



**Programme &  
Abstracts**

# **Motivation, Learning, and Knowledge Building in the 21st century**

**Conference June 18-21, 2004**

**Stockholm, Visby, Tallinn, Birka Cruises**



Department of Learning, Informatics,  
Management and Ethics  
Centre for Cognition, Understanding  
and Learning



European Association for Research  
on Learning and Instruction



The Institute for  
Knowledge Innovation  
and Technology

# **Motivation, Learning, and Knowledge Building in the 21st century**

**Conference June 18-21, 2004**

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<http://www.lime.ki.se/baltic2004>

## **Programme & Abstracts**

**Jointly organised by:**

**Karolinska Institutet (local organizer)  
Dept of Learning, Informatics Management and Ethics  
Centre for Cognition, Understanding and Learning**

**Earli SIG Higher Education**

**IKIT - The Institute for Knowledge Innovation and Technology**

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# Welcome to our conference

## Motivation, Learning, and Knowledge Building in the 21st century

The Scandinavian Summer Cruise at the Baltic Sea June 18 - June 21, 2004

We organize this Conference in collaboration with IKIT and the European Association for Research on Learning and Instruction (EARLI), Special Interest Group (SIG) Higher Education. There will be sessions for SIG Higher Education members and those who are invited by IKIT. However, all participants can join the common sessions, workshops and cultural events. The cultural theme will be "Medieval times".

**WHAT IS KAROLINSKA INSTITUTET?** Karolinska Institutet is a medical university, dedicated to improve people's health by higher education, research, and information. At the Department of LIME (Learning, Informatics, Management and Ethics). Centre for Cognition, Understanding and Learning (CUL) is responsible for university teacher training, educational research, evaluation and assessment.

**WHAT IS EARLI?** The European Association for Research on Learning and Instruction (EARLI) enables more than 1000 members from 40 countries to engage in critical dialogue. They systematically exchange and discuss ideas on instructional and educational research, as well as research on industrial training. For these scholars, drawn from all parts of Europe, EARLI provides a platform on which to make a significant contribution to current debates. [www.earli.org](http://www.earli.org)

SIG Higher Education has two Coordinators, Professor Sari Lindblom-Ylänne (University of Helsinki, Finland) and Professor Mien Segers (University of Leiden, The Netherlands). They have been actively developing the EARLI SIG 4 meeting on the boat.

**WHAT IS IKIT?** The Institute for Knowledge Innovation and Technology (IKIT) conducts research, develops technology, and helps build communities aimed at advancing beyond "best practice" in education, knowledge work, and knowledge creation. An international community from a variety of sectors is actively engaged in pooling intellectual resources and participating in projects. More powerful theories of knowledge and expertise are needed to move education and training beyond existing best practices. IKIT has developed a knowledge-building pedagogy that puts ideas at the center. [www.ikit.org](http://www.ikit.org)

The Scandinavian Summer Cruise is intended for people who want to enjoy high-level scientific discussion in a spectacular environment. The idea is to stimulate multidisciplinary creative thinking around research on student learning and motivation. We invite educationalists, psychologists, cognitive scientists, sociologists, university teachers, and other scholars to join this trip where high-level keynote lectures and interactive scientific sessions will be held. Welcome to Stockholm – I look forward to this stimulating meeting!

Kirsti Lonka

Professor of medical education

# Organisation

## **Dr Kirsti Lonka**

Chair of the Committee  
Professor of Medical Education  
Director of the Centre for Cognition, Understanding and Learning,  
The Department of Learning, Informatics, Management and Ethics,  
Karolinska Institutet, Sweden

## **Dr Sari Lindblom-Ylänne**

Cordinator of SIG Higher Education, EARLI  
Professor of Higher Education  
Director Resource Centre for the Development of Higher Education  
Faculty of Behavioural Sciences,  
University of Helsinki, Finland

## **Dr Jonas Nordquist**

Research Fellow of the Centre for Cognition, Understanding and Learning,  
The Department of Learning, Informatics, Management and Ethics,  
Karolinska Institutet, Sweden

## **Dr Mien Segers**

Cordinator of SIG Higher Education, EARLI  
University of Leiden, The Netherlands

## **Ms. Satu Pulkkinen**

Conference Manager  
Research assistant  
Centre for Cognition, Understanding and Learning,  
The Department of Learning, Informatics, Management and Ethics,  
Karolinska Institutet, Sweden

# Practical Information

The conference will take place on a cruise ship and departs from Stockholm on Friday June 18, 2004. The cruise will stop at the medieval city of Visby on the island of Gotland, Sweden, and continue to Tallinn, Estonia.

