rather than only describing what is involved. This focus on processes is a prerequisite for individuals to understand knowledge creation and their own role in it.

The more abstract additions to SECI, such as *ba*, make the model even more challenging to implement and use in an organization. There are no ready-made guidelines on how to model concrete processes of knowledge creation and conversion within an organization onto one of the four modes of SECI. In our opinion, however, the distinction between tacit and explicit knowledge and the emphasis on the importance of interaction between these two types of knowledge are very helpful for organizations as they are encouraged to try to establish an inventory of their knowledge (What tacit and explicit knowledge do we have?) as well as emphasize the importance of the knowledge conversion processes, often involving interpersonal interaction (What happens with our knowledge and how is this mirrored by the four modes?).

We also suggest that a ‘pre-mode’ to the four SECI modes, not being part of the knowledge creation spiral itself but acting as a place for an explicit analysis of culture at various levels prior to exploring the various knowledge conversion modes is useful for organizations as they are thus more aware of cultural influences on knowledge creation so that they can take actions and possibly adopt the SECI model or create sub-models.

In 2003 Nonaka & Toyama incorporated dialectic thinking into the SECI model. They see “knowledge creation as a dialectical process, in which various contradictions are synthesized through dynamic interactions among individuals, the organization, and the environment” (Nonaka & Toyama, 2003, p. 2). This conceptual addition to the model points further to the importance of culture when it comes to applying SECI and to the constituting characteristic of context for knowledge creation. Nonaka & Toyama (2003) themselves note that “the same reality can be viewed differently depending on from which angle (context) one sees it” (p. 3). Furthermore, it is important to note here that knowledge is not created within one’s mind totally detached from the environment, but by an individual’s “actions and interactions with the environment” (Nonaka & Toyama, 2003, p. 4).

As we have seen, culture is an important determinant and creator of this context – *ba* is co-created by culture. It is important to note that culture does not need to be a separate aspect of the model, but that the idea of a ‘pre-mode’ which advocates that members of an organization or team should first analyze how culture influences knowledge creation and conversion within the particular context they are in. The insights gained by this ‘pre-mode’ enables one to better understand how the four knowledge conversion modes operate in a particular situation and context and, consequently, how knowledge creation and innovation can be more effectively fostered and facilitated.

Cultural situatedness of knowledge management and the SECI model

After having introduced all the relevant concepts in the previous section, we will explore a range of the cross-cultural differences in knowledge management. Then, the cultural origin of the SECI model will be described and its universal applicability discussed.

Culture and knowledge management

On an epistemological level, Nisbett, Peng, Choi & Norenzayan (2001) suggest that the differences that exist among cultures have an influence on theories of knowledge and on what can be labelled as knowledge and also determine cognitive processes (Nisbett, 2003). Nisbett et al. (2001) suggest therefore that “the cognitive processes triggered by a given situation may not be so universal as generally supposed, or so divorced from content, or so independent of the particular character of thought that distinguishes one human group from another” (p. 307). In an experiment reported in Nisbett (2003), people from Asian and Western cultures had to decide which two of the three words ‘panda’, ‘monkey’ and ‘banana’ should be grouped together. Most Asians linked monkey with banana, most Westerners linked panda with monkey. This suggests that Westerners are more likely to perceive the world in categories (pandas and monkeys are both animals), whereas Asians are more likely emphasize relationships (monkeys eat bananas). In a heterogeneous team consisting of members of several cultures, these cognitive differences can have both advantages and disadvantages. On the one hand, perceiving the world in different ways presumably hampers interaction and communication within a team as obstacles are being created by different ways of thinking. On the other hand, bringing different styles of thinking and perception into a team can potentially lead to finding more than one possible solution to a problem or to increased creativity and innovation through a mutual challenge of one’s own ways of thinking and working.

These differences in cognitive processes are important to note here, as differences in cognition are based on different tacit background knowledge (Viale & Pozzali, 2007) and will affect how knowledge is regarded, which in turn affects knowledge management and knowledge creation.

