

EARLI SPECIAL INTEREST GROUP 9  
PHENOMENOGRAPHY AND VARIATION THEORY

*Biennial Workshop*  
*Hong Kong SAR, China*  
*December 7 – 9, 2006*

**Phenomenography and Variation Theory:  
The Ways Forward**

PROGRAMME  
AND  
ABSTRACT



## Contents

I.	Message from the Acting Dean	2
II.	Message from the EARLI SIG 9 Co-ordinators	3
III.	Organization	4
IV.	Organizing Committee	5
V.	General Information	5 - 6
VI.	The University of Hong Kong Campus Map	7
VII.	Invited Keynote Speakers	8
VIII.	Programme	9 – 11
IX.	Abstract	
	Parallel Session 1A – Paper Presentation	12 – 15
	Parallel Session 1B – Paper Presentation	15 – 16
	Parallel Session 2A – Paper Presentation	17 – 19
	Parallel Session 2B – Round Table	20 – 21
	Parallel Session 3A – Paper Presentation	21 – 22
	Parallel Session 3B – Paper Presentation	23 – 25
	Parallel Session 4A – Symposium	26 – 27
	Parallel Session 4B – Symposium	28
	Parallel Session 5A – Paper Presentation	29 – 31
	Parallel Session 5B – Paper Presentation	32 - 33

## **I. Message from the Acting Dean**

Dear Colleagues,

It is a great pleasure to welcome you, on behalf of the Faculty of Education, The University of Hong Kong, to this Biennial Workshop on Phenomenography and Variation Theory. We are proud to host this international event in collaboration with the European Association for Research on Learning and Instruction. With the high-quality presentations accepted, as well as the presence of prestigious invited speakers, the Workshop signifies an important advancement in research in this area. I hope all of you will find it inspiring to share your work with scholars who come from different parts of the world.

I wish you all a fruitful meeting and an enjoyable stay in Hong Kong.

Nirmala Rao  
Acting Dean  
Faculty of Education  
The University of Hong Kong

## **II. Message from the EARLI SIG 9 Co-ordinators**

Dear Colleagues,

It is our great privilege to welcome you to the University of Hong Kong and to the EARLI SIG 9 Biennial Workshop 2006. This workshop offers an opportunity for researchers in the area of phenomenography and variation theory to share the results of their work as well as to engage in fruitful discussion with other scholars in the field.

The theme of the workshop “Phenomenography and Variation Theory: The Ways Forward” is conceived to be appropriate and timely, as there has been rapid and diversified developments in this research paradigm recently. We are pleased that the participants were able to address the challenge of this topic creatively and use it to good effect as a probe for raising relevant issues in educational research and practice. The high standard of presentations accepted and the presence of widely respected keynote speakers will lead us through a productive and intellectually stimulating workshop.

We would like to take this opportunity to acknowledge the continuous support of the EARLI as well as the Faculty of Education, the University of Hong Kong to our SIG 9. We are also indebted to the reviewers and the chairpersons of the conference sessions for their contributions to the workshop. Last but not the least, we would like to thank all of you for enthusiastically submitting proposals of high quality and for bringing your ideas and experience to the workshop which makes it a memorable and successful event.

Ming Fai Pang and Mona Holmqvist  
EARLI SIG 9 Co-ordinators

### **III. Organization**

European Association for Research on Learning and Instruction

Faculty of Education, The University of Hong Kong

### **IV. Organizing Committee**

Chairpersons:

Ming Fai Pang, The University of Hong Kong, Hong Kong  
SAR, China

Mona Holmqvist, Kristianstad University, Sweden

Members:

Gerlese Åkerlind, Australian National University, Australia

Jonas Emanuelsson, Göteborg University, Sweden

## **V. General Information**

### **1. Conference Venue**

LG 01, 02 & 06, Hui Oi Chow Science Building (HOC),  
The University of Hong Kong,  
Pokfulam Road,  
Hong Kong SAR, China

### **2. Meals**

	<b>Location</b>
Morning and Afternoon Tea	Open area outside LG01, Hui Oi Chow Science Building
Lunch	Restaurant of the Graduate House, The University of Hong Kong
Conference Dinner	Hunan Garden 3/F, The Forum Exchange Square Central, Hong Kong

### **3. Official Language**

The official language of the conference is English.

#### **4. Presentation Equipment**

All rooms will be equipped with a computer, a data projector and an overhead projector.