## Registration

Registration will take place on the Nobel forum, Nobels väg 1, Karolinska Institutet.

## Badges

All participants will receive a name badge upon registration. For identification purposes and admission to the sessions, participants are requested to wear their badges throughout the conference.

## Liability and Insurance

The organisers will not take any responsibility for injury or damage involving persons or property during the conference. Participants are advised to take out their own personal insurance.

## Conference Web Site

<http://www.lime.ki.se/baltic2004>

## The Registration Fee Includes

The registration fee for the conference includes lunch and sightseeing in Stockholm, the costs for all seminars and conference material, refreshments, three nights on board of the ship, lunch and three dinners on the boat. Lunch and museum visit in Visby and sightseeing and lunch in Tallinn are not included in the conference fee. If you have registered to these activities you'll find the tickets inside your conference folder.

## Breakfast and Dinner on the Boat

You can choose to eat breakfast at restaurant Pommern or restaurant Albatross, you don not need any reservation for this. Breakfast is served between 7.30-9.00. Dinner will be served at restaurant Pommern, deck 6.

## Money Exchange

It is possible to exchange currencies directly on the boat. You can also exchange back to your own currency once the conference is finished.

## Telephone number to the boat

00-358-18 27337

# Conference Programme Overview

## Friday Juni 18 – Stockholm Nobel Forum, Nobels väg 1, Karolinska Institutet, Stockholm

08.45-10.00	Registration, Nobel Forum, Nobels väg 1, Karolinska Institutet, Stockholm
10.00-12.30	Keynote session, Nobel Forum, Wallenbergssalen
12.30-13.30	Lunch, Nobel Forum, in the lunchroom on the second floor
13.30-14.30	Keynote session, Nobel Forum, Wallenbergssalen
15.00	Bus to Birka Cruises from Nobel Forum, Nobels väg 1 Karolinska Institutet, Stockholm
15.00-16.30	Sightseeing tour
18.00	Birka Cruises leaves from Stadsgårdskajen, Slussen, Stockholm
18.30-19.00	Get together in the conference room deck 6
19.00-20.00	Scientific program
20.30-21.30	Dinner, Restaurant Pommern, deck 6

## Saturday June 19 – Birka Cruises, Visby

07.30-09.00	Breakfast
09.00-11.00	Scientific program
11.30-15.00	Lunch and Museum visit in Visby, Fornsalen, Strandvägen
15.00-19.00	Scientific program
20.30-22.00	Dinner, Restaurant Pommern, deck 6

## Sunday June 20 – Birka Cruises, Tallinn

07.30-09.00	Breakfast
09.00-10.45	Scientific program
11.00-15.30	Sightseeing in Tallinn, Lunch in Olde Hansa
16.00-19.00	Scientific program
20.30-22.00	Dinner, Restaurant Pommern, deck 6

## Monday June 21 – Birka Cruises, Stockholm

07.30-09.00	Breakfast
09.00-13.00	Scientific program
14.00-15.00	Lunch, Restaurant Pommern, deck 6
16.00	Arrival in Stockholm

# Scientific Programme Overview

Conference rooms: B = Brändö, E = Eckerö, F = Finström, G = Geta, J = Jomala,  
M = Mariehamn, L = Lumparland, EF = Eckerö and Finström together  
GJML = Geta, Jomala, Mariehamn and Lumparland together

	Friday	Saturday			Sunday		Monday	
<b>09.00</b>		<b>Round tables SIG</b> ▣ GJML	<b>Invited symposium Knowledge building</b> ▣ B		<b>Interactive round tables SIG</b> ▣ GJML	<b>Invited symposium Knowledge building</b> ▣ B	<b>Round tables SIG</b> ▣GJML	<b>Interactive symposium Knowledge building</b> ▣ EF
<b>10.00</b>	<b>Keynotes seminars</b>  ▣ Nobel Forum Karolinska Institutet							
<b>11.00</b>								
<b>12.00</b>								
<b>13.00</b>								
<b>14.00</b>								
<b>15.00</b>		<b>Interactive Symposium SIG</b> ▣ GJML	<b>Interactive round tables Knowledge building</b> ▣ EF		<b>Interactive symposium SIG HE</b> ▣ EF	<b>Interactive round tables Knowledge building</b> ▣ GJML		
<b>16.00</b>		<b>WORKSHOP</b>						
<b>17.00</b>		<b>Eijl</b> ▣ G	<b>Comley</b> ▣ M	<b>Numminen</b> ▣ L				
<b>18.00</b>		<b>General symposium</b> ▣ GJML			<b>WORKSHOP</b>			
<b>19.00</b>	<b>Opening session</b> ▣GJML				<b>Melnick</b> ▣ M	<b>Russell and Lonka</b> ▣ L		