Zhu (2004) claims that knowledge management is not a universal concept, but argues that it is essential to jointly construct and share cross-cultural contexts for knowledge management to be successful. He posits that knowledge management “will benefit not from a universal concept, but from an interactionist strategy that facilitates the construction, connection and sharing of cross-cultural contexts, through which cultural differences and diversity are important sources for [knowledge management] competence rather than obstacles to be overcome” (p. 67). The suggestion that knowledge management is not a universal concept is supported by Begoña Lloria (2008). In her categorization, she distinguishes between models that fall into a knowledge-based theory of the firm, intellectual capital models which are primarily European, knowledge creation models which are primarily Japanese and knowledge management models which are primarily from the USA and are further sub-divided into models from an academic and from a consultancy perspective (Begoña Lloria, 2008). This suggests that the SECI model as a model of knowledge creation is indeed situated in a particular context and may be used differently in other contexts.

Being part of a community of practice (Wenger, 1998) in a shared context (Lave & Wenger, 1991) facilitates direct interaction with, or observation of, peers and is therefore an effective way of tapping into the tacit knowledge of others. The concept of ‘communities of practice’ (Wenger, 1998) provides further evidence of the situatedness and highly contextualized nature of knowledge management in general and organizational learning in particular. Wenger (2004) defines communities of practice as “social structures that focus on knowledge and explicitly enable the management of knowledge to be placed in the hands of practitioners” (p. 2). *Ba* and communities of practice are thus related concepts. However, there are some differences that are worthwhile mentioning here:

While a community of practice is a place where the members learn knowledge that is embedded in the community, *ba* is a place where new knowledge is created. While a community of practice has an identity and its boundary is firmly set by the task, culture, and history of the community, the boundary of *ba* is fluid and can be changed quickly, as it is set by the participants. While the membership of a community is fairly stable, and it takes time for a new participant to learn about the community to become a full participant, the membership of *ba* is not fixed; participants come and go. *Ba* is created, functions, and disappears according to need. Whereas members of a community of practice belong to the community, participants of *ba* relate to the *ba*. *Ba* has a ‘here and now’ quality as does an emerging relationship, and is constantly moving as the contexts of participants and/or the membership of *ba* change. While learning occurs in any community of practice, *ba* needs energy to become an active *ba* where knowledge is created. (Nonaka & Toyama, 2003, p. 7)

Various levels of culture shape a community of practice. For example, organizational cultural characteristics as to what style of interaction between employee and superordinate is acceptable are mirrored in the – largely implicit – rules of communicating within a particular community of practice.

Belonging to different professional cultures can cause problems in the communication with others in a community of practice: in preparing a product launch, marketing professionals emphasize other aspects of that product than engineers would do. We argue that it is essential that the members of a community of practice are aware of the impact of various levels of culture on the implicit rules and characteristics of the community. Culture at its various levels, the particular context of the 'here and now' in which the community is embedded and the characteristics of the individual community members all make up the communities of practice culture.

Discussion of the universal applicability of the SECI model

It is argued that the SECI model (Nonaka, 1991, 1994; Nonaka & Takeuchi, 1995) is a contextualized model, embedded and shaped by context. Nonaka & Konno (1998) adapted the concept of *ba*, which they consider "to be a shared space that serves as a foundation for knowledge creation" (p. 40). This shared space also points to the 'cultural situatedness' of the SECI model as it suggests that contexts have to be shared with others who have a similar understanding of the situation in order to be meaningful to them – and members of a different culture often have quite different understandings of the same situation. Therefore, it is often more difficult to use a *ba* as a shared space for knowledge creation, because that shared space may be interpreted differently by members of different cultures, thus leading to problems in knowledge creation.

Glisby & Holden (2003) criticized SECI and posited that it is not universally applicable because it stems from a particular context, in this case from a Japanese context. Some researchers, for example Li & Gao (2003), claimed that the term 'tacit' is used differently from Polanyi's (1966) work. Weir & Hutchings (2005) acknowledge that the SECI model is not universally applicable, but also suggest that SECI does have some relevance to knowledge management cross-culturally. We suggest that SECI can be applied in a variety of contexts, as long as its origin and cultural situatedness are kept in mind and as long as it is adapted and modified accordingly in order to be relevant for the purpose for which it is applied.