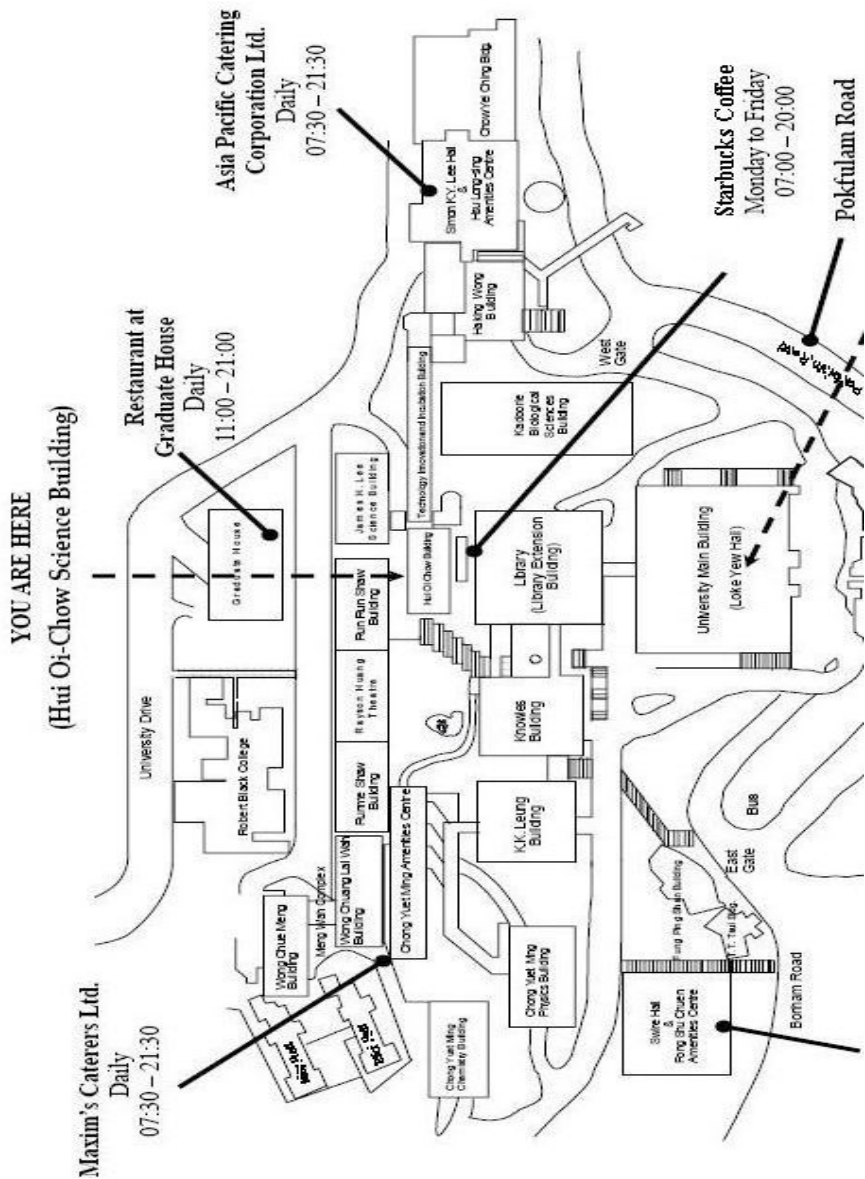
#### **5. Smoking Policy**

Participants are kindly requested to refrain from smoking all indoor and outdoor areas.

#### **6. What is included in the registration fee?**

The registration fee includes one copy of conference booklet, a souvenir pack, lunches, and morning and afternoon tea.

# VI. The University of Hong Kong Campus Map



## **VII. Invited Keynote Speakers**

**Christine Bruce**

Queensland University of Technology, Australia

**Lars-Owe Dahlgren**

Linköpings University, Sweden

**Lo Mun Ling**

Hong Kong Institute of Education, Hong Kong SAR

**Ference Marton**

Göteborg University, Sweden

**Ming Fai Pang**

The University of Hong Kong, Hong Kong SAR

**Ulla Runesson**

Göteborg University, Sweden

**Lennart Svensson**

Lund University, Sweden

## VIII. Programme

December 7, 2006 (Thursday)

<b>Time</b>	<b>Activity</b>	
<b>0915 - 1015</b>	<b>Registration &amp; Morning Tea</b>	
<b>1015 - 1030</b>	<b>Opening ceremony &amp; Welcoming Speech (Rm HOC LG06)</b>	
<b>1030 - 1130</b>	<b>Keynote Presentation 1 (Rm HOC LG06)</b> Ferenc Marton	
<b>1135 - 1235</b>	<b>Parallel Session 1</b>	
	Session 1A (Rm HOC LG01) Chair: Elina Hella	Session 1B (Rm HOC LG02) Chair: Angelika Kullberg
	Samantha Sin	Stuart Boon Bill Johnston Sheila Webber
	Rhonda Hallett Elaine Martin	Anna Reid Peter Petocz
	Monne Wihlborg	
<b>1235 - 1350</b>	<b>Lunch</b>	
<b>1350 - 1450</b>	<b>Keynote Presentation 2 (Rm HOC LG06)</b> Ming Fai Pang	
<b>1450 - 1520</b>	<b>Afternoon Tea</b>	
<b>1520-1620</b>	<b>Parallel Session 2</b>	
	Session 2A (Rm HOC LG01) Chair: Jo Mckenzie	Session 2B (Round Table) (Rm HOC LG02) Chair: Ming Fai Pang
	Ann-Charlotte	Mandy Lupton
	Airi Rovio-Johansson	Elina Hella Andrew Wright
	Sylvia Edwards	
<b>1625 - 1725</b>	<b>Keynote Presentation 3 (Rm HOC LG06)</b> Ulla Runesson	

**December 8, 2006 (Friday)**

<b>Time</b>	<b>Activity</b>	
<b>0900 - 1000</b>	<b>Keynote Presentation 4</b> (Rm HOC LG06) Christine Bruce	
<b>1000 - 1030</b>	<b>Morning Tea</b>	
<b>1030 - 1130</b>	<b>Parallel Session 3</b>	
	Session 3A (Rm HOC LG01) Chair: Airi Rovio-Johansson	Session 3B (Rm HOC LG02) Chair: Sylvia Edwards
	Veronica Bjurulf	Laura Wood
	Sandra Herbert	Elina Hella
	Leo Hitchcock	Mona Holmqvist Laila Gustavsson Anna Wernberg
<b>1135 - 1235</b>	<b>Keynote Presentation 5</b> (Rm HOC LG06) Lars-Owe Dahlgren	
<b>1235 - 1350</b>	<b>Lunch</b>	
<b>1350 - 1450</b>	<b>Keynote Presentation 6</b> (Rm HOC LG06) Lo Mun Ling	
<b>1450 - 1520</b>	<b>Afternoon Tea</b>	
<b>1520-1650</b>	<b>Parallel Session 4</b>	
	Session 4A (Symposium) (Rm HOC LG01)  Greg Light Gerlese Åkerlind Jo McKenzie Mandy Lupton	Session 4B (Symposium) (Rm HOC LG02)  Ko Po Yuk Lo-Fu Yin Wah Kwok Wing Yin Ng Pun Hon Li Shu Ying
<b>1930 - 2230</b>	<b>Conference Dinner</b>	

**December 9, 2006 (Saturday)**

<b>Time</b>	<b>Activity</b>	
<b>0900 - 1000</b>	<b>Keynote Presentation 7</b> (Rm HOC LG06) Lennart Svensson	
<b>1000 - 1030</b>	<b>Morning Tea</b>	
<b>1030 - 1130</b>	<b>Parallel Session 5</b>	
	Session 5A (Rm HOC LG01) Chair: Anna Reid	Session 5B (Rm HOC LG02) Chair: Mona Holmqvist
	Linda Thomas Gwen Ineson	Helge Strömdahl
	Gillian Boulton-Lewis Joanne Brownlee Donna Berthelsen	Angelika Kullberg
	Greg Light Susanna Calkins	Dilara Demirbulak Nazan Tutas
<b>1135 - 1235</b>	<b>Plenary Session &amp; Close of Conference</b> (Rm HOC LG06) Chair: Gerlese Åkerlind	

## **IX. Abstract**

### **Parallel Session 1A**

7 Dec 2006

11:35 – 12:35

Room HOC LG01

Paper Presentation

Chair: Elina Hella, University of Helsinki, Finland

*Considerations of quality in phenomenography*

Samantha Sin, Macquarie University, Australia

This paper discusses the considerations of quality of the phenomenographic process that I have made in my first attempt at the method in my PhD study of the meanings and understandings that students and practicing accountants have of accounting work and the role of accountants. Drawing on the literature on the rigor of qualitative research in general and selected studies in the phenomenography literature that address specific validity issues, I consider how I could improve the quality of my research at each step of the process from the formulation of the research question to the conclusions of investigative outcomes and application of findings. Issues of bracketing and empathy in practice are supplemented by a discussion of the practice of reflexivity and thorough and comprehensive documentation of the research process to convince readers of the rigor and quality of the research.

*The working knowledge of academic staff*

Rhonda Hallett, Victoria University, Melbourne, Australia

Elaine Martin, Victoria University, Melbourne, Australia

This study explores the notion of the working knowledge of academic staff in a ‘new generation’ University. It explores how academic staff ranging in academic level and experience make sense of what it takes to work through their day to day tasks and challenges.

A series of phenomenographic analyses highlighted three distinctive but overlapping aspects of this knowledge. The first aspect was teaching which was talked about at length by all interviewees. The second aspect, research, was mentioned, but not discussed in detail, by all the interviewees. The third area, which has not previously been the focus of phenomenographic analysis dealt with institutional administration and it was this, hitherto neglected, area that a significant proportion of academics spent most time commenting on and discussing.