Roy & Gupta (2007) examined the suitability of the SECI model in describing knowledge processes in product development of a small Indian company. They found that the knowledge conversion modes of SECI are not adequately represented in the manufacturing firm that they observed. Thus, they argue that the SECI model cannot be applied universally due to its embeddedness in Japanese business contexts (Roy & Gupta, 2007). They base their report on one particular case and therefore on one particular context, making it difficult to even speculate whether a) the idiosyncrasies of the reported company, b) the cultural value context or c) other factors have a decisive impact on the reported non-universality of SECI. In the case of India as a country with a large variety of ethnic groups and sub-cultures, making any predictions of why the SECI model may be less relevant in this context than in the Japanese context in which it was developed is even more difficult.

Applying the SECI model: the role of culture and context

In this section, we will discuss the impact of culture and context on knowledge creation and suggest how the SECI model can be applied to reflect on knowledge creation in a business setting and to analyze it. In order to do this, the four knowledge conversion modes will be examined separately. Afterwards, we will show how others have adapted the SECI model to either make it more suitable for a different context or apply it at an individual level rather than at the organizational level for which it was originally developed.

Knowledge creation: the impact of culture and context

Although the SECI model was originally conceived as a model of organizational knowledge creation involving the individual, teams and the organization as a whole, SECI is a useful analogy for learning at an individual level. Let us take a computer software course as an example: Employees learn how to use a new version of a software not only through reading teaching materials handed out by their trainer in a conventional software course, but they may learn far more by merely observing other colleagues who have already been using that version for quite some time. Furthermore, experimenting with the new software and learning by doing, using it in a context which is relevant for a particular employee, are also ways of learning to use the software. As we can see in this example, several SECI modes are involved in describing these learning processes.

The SECI model can also help to stress the importance of interaction in informal knowledge processes (Hoe, 2006). Whereas formal and structured knowledge processes take place in an organization, it is particularly the informal and largely unstructured knowledge processes that are essential for tacit knowledge to be shared. It is therefore important that an organization does not hamper spontaneous talks in the copier room, but create opportunities for colleagues to interact with each other without the restricting structure of formal meetings involving an agenda.

We believe that it is possible for an organization to facilitate and manage the context and climate of tacit knowledge sharing. Through a review of the literature, McAdam, Mason & McCrory (2007) identified a number of sub-types or epitomes of tacit knowledge which make the concept of tacit knowledge easier to operationalize in a business setting. They list the following epitomes of tacit knowledge: intuition, skills, insight, know-how, beliefs, mental models, and practical intelligence (McAdam, Mason & McCrory, 2007). When businesses use these epitomes as categories to explore their 'tacit knowledge inventory' it will be easier for them to grasp and detect this tacit knowledge.

As we have seen above, Tsoukas (2003) strongly recommends not to try to mechanically convert and 'translate' tacit knowledge into explicit knowledge but argues in favour of fostering social interaction as a means of 'accessing' tacit knowledge. Although Nonaka & Takeuchi (1995) argue in favour of a conversion of tacit and explicit knowledge so that knowledge creation can take place, Tsoukas's (2003) emphasis on interpersonal interaction as a facilitator of making tacit knowledge at least partly explicit is to be welcomed. To put it another way: "New knowledge comes about not when the tacit becomes explicit, but when our skilled performance is punctuated in new ways through social interaction" (Tsoukas, 2003, p. 410). Nurturing a culture and climate of knowledge sharing, discussion and informal interactions at the workplace is essential for making use of tacit knowledge. This may seem inefficient and leading nowhere to an outside observer, but it can be a powerful way of tapping into tacit knowledge.

Culture and the four SECI modes

The purpose of this section is to introduce some elements of culture at various levels and explore their relationship with and impact on knowledge conversion via the four SECI modes. We argue that there is no established procedure to analyze culture taking it into account in order to make knowledge creation more effective and efficient. It is essential to be aware of the impact that culture can have on the four SECI modes and to be open-minded in the analysis of the context in which knowledge is created within an organization as a whole or a team.