The overall study includes a separate analysis of teaching, research and institutional management and then a multi phenomenological analysis of the overall notion of working knowledge (Roberston and Bond, 2005; Akerlind, 2005). The analyses of teaching and research have close parallels with existing work (Prosser and Trigwell, (1999); Trigwell, Prosser, Martin and Ramsden, (2003)). In this proposed presentation, however, we will focus briefly on the institutional administration category before moving on to the multi-phenomenological analysis of working knowledge overall.

An important aspect of this study is that typically interviewees were consistent in their understanding of what constituted knowledge and knowing across the categories of teaching, of research and of institutional administration. In further exploring this we identified four themes that seemed to underpin the composite working knowledge of academic staff. These themes are explored to help elucidate the five different categories of working knowledge and how they manifest in

terms of teaching, research and institutional administration.

Below is a summary of the six categories followed by a brief outline of the four themes that can be seen as underpinning the understandings of working knowledge as an academic.

Category A: Imitation

The focus is on pieces of information that are used to perform requested and required tasks in terms of administration, teaching and research.

Category B: Adoption

The focus is on organised and structured information that is used to perform tasks in a systematic way

Category C: Adaptation (ideas)

The focus is on ideas in use elsewhere and using these to adapt tasks within the given academic context

Category D: Adaptation (problem)

The focus is on issues and problems and exploring existing literature/practice to address these

Category E: Rethinking (renewing)

The focus is on multiple theories and concepts and using these to rethink and restructure the scope of the issues and challenges.

The four themes that underpin the categories of working knowledge are:

- How knowledge is developed and extended (approach)
- How it is used in different contexts (where and agency)
- How it is constituted and practiced in the workplace (subject and object)
- How it is understood and known by the knower (identity)

In the presentation we will focus on the way this multi-phenomenal field was explored and analysed as well as on the categories that were developed.

*Credibility in variations*

Monne Wihlborg, Lund University, Sweden

This paper implies that there is a substantial risk at stake, based on the idea concerning variation in the approaches involved with humans learning based on humans ways of experiencing a phenomenon, when it comes to be sure that we make differences connected with gender visible in phenomenographic research results. It is argued that *the awareness of being aware of a gender aspect* as being an intertwined part in the nature of variations of experiences is of substantial importance and an important part in (valid) phenomenographic research. Rationales; variations in humans' meaning and understanding in approaches in learning emerge from data gathered and analyzed in phenomenographic research. However, if, the pattern of variation is embedded and constituted and an offspring of the ruling social discourse at work, and also assuming, that the pattern of variation in meaning and understanding builds on a liberal humanist discourse, then, there is a considerable risk for a gender blindness in the shaping of variations in meaning(s).

**Parallel Session 1B**

7 Dec 2006

11:35 – 12:35

Room HOC LG02

Paper Presentation

Chair: Angelika Kullberg, Göteborg University, Sweden

*Further reflections on the phenomenographic team research process*

Stuart Boon, University of Strathclyde, United Kingdom

Bill Johnston, University of Strathclyde, United Kingdom

Sheila Webber, University of Sheffield, United Kingdom

Our paper looks at the team approach to phenomenographic research in the context of current methods described in the literature (most recently, Bowden, 2005). We reflect upon our experience of the phenomenographic method in our three-year investigation into UK academics' conceptions of, and pedagogy for, information literacy. We present our reflections as a dialogue with Bowden's account and take his descriptive framework as our starting point. We discuss the position of the researchers and the need to bracket experience, in both the interview processes and analysis; methods for assuring validity and impartiality in group analysis; and, the timeframe and process for team phenomenographic research. We aim to contribute to the discussion of the phenomenographic method by reflecting upon our own experience, including practical and theoretical aspects of the team approach.

*Variation in analytic processes*

Anna Reid, Macquarie University, Australia

Peter Petocz, Macquarie University, Australia

Phenomenographers have focused their awareness on several aspects of variation in experience. The issues that have received the greatest attention have been the variation apparent in a group's experience of something, an individual's way of experiencing something and the complexity of the phenomenon itself. In each of these cases, claims for the trustworthiness of the research outcomes are based on coherence of conceptual categories with their illustrative quotations, especially if there are justifiable and obvious structural and referential dimensions. However, one further aspect has not been acknowledged sufficiently – that of variation in the researchers' experience of the research artefacts, usually interview transcripts. In this workshop, we will investigate elements of variation based on an analysis across studies where the research questions were similar, but the researchers, locations and contexts were not.

## **Parallel Session 2A**

7 Dec 2006

15:20 – 16:20

Room HOC LG01

Paper Presentation

Chair: Jo McKenzie, University of Technology, Sydney, Australia

*The changing meanings of learning – expressed by pre-school teachers in further education*

Ann-Charlotte Mårdsjö, Göteborg University, Sweden

The aim of the study was to describe how pre-school teachers in further education create meaning in their own learning and how they participate in children's learning. Three questions investigated in the study are: What are the conceptions of one's own learning? What are the conceptions of participation in children's learning? Do the conceptions of one's own learning and/or the conceptions of participation in children's learning during the course of the education program change and if so, how?