Different levels of culture can impact on context and thus influence knowledge creation and knowledge conversion processes of the four SECI modes. Hofstede & Hofstede (2005) suggested six levels of culture, namely national, regional/ethnic/religious/linguistic, gender, generation, social class and organizational or corporate. In this chapter, we will focus on national culture and organizational culture as these two levels may be the most important ones in knowledge creation and most of the research has been done in these two areas. In addition to this, individual-level values (e.g. Schwartz, 1992, 1994) as the third level of culture which impacts on context and, in the end, knowledge creation, should be included.

In order to explore the impact of national and organizational culture and individual-level values on knowledge conversion within the four SECI modes, we chose elements of Hofstede's (1980, 1994) set of cultural dimensions, the KEYS: Assessing the Climate for Creativity tool (Amabile et al., 1996), and some of the individual-level values of the Schwartz Value Survey (Schwartz, 1992). On the basis of these frameworks that describe culture, we will provide some examples of how cross-cultural differences can have an impact on the SECI modes and what this means for applying SECI in a business context. It is important to note that this is not an exhaustive list, but exemplars to illustrate the cultural situatedness of the SECI model and of knowledge creation.

Hofstede (1980, 1994) developed several cultural value dimensions. His individualism-collectivism dichotomy has been widely used and applied in research to date and is arguably the most widely used dimension of Hofstede's set of values (Schwartz, 1994). Hofstede (1994) defines individualism as "[pertaining] to societies in which the ties between individuals are loose: everyone is expected to look after himself or herself and his or her immediate family" (p. 51). Collectivism, on the other hand, "pertains to societies in which people from birth onwards are integrated into strong, cohesive ingroups, which throughout people's lifetime continue to protect them in exchange for unquestioning loyalty" (Hofstede, 1994, p. 51). Prototypical examples of countries that score high on individualism are the USA and the UK, whereas several South American countries score high on collectivism (Hofstede, 1994). In addition to individualism-collectivism, we employ the power distance dimension as another important aspect of cross-cultural differences at a national level (Hofstede, 1994). Power distance is defined as "the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally" (Hofstede, 1994, p. 28). Malaysia and some Central American countries score high on power distance, whereas Austria and Scandinavia score particularly low (Hofstede, 1994). We will now look at knowledge creation processes of the four SECI modes from the perspective of these two value dimensions.

Socialization as a knowledge conversion mode is closely connected with group processes and organizational culture (Takeuchi & Nonaka, 2004). Although scoring medium on the individualism-collectivism scale, Japan is certainly more collectivist than, say, the US (Hofstede, 1994). In the Socialization mode, the relatively strong group-think mentality in Japan favouring members of one's ingroup is likely to create difficulties in inter-organizational knowledge transfer, whereas knowledge transfer among teams of one's own organization is likely to be more effective (Hofstede, 1994). From a

power distance perspective, cultures that score low on power distance are more likely to support an open and non-threatening environment for brainstorming than cultures that score high on power distance.

Externalization typically involves concept creation and is facilitated by dialogue and collective reflection (Takeuchi & Nonaka, 2004). When going back to the two value dimensions we have just introduced, there do not seem to be substantial differences in knowledge conversion from the perspective of individualism-collectivism and power distance. However, differences are more obvious in the Combination mode.

The Combination mode by definition focuses on explicit knowledge only. Japanese companies focus more on tacit knowledge, whereas organizations in Western cultures focus more on explicit knowledge (Takeuchi & Nonaka, 2004). It is important to keep in mind that cognitive processes differ across cultures (Nisbett et al., 2001). These differences may explain that American companies, for example, put a very strong emphasis on the Combination mode and on explicit knowledge or information, whereas Japanese companies do not. In general, it is difficult to decide whether cross-cultural differences in knowledge creation are caused by differing cognitive processes, national culture or organizational culture. Presumably, all levels can potentially be involved and are likely to be interdependent and differ in salience according to context.

Finally, as the Internalization mode is closely linked to learning by doing and to actually applying knowledge and skills, it is arguably closely influenced by the local context of a specific organization rather than by national cultural values.

Let us now move on to organizational culture. There are several ways to operationalize organizational cultures (Ashkanasy, Wilderom & Peterson, 2000), but, by way of example, we have chosen the KEYS: Assessing the Climate for Creativity tool (Amabile et al., 1996) because it examines creativity within an organization and is thus closely linked to the concept of knowledge creation.