The theoretical background of the study is variation theory and its concepts discernment, simultaneity and variation. This theory has been developed into a theory of awareness in order to analyse and understand what takes place in the pedagogues' awareness. With the aid of this theory, it is possible to shed light on what emerges as figure in their awareness and what is background in their creation of meaning.

The phenomenographic research approach constitutes the methodological basis of the study – a perspective of people's learning and knowledge formation that is holistic and non-dualistic, i.e. people's understanding of the world around them cannot be separated from the world they live in. The research group consists of 15 professionally active pedagogues attending a supplementary education program:

Program in education – orientation towards early childhood education 40 points. The data material consists of 37 interviews carried out over a 2-year period.

The results from the study show that the participants express three qualitatively different conceptions of how they learn: Creating meaning via communication (category 1), creating meaning via professional practice (category 2) and creating meaning via reflection on one's own learning (category 3). The determining factor in the pedagogues' creation of meaning is the variation they themselves create in each category. The pedagogues describe how they participate in children's learning in two qualitatively different ways: Being sensitive to the children and the world around them (category A) and Challenging the children in their learning (category B). The conceptions in categories A and B are hierarchical, which means that category A is fundamental to the pedagogues' participation in children's learning. Two thirds of the pedagogues change so that they understand what they are learning when they reflect on their own learning and an equal number (although partly different individuals) change so that they challenge the children in their learning during the period they are attending the education program. A little less than half the participants undergo both changes, i.e. they both reflect on their own learning and challenge the children in their learning.

*Equal education – unequal learning outcomes: an analysis of undergraduate students' conceptual development in accounting*  
Airi Rovio-Johansson, Göteborg University, Sweden

The paper investigates a sample of undergraduate students' conceptual development in a longitudinal study in Economics and Business Administration. Empirical data are derived from interviews during their three years higher education programme. The aim is to investigate the development of students' conceptual understanding of a specific

concept in accounting. Results indicate that their conceptual development from the first to the third year comprises of three stages: algorithmic understanding which one third reaches, their pre-understanding, some of them obtain a mixture of algorithmic and accounting knowledge, and half of the sample obtained the ability to make judgements, estimations and integration of the influence of contextual factors in problem solving. The scientific implications refer to widening the students' awareness of critical aspects of the learning objects, and the educational implications have reference to reorganized learning and teaching. Implications of the findings are discussed and further research in the area is called for.

*Introducing the Net Lenses model: An electronic outcome space*

Sylvia Edwards, Queensland University of Technology, Australia

Reporting the findings from a phenomenographic study of students' experiences of web-based information searching, this paper describes how the identified four conceptions, and their structures of awareness, might be displayed electronically. The first electronic outcome space will be outlined and presented. This electronic outcome space is an enhancement to ways of presenting phenomenographic study findings. Using a phenomenographic approach, the study aimed to uncover variation in students' experiences of web-based information searching. Amongst the group of students interviewed, four categories of explicit variation were discovered and these have been described drawing largely from the words of the participants.

Attempting to explain the findings to non-phenomenographers inspired the birth of the first electronic outcome space. The emphasis of this presentation and paper will be to present and demonstrate the first electronic outcome space.

## **Parallel Session 2B**

7 Dec 2006

15:20 – 16:20

Room HOC LG02

Round Table

Chair: Ming Fai Pang, The University of Hong Kong

*Investigating relationships between related phenomena*

Mandy Lupton, Griffith University, Australia

This roundtable will address the ways in which phenomenographic studies investigate the relationship between related phenomena. Åkerlind (2003 p. 94-95) examined existing studies and found two primary approaches to investigating related phenomena as logical and empirical. The logical approach consisted of investigating the relationships between the structure of the outcome space for each phenomena, whereas the empirical approach analysed the frequency of combinations of relationships in the interview transcripts. Both approaches are first-order, in that they are derived from the researcher's perspective. In my PhD study I have sought to investigate students' experiences of the relationship between information literacy and learning from an empirical, second-order perspective by asking students about how they experience this relationship. In doing so, I claim to be making a methodological advance in phenomenography. The roundtable will discuss and critique this claim.

*Macro-perspectives on variation theory of learning: learning about Christianity in relation to religious and secular worldviews*

Elina Hella, University of Helsinki, Finland

Andrew Wright, King's College, University of London, United Kingdom

Our presentation aims to generate discussion on issues surrounding the extension of the Variation Theory of Learning into macro-level of learning about Christianity in relation to variant secular and religious worldviews. We shall discuss both practical questions of conducting a learning study in religious education classrooms, and theoretical questions about the relationship between of critical realism and Variation Theory of Learning. These issues are related to our research project under development at University of Helsinki and King's College London. The project seeks to develop a critical pedagogy designed to enhance the religious literacy of nominal Anglican and Lutheran Christians in England and Finland. By religious literacy we mean the ability to attend and respond to the truth claims of religion. We draw on theology as the primary 'insider' discourse of religious adherents.

### **Parallel Session 3A**

8 Dec 2006

10:30 – 11:30

Room HOC LG01

Paper Presentation

Chair: Airi Rovio-Johansson, Göteborg University, Sweden

*What kinds of variation are made available in technology education?*

Veronica Bjurulf, Karlstad University, Sweden

The aim is to present what kinds of variation that are made available in two teachers' classrooms. Five teachers from the Swedish compulsory school were interviewed about technology and technology as a subject in school, and one field of work for each of the teachers were observed. The analysis is under work based on the variation theory. With examples from the data I will show that there are different kinds of variation in two of the teachers (John and Gustav) teaching, but one kind more frequent than the others. In Gustav's case the "principle-apply variation" is most common, which means that there is a

fundamental idea needed to be understood to be capable to make suitable choices and/or acts. In John's case the most frequent kind of variation is the "example variation". It means that the examples of a specific aspect vary. Interesting to discuss is how these results affect the shape of the technology subject in the two teacher's classrooms.

Sandra Herbert, University of Ballarat, Australia

*Phenomenography and interpretive phenomenological analysis: researching understanding of a phenomenon and the phenomenon itself through actors' experiences*

Leo Hitchcock, Auckland University of Technology, New Zealand

Over the past several decades industry certification has expanded into a multi-billion dollar business (Cosgrove, 2004), with the number of certifications impossible to quantify (Knapp & Gallery, 2003). Industry certification is being integrated into academic curricula at secondary and tertiary level. But is it a pedagogically robust form of credentialing? Does it have value to those who hold such certifications, and to the industry and consumers they represent? New research using a joint methodology, Phenomenography and Interpretive Phenomenological Analysis (IPA), suggests that certifications that are well designed, have elements of performance-based assessment and/or experiential content, and are well administered, are indeed pedagogically sound, with significant value.

### **Parallel Session 3B**

8 Dec 2006

10:30 – 11:30

Room HOC LG02

Paper Presentation

Chair: Sylvia Edwards, Queensland University of Technology, Australia

*Using variation theory framework to teach teachers*

Laura Wood, Jerudong International School, Brunei / Brunel University, West London

The study looks at using the Framework of Variation Theory as a basis for Student Teachers of Design and Technology Education to understand their teaching differently and to provide a common structure for teachers to be able to communicate about and develop their lesson planning and reflection.

Student teachers were introduced to Variation framework, including the ‘how’ and ‘what’ of teaching and learning for students, and the ‘how’ and ‘what’ of learning to teach. Student teachers were videoed, and differences in the how and what that took place in their classrooms were analysed against the framework as it stands. Discerned differences enabled the researcher to expand the Variation Framework, in order that teachers could discern and discuss these differences. A diagrammatical representation of the framework within the classroom was used. The teachers were asked to ‘reflect’ on their teaching, and from these accounts, further developments of the theory were formulated.

*Phenomenography and variation theory as relational pedagogical tools for religious education*

Elina Hella, University of Helsinki, Finland

This paper argues that phenomenography and Variation Theory of Learning (e.g. Marton et al. 2004) offer potentially effective pedagogical tools to help students to relate to and make sense of diversity of religious and secular worldviews. I suggest, by elaborating on the concept of *relationality* (Bowden, 2005), that phenomenography serves as a relational tool for researchers and teachers of religious education to discern and relate together the qualitative differences in understanding a particular religious subject matter as seen from different perspectives. ‘Variation Theory of Learning’, (Marton et al. 2004) offers a framework for exploring how qualitative differences between individual ways of understanding a particular religious worldview are linked to their ability to discern the critical aspects of that phenomenon. Suggestions for using variation of *educationally critical aspects* of the object of learning in religious education classrooms are outlined. Illustrations from a phenomenographic study on variation in Finnish students’ understanding of Lutheranism (Hella, 2006) are offered to support these suggestions.

### *Generative learning*

Mona Holmqvist, Kristianstad University, Sweden

Laila Gustavsson, Kristianstad University, Sweden

Anna Wernberg, Kristianstad University, Sweden

By contrasting critical aspects in a dimension of variation, the learning object can change form and be experienced in different ways which influence the students’ ability to learn. To investigate in which ways the contrasts affect the students’ learning outcome was the primary focus of the study, but the results also show an interesting pattern of how students’ learning outcome in short and long time perspective are affected. We have worked with learning study as a method, and the results are based on analyses of three learning studies made up of three

lessons each. The results show how one pattern offers the students to look critically upon their previous knowledge and make them find new ways of seeing the object of learning. This pattern has also been found to be more powerful in preparing students for future learning, since it seems to generate new learning after the learning situation itself.