KEYS includes scales that are positively related to creativity and called stimulant scales and scales that are negatively related to creativity and called obstacle scales (Amabile et al., 1996). The conceptual categories underlying these scales stem from a review of previous research and from a critical incidents study investigating creativity (Amabile, 1988). The KEYS instrument assesses the following six practices that encourage creativity: organizational encouragement, supervisory encouragement, work group supports, sufficient resources, challenging work, and freedom. It also assesses two practices that inhibit creativity, namely organizational impediments, and workload pressure (Amabile et al., 1996).

We have chosen two of these categories as examples to illustrate how these categories can impact on knowledge creation and the SECI model. Let us first consider Sufficient Resources as a category for encouraging creativity. The category of Sufficient Resources is about “access to appropriate resources, including funds, materials, facilities, and information” (Amabile et al., 1996, p. 1166). This can have an impact on all four SECI modes, as resources can mean having an appropriate infrastructure for informal meetings which would foster and facilitate knowledge conversion in the Socialization and Externalization modes. Having sufficient access to information is a typical example of the Combination mode as it is in this mode in which information is being combined. Finally, having an adequate infrastructure and environment contributes to a more effective and efficient learning by doing in the Internalization mode.

Organization Impediments is one of the two categories of KEYS which inhibits creativity (Amabile et al., 1996). It is defined as “an organizational culture that impedes creativity through internal political problems, harsh criticism of new ideas, destructive internal competition, an avoidance of risk, and an overemphasis on the status quo” (Amabile et al., 1996, p. 1166). For example, in terms of the Socialization mode, destructive internal competition may mean that people are not willing to share their knowledge with new colleagues as they may feel they are in an overly competitive environment, not trusting other colleagues (Alavi, Kayworth & Leidner, 2006), and therefore not wanting to share their expertise. Moreover, harsh criticism of new ideas by super-ordinates or peers will make employees wary of sharing ideas in the Externalization mode as the context for sharing ideas is likely to be a threatening rather than an encouraging environment. In terms of the Combination mode, destructive internal competition could lead to information hoarding and employees will be reluctant to pass information on to others. Finally, in the Internalization mode, an avoidance of risk will lead to a low tolerance for mistakes in learning by doing.

The final perspective that we want to take here is the perspective of individual-level values, based on the Schwartz Value Survey (Schwartz, 1992, 1994; Schwartz & Bilsky, 1987, 1990). This value set conceives individual values as both the product of a shared culture and a product of an individual's experience (Schwartz, 1994). It not only identifies the values as such, but specifies a circular structure of relations among – and oppositions between – them (Schwartz, 1992). As with the examples involving Hofstede's dimensions and KEYS, we will use the values of Power and Benevolence from the Schwartz Value Survey to illustrate how individual-level value differences can have an impact on the four knowledge conversion modes.

Power is about “social status and prestige, control or dominance over people and resources” (Schwartz, Melech, Lehmann, Burgess, Harris & Owens, 2001, p. 521). In the Socialization mode, the direct sharing

of experiences among colleagues may be hampered by employees who score high on Power, because they may not be willing to share knowledge with others, as they believe this could lead to a loss of power within the company. In the Externalization mode, in the dialogue involved in it, employees who score high on power may use ambiguous concepts and metaphors in order to avoid having to share knowledge in a meaningful way. In the Combination mode, information hoarding may be a strategy of an employee scoring high on Power. Finally, in the Internalization mode, the individual-level value of Power does not seem to have a direct effect, as Power is about a certain power relationship with others, whereas Internalization is closely linked to an individual only (Takeuchi & Nonaka, 2004).

Benevolence is about “preservation and enhancement of the welfare of people with whom one is in frequent personal contact” (Schwartz et al., 2001, p. 521). In the Socialization mode, if the giver of knowledge scores high on Benevolence, he or she is likely to be willing to share knowledge and closely working together with the receiver of knowledge. People scoring high on Benevolence are also likely to invest considerable time and effort to make knowledge explicit in the Externalization mode and thus support their colleagues. In the Combination mode, information is not hoarded, but shared, sometimes to such an extent that there could be an information overkill. In the Internalization mode, analogous to Power, Benevolence does not seem to have a direct effect because it is about a certain relationship with others rather than closely linked to an individual.

Table 1 summarizes how some of Hofstede’s dimensions (Hofstede, 1980, 1994), elements of organizational culture via KEYS (Amabile et al., 1996), and some individual-level values of the Schwartz Value Survey (Schwartz, 1992, 1994) impact on the four SECI modes and their corresponding *ba*. The table can only begin to outline some hypothetical examples; other examples and scenarios are certainly possible. In our opinion, it is worthwhile to empirically test and explore some of them in order to better understand how certain levels of culture impact on knowledge conversion processes in the four SECI modes.

Table 1: Examples of impact on the four SECI modes: Hofstede, organizational culture via KEYS and Schwartz Value Survey

	Hofstede	Organizational culture: KEYS	Schwartz Value Survey
Socialization	Ingroup favouritism by cultures high on collectivism, potentially creating barriers for inter-organizational knowledge transfer Freer and less threatening environment for brainstorming in cultures scoring low on power distance	Sufficient resources: Appropriate infrastructure for informal meetings which would foster and facilitate knowledge conversion Destructive internal competition: employees are not willing to share knowledge because of distrust of colleagues	Scoring high on Power: reluctant to share knowledge due to fear of losing power Scoring high on Benevolence: likely to be willing to share knowledge and closely working together with the receiver of knowledge
Externalization	Few differences expected from the perspective of individualism-collectivism and power distance	Sufficient resources: Appropriate infrastructure for informal meetings which would foster and facilitate knowledge conversion Harsh criticism of new ideas will make employees wary of sharing ideas	Scoring high on Power: employees may use ambiguous concepts and metaphors to avoid sharing knowledge in any meaningful way Scoring high on Benevolence: likely to invest considerable time and effort to make knowledge explicit and thus support their colleagues
Combination	Western cultures have a stronger focus on Combination than Eastern cultures	Sufficient resources: Having appropriate access to information Destructive internal competition could lead to information hoarding	Scoring high on Power: information hoarding Scoring high on Benevolence: information is not hoarded, but shared, sometimes leading to information overkill
Internalization	Heavily depending on a concrete context and situation, therefore less likely to be heavily influenced by national culture only	Sufficient resources: Adequate infrastructure and environment contributes to more effective and efficient learning by doing Risk avoidance will lead to a low tolerance for mistakes in learning by doing	Scoring high on Power: unlikely to have a direct effect, as Power is about a power relationship with others, not linked to an individual’s mind Scoring high on Benevolence: analogous to scoring high on Power

There are, however, other differences, even quite substantial ones, in how Japanese and Western companies approach knowledge creation. Western organizations often focus on explicit knowledge which is easy to store and to transmit, whereas Japanese organizations put a higher emphasis on tacit knowledge, arguing that knowledge is primarily tacit and highly situated and contextualized (Takeuchi & Nonaka, 2004). This fundamental difference in cognitive processes (Nisbett, 2003) suggests that Japanese companies may emphasize the importance of the Socialization mode, because they see “sharing and creating tacit knowledge through direct experience” (Takeuchi & Nonaka, 2004, p. 9) as essential for successful knowledge creation. Companies from the West, however, are likely to focus primarily on the Combination mode, as this is strongly about explicit knowledge and about “systemizing and applying explicit knowledge and information” (Takeuchi & Nonaka, 2004, p. 9). However, it is important to note that Nisbett (2003) suggests that a Westerner does not necessarily focus strongly on categorizing the world around her, but can fall in the middle between a Western focus on categorizing and an Eastern focus on relationships. This depends on the personality of the individual and on the concrete situation and context. Yet, in a multicultural team, it is essential to be aware of potential differences regarding the importance that people put on the knowledge conversion modes. In order to accommodate these differences managers may want to encourage Easterners within a team to put a stronger emphasis on explicit knowledge and therefore the Combination mode. At the same time, Westerners could benefit from a more implicit and experiential approach to knowledge creation. However, depending on the characteristics of the team and its context, managers might prefer not to accommodate these differences between Westerners and Easterners as these cognitive differences can potentially lead to more creativity and innovation. Discussing openly the different foci on either explicit knowledge and Combination or on implicit knowledge and Socialization can make the team members aware of how the others tick and enable them to see aspects of a situation or problem that they had not thought about before.