## Parallel Session 4A

8 Dec 2006

15:20 – 16:50

Room HOC LG01

Symposium

*Variation in personal histories of the evolution of phenomenography and variation theory – implications for the ways forward*

Greg Light, Northwestern University, United States

Gerlese Åkerlind, Australian National University, Australia

Jo McKenzie, University of Technology, Sydney, Australia

Mandy Lupton, Griffith University, Australia

One approach to illuminating ways forward for phenomenography and variation theory is by looking at them in relation to their history. A critical feature of phenomenography and variation theory has been their focus on variation: variation in ways of experiencing phenomena and relations between the experience of variation and human learning and awareness. In this symposium, we will open up a space of variation through five phenomenographers' personal histories of phenomenography and variation theory.

The five participants commenced their involvement with phenomenography at different stages in its development. Each will describe their initial engagement with phenomenography, early work and ideas that first influenced them, theoretical and methodological changes in their research and understanding over time, perceptions of key changes in the field that have influenced their research, and what they currently envisage as their personal way forward in terms of where their research is heading.

The collective consciousness of phenomenography and variation theory is constituted from the experience of individuals over its history and our understandings have evolved over the past 30 years. Significant events

in the collective history include the first papers describing approaches to learning (Marton and Saljo, 1976), early writings on phenomenography (Marton, 1981), the Warburton symposium (Bowden & Walsh, 1994), the publication of *Learning and awareness* (Marton and Booth, 1997), workshops in Gothenburg and elsewhere, and various EARLI conferences and symposia. Amongst the five phenomenographers, there is both variation and similarity in the events that we have experienced, and the aspects of particular events that we have individually discerned and focused on.

The symposium will draw out the implications of individuals' personal experiences of these and other events for the field as a whole. Similarities in the development of our personal understandings will highlight what we see as the critical aspects of phenomenography and variation theory - the common aspects that situate our own research in this tradition. Variation in our histories will highlight aspects of how phenomenography has changed over time, variation in ways of engaging with theoretical and methodological aspects in our research, and variation in ways in which key events can influence individuals' understandings and research directions.

Educational implications have been a key aspect of phenomenographic research. As the five phenomenographers all work as higher education developers, their experience of the educational implications of phenomenography and variation theory will also form part of their personal histories.

Just as the collective histories of individual phenomenographers have constituted the current directions in phenomenography and variation theory, we see the future being constituted by the ongoing work of the collective members of the phenomenographic community. Symposium discussions will draw out common current directions to highlight possible implications for the future.

## **Parallel Session 4B**

8 Dec 2006

15:20 – 16:50

Room HOC LG02

Symposium

### *Contributions of the theory of variation to “Learning to Learn”*

Ko Po Yuk, Hong Kong Institute of Education, Hong Kong, China

Lo-Fu Yin Wah, Hong Kong Institute of Education, Hong Kong, China

Kwok Wing Yin, Hong Kong Institute of Education, Hong Kong, China

Ng Pun Hon, Hong Kong Institute of Education, Hong Kong, China

Li Shu Ying, Hong Kong Institute of Education, Hong Kong, China

In the past six years, more than 200 Learning Studies have been completed by the Center for Learning-study And School Partnership. These cases provided strong evidence that the Theory of Variation is a powerful tool for teachers to help students to learn. Such learning can be described at two levels: at the first level, students were helped to discern the object of learning, through the pattern of variation that the teachers consciously constructed to facilitate learning; at the second level, when students were made aware of the pattern of variation that was used and how it led to their learning, there is the possibility that students would have acquired a powerful tool to learn by themselves. In the past years, all our attention have been focused on the first level. In this symposium, we will draw on examples from the various Learning Studies to illustrate how different patterns of variation can produce the different functions: contrast, separation, generalization and fusion, which we considered to be fundamental to the learning of Level 1 described above. Some of the functions will be examined in more details, and then we would discuss how we could make better use of this knowledge to facilitate learning at both the first Level and at the second level. We would use evidence from our data to demonstrate that some students were able to discern how the pattern of variation used in class facilitated their own learning. We would also point the way to further research to facilitate learning at the second level to take place.