Modified versions of the SECI model: adapting to context

The SECI model may need modification in order to incorporate culture more explicitly and to reflect the impact of culture on knowledge creation more fully. This section gives examples of how others have adapted the SECI model to either make it more suitable for a different domain or apply it at an individual level rather than at an organizational level for which it was originally intended.

In the context of research into scaffolding mechanisms in e-learning environments, Bryceson (2007a, 2007b) proposed a model of knowledge acquisition in e-learning environments called ESCIE, which is based on the SECI model. The acronym represents the five stages of the model: explicitization, socialization, combination, internalization, and externalization. The e-learning cycle begins with the making explicit (Explicitization) of the lecturer’s knowledge of the course contents. In the second phase, Socialization, students then discuss their ideas in an online forum, and they combine various pieces of information such as the discussion postings, texts, videos, etc. (Combination). Internalization of new knowledge is the next step, and, finally, this internalized knowledge can be made external again (Externalization) through report writing (Bryceson, 2007a).

Albeit not modified to account for cultural differences, the ESCIE model (Bryceson, 2007a) is one example of how a model is adapted and changed to make it more suitable and useful for a particular domain. Analogous to the ESCIE model which starts with the explicitization mode in which the lecturer presents the course contents, the SECI model can be modified by adding a ‘culturization’ mode. This ‘culturization’ mode would not be part of the knowledge creation spiral but would act as a framework in which companies can analyze how culture at various levels manifests itself in their organization and what impact these cultural factors could have on knowledge creation. After having done this cultural assessment in the ‘culturization’ mode, the four SECI modes can be applied and adapted accordingly, if necessary.

Chatti, Klamma, Jarke & Naeve (2007) reported another application of the SECI model in the context of Web 2.0. As both SECI and the concept of Web 2.0 rely on community and collaboration, they argued that Web 2.0 features can be modelled onto the four SECI modes. Thus, they proposed a convergence of learning, knowledge management and Web 2.0 features. For example, they regard communities and networks as pertaining to the Socialization mode, blogs, wikis and chat as pertaining to the Externalization mode, RSS feeds and social bookmarking as pertaining to the Combination mode, and learning by doing as pertaining to the Internalization mode (Chatti et al., 2007). This is a good example of the adaptability of SECI into related domains, away from organizational knowledge creation. It also focuses on the individual level of learning processes rather than organizational knowledge creation and learning. Yet another example of applying the SECI model in research in technology-mediated communication with a particular focus on virtual *ba* is presented by Saari, Laarni, Ravaja, Kallinen & Turpeinen (2004).

The examples of adaptations of the SECI model mentioned above illustrate the usefulness of the SECI model by either applying the complete model, adapting it, or applying some selected parts of it in other domains and for other purposes. The inconsistencies and difficulties in defining key elements of SECI – particularly tacit knowledge and *ba* – make it difficult to describe SECI conceptually and employ it in academic research projects. However, when it comes to applying SECI in business settings and contexts, these difficulties and shortcomings, may be regarded as a blessing in disguise: Practitioners who apply the

SECI model for their own purposes in a business setting feel less restricted by the definitions of the concepts of the model and are therefore freer to use parts of the model in a modified way.

Suggestions for further research

Throughout the chapter, we have raised a variety of issues concerning the cultural situatedness of the SECI model and the importance of context for using the model appropriately in an organization. The examples mentioned in Table 1 act as a starting point and preliminary ideas for further research. Unfortunately, there is a distinct lack of reports and case studies dealing with implementing the SECI model and using it for organizational knowledge creation. In our opinion, the merit of SECI is its theoretical basis that it provides that can potentially be used in practice. Rice & Rice (2005) point out that empirical research involving the SECI model is made difficult by the philosophical nature of concepts such as *ba*. Another problem is the difficulty to clearly delineate between explicit and tacit knowledge, making statistical testing difficult (Rice & Rice, 2005). There is a lack of empirical research into *ba* (Rice & Rice, 2005) but this would be very worthwhile as getting an insight into how *ba* works and should be facilitated in order to maximize knowledge creation is central to a thorough understanding of the SECI model.

Therefore, comparative or multiple-case studies (Yin, 2003) into how specific organizations apply the SECI model for their own purposes would be useful. That way, comparisons of how the model is used and how useful and helpful this is for the particular context of the company can be made. If cases are chosen in the same industry and the same country, organizational or individual factors are likely to cause any observed differences. If subsidiaries in various countries are chosen, national culture arguably has a greater potential impact. These comparisons can be conducted at various levels, the most important levels arguably being national culture, organizational culture, and professional culture. If SECI was generally considered useful in a Japanese context but much less so in an American context, one could argue that SECI focuses too strongly on tacit knowledge to be useful in a culture that places a higher emphasis on codified knowledge.

Although the SECI model was originally developed for examining knowledge creation within an organization, its application should not be limited to this context. For example, researchers could explore how the SECI model can be adapted to examine *personal* knowledge development processes and the impact of culture and values in a given learning or working environment. As Web 2.0 technologies enable people to establish and maintain various forms of online communities which aim to facilitate social interaction and information and knowledge sharing, any attempt to apply the SECI model in order to study knowledge creation within an online community would help to develop a better understanding of the sustainability of online communities and their contributions to knowledge creation and sharing for a much wider community of Internet users.

Conclusion

We have started the chapter by discussing one of the most notoriously difficult to explain concepts: culture. It was suggested that the concept be defined in a very broad way, including several levels of culture such as national, organizational, professional and others. The SECI model and *ba*, a physical and virtual space and context for knowledge creation, was explained and we suggested that SECI as a model is culturally situated because it stems from a particular cultural context. Not only is the model itself culturally situated, but the knowledge creation processes and modes that it describes are themselves strongly influenced and shaped by culture and cultural values (Hofstede, 1994; Nisbett, 2003). We then offered some suggestions of how the SECI model can be applied in an organizational setting, before making suggestions for further research.

Various levels of culture influence and shape a particular context. In turn, context strongly influences the SECI model and its four knowledge conversion modes. This means that culture at its various levels impacts on organizational knowledge creation via context as a proxy. When examining organizational knowledge creation, the levels of culture that have the strongest impact on context and in the end on knowledge creation are arguably national culture and organizational culture. However, the importance of the impact of values at the individual level should not be underestimated. It is the dynamic interplay of these various levels, guided and determined by particular circumstances, that makes the concept of culture and its impact on organizational knowledge creation so difficult to explore and understand.

It is the varying salience and importance of cultural factors that make it difficult to map knowledge creation processes in an organization using the SECI model. However, we have shown that the SECI model can – and indeed should – be adapted in order to be successfully applied in different contexts. SECI has also been applied at an individual level rather than an organizational level and seems thus to be a useful tool to investigate both personal knowledge development and organizational knowledge creation. Adding a ‘pre-mode’ called ‘culturization’ to the four original SECI modes, which would act as a framework in which companies can analyze how culture at various levels manifests itself in their organization and what impact these cultural factors could have on knowledge creation, would make the SECI model more appropriate for use in a multicultural context. It must be said here, though, that culture is indeed a difficult to explain, difficult to grasp, and often elusive concept, which can mean a lot of things to different people in different

situations. However, being aware of culture and its impact on knowledge creation and the application of the SECI model will enrich the insights of an organization into their knowledge creation and the processes involved in it.

Organizational knowledge creation is a difficult and complex process which requires effort and commitment from all employees within a company. The 'carrier of knowledge' *per se* is the individual, but it is possible to aggregate and share this knowledge with immediate colleagues and team members. However, a shared context is necessary for other members of a community of practice to make sense of this shared knowledge. That knowledge can then finally be embedded in organizational routines and processes. The SECI model or a version adapted to the needs of the organization can act as a useful starting point to explore knowledge creation.

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DECLARATION

I declare that this thesis is my own unaided work. It is being submitted for the degree of Doctor of Philosophy at the University of Bedfordshire.

It has not been submitted before for any degree or examination in any other university.

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