## **Parallel Session 5A**

9 Dec 2006

10:30 – 11:30

Room HOC LG01

Paper Presentation

Chair: Anna Reid, Macquarie University, Australia

### *Trainee teachers' mental mathematics*

Linda Thomas, Brunel University, United Kingdom

Gwen Ineson, Brunel University, United Kingdom

Since its establishment in the UK in 1999 the National Curriculum's National Numeracy Strategy has emphasised the importance of developing children's mental mathematics processes. This reflects trends in mathematics teaching towards the earliest possible acquisition by pupils of informal methods such as estimation and number patterns. Teacher education programmes designed for teachers at key stages 1&2 have been adapted to reflect this objective within the overarching aim of developing trainee teachers' understanding of the connectedness of mathematical thinking. Drawing on data from a study of trainee teachers' confidence and competence in mental mathematics, their preferences for formal and informal computation methods and the ways chosen by them to handle standard mental mathematics topics in the classroom, this paper utilises the approaches adopted by previous studies working within and outside the phenomenographic/variation theory tradition to explore the incidence of connected thinking among those responsible for the teaching of primary mathematics.

### *Child care students' conceptions of learning*

Gillian Boulton-Lewis, Queensland University of Technology, Australia  
Joanne Brownlee, Queensland University of Technology, Australia  
Donna Berthelsen, Queensland University of Technology, Australia

This paper presents an analysis of the transcripts of 52 first and second year child care students for conceptions of learning. All six categories of conceptions as identified originally by Marton et al,(1993) were found but about 50% of these were at level A (increasing knowledge). This category was richer and more differentiated than usual and had a very practical, applied focus. The participants did not generally situate learning in a formal context based on reading reference material. This could present a problem for lecturers in the course who expect that students will underpin skills with theoretical knowledge and raises the question of how to move students' conceptions to a higher level.

### *Faculty conceptions of academic practice*

Greg Light, Northwestern University, United States  
Susanna Calkins, Northwestern University, United States

This study investigates faculty conceptions of *academic practice*, defined here as encompassing research and teaching in an integrated construct grounded in learning. The study takes a phenomenographic research perspective focusing on the different ways in which academic practice is conceived and the variation in the ways in which key features of conception are experienced. 25 tenure-track junior faculty members from a private research university were interviewed. Analysis of the interview data disclosed four types of faculty conceptions in two broad categories: connected and disconnected conceptions. These conceptions are characterized by three distinct features: (1) a 'learning feature'

which describes the variation in the ways that faculty understand the relationship of their learning in the research context to student learning in the teaching context; (2) the ‘research-teaching feature’ which concerns the variation in the ways in which faculty regard their research informing teaching practice, and (3) the ‘teaching-research’ feature, which concerns the variation in the ways in which faculty see their teaching informing their research practice. The results of this study suggest that for some faculty the “rivalry of practice” between the faculty’s research agenda and their teaching responsibilities, is underpinned by a more disquieting “disconnect of learning” embedded within the faculty member’s overall experience of academic practice.

### **Parallel Session 5B**

9 Dec 2006

10:30 – 11:30

Room HOC LG02

Paper Presentation

Chair: Mona Holmqvist, Kristianstad University, Sweden

*A triple discernment of term meaning in concept learning in natural sciences*

Helge Strömdahl, Linköping University, Sweden

The educational challenge of polysemy of a term used both in non-formal (every-day) and scientific formal language is addressed. An analysing tool, *the triadic approach* has been elaborated to make the polysemy of terms explicit by discerning three different sets of meaning attached to the one and same term. These are non-formal denotations, denotation of a scientifically delimited phenomena and a physical quantity, respectively. The discernment process is a particular way of seeing the critical aspects of variation connected to the current term simultaneously. The educational validity of the triadic approach will be supported by application to some recently gain empirical data.

*From learning study to design experiment*

Angelika Kullberg, Göteborg University, Sweden

The study presented here is a development and a follow-up study of learning studies conducted previously by a research group at Gothenburg University. The analysis from the different learning studies pointed at interesting results for pupils' learning. In the analysis [with variation theory as a framework] critical aspects concerning the object of learning were found to play a critical role for the pupils' learning. With the research design I present, I compare designed lessons in mathematics from learning studies e.g. about negative numbers (where the teachers were involved in the process of founding the critical aspects) with new designed lessons, (where teachers try to implement already found aspects). The aim of the study is to see how those two kinds of lessons compare, as far as the object of learning is concerned and the learning outcomes. In my presentation I will focus on the specific design and preliminary results of a study.

*A case study on phenomenographic research on learning*

Dilara Demirbulak, Cankaya University, Turkey

Nazan Tutas, Ankara University, Turkey

Research has become an inseparable part of higher education. Almost all the courses require learners to seek for information and use it in a learning environment. The aim of this article is to look into the implementation process of the content by the instructors and the use of the information by the learner via phenomenographic research on learning. This then would provide the opportunity to get a better insight of the interplay between learning in a subject area and the learning environment. This study was carried out at two higher-education institutions where 4 professors participated in the study. The

results showed that instructors demonstrated an ability to use variation when focusing on “critical concepts” within the content of the course and the “research” requirement component