# Scientific Programme

## EARLI SIG Higher Education conference in June 18-21, 2004 “Optimizing learning environments in higher education” Programme

### Friday June 18, Nobel Forum, Karolinska Institutet

- 10.00-10.15 Welcoming address: The President of Karolinska Institutet  
Professor Harriet Wallberg-Henriksson
- 10.15-10.30 Opening words: Professor Kirsti Lonka
- 10.30-11.15 *Keynote address* Teaching and Learning in Diverse University Settings:  
Conceptual Frameworks and Empirical Findings  
Professor *Noel Entwistle*, University of Edinburgh, United Kingdom
- 11.15-11.30 Break
- 11.30-12.15 *Keynote address* Exploring the What, How, and Why of Expertise  
Development in Higher Education: A Self-regulation Approach  
Professor *Monique Boekaerts*, University of Leiden, The Netherlands
- 12.30-13.15 Lunch
- 13.15-14.00 *Keynote address* Soft Skills: A Critical Look.  
Professor *Carl Bereiter*, IKIT, OISE, Toronto, Canada
- 14.00-14.45 *Keynote address* Ideas at the Center: Whose Ideas?  
Professor *Marlene Scardamalia*, IKIT, OISE, Toronto, Canada

### On the boat

- 19.00-20.00 Opening Session

## **Saturday June 19, On the boat: Visby, Sweden**

### **09.00-10.45 INTERACTIVE ROUND TABLES, SIG HIGHER EDUCATION**

#### **Learning and Teaching**

**Chair Mien Segers**

#### TABLE I

Gillian Boulton-Lewis, Hitendra Pillay and Lynn Wilss

Teaching for diversity in higher education in Australia: proposed research

#### TABLE II

Klara Bolander, Kirsti Lonka and Anna Josephson

The aim of teaching – an interview study of anatomy and surgeon teachers

#### TABLE III

Michael Christie

Engendering good learning in groups

#### TABLE IV

Laura Helle and Päivi Tynjälä

Facilitating work-based project learning

#### TABLE V

Keith Trigwell, Sari Lindblom-Ylänne, Paul Ashwin, and Anne Nevgi

Variation in approaches to university teaching: the role of regulation and motivation

### **09.00-11.00 INVITED SYMPOSIUM 1: KNOWLEDGE BUILDING**

#### **Teaching at the Cutting Edge of Inquiry**

**Moderator: Blake Melnick**

Therese Laferriere, Mary Lamon, Nancy Law, Ola Erstadt,

Clare Brett, and Pirita Seitamaa

### **15.00-16.45 INTERACTIVE SYMPOSIUM. SIG HIGHER EDUCATION**

#### **The development of competence in higher education: To do or not to do?**

**Discussant Noel Entwistle**

Barbara de la Harpe and Alex Radloff

Challenges and opportunities for learning environments that support the development of 'generic skills'

Minna Kaartinen-Koutaniemi

The development of scientific thinking in higher education

Hanne ten Berge, Stephan Ramaekers, and Albert Pilot

The design of cases that promote higher-order learning

### **15.00-16.45 INTERACTIVE ROUND TABLES, KNOWLEDGE BUILDING**

**Theme: Education**

**Chair Mary Lamon**

#### TABLE I

Patil Nivritti  
Traditional Bedside teaching and Clinical PBL - Are they compatible?

TABLE II  
Pirita Seitamaa-Hakkarainen, Kai Hakkarainen, Maiju Iivonen, Marianne Bollström-  
Huttunen and Ritva Engeström  
Practices of Teacher Guidance in the Computer Supported Collaborative Learning

TABLE III  
Clare Brett and Cauleen Stanley  
Beyond best practice: Promoting a knowledge building orientation toward technology  
enhanced curriculum development among preservice educators.

TABLE IV  
Zhang Jianwei and Qi Chen  
A Research on Peer Collaboration during Scientific Discovery Learning Based on  
Computer Simulation

TABLE V  
Thérèse Laferrière  
Preservice teachers' online progressive discourse about teaching in laptop  
classrooms.

**17.00-18.00      WORKSHOP**

Pierre Van Eijl, Wim Westerveld, Joost van Hoof, Patricia Huisman-Kleinherenbrink  
and Richard van der Stam  
Educational development and research in research-oriented project learning

**17.00-18.00      WORKSHOP**

Pat Comley  
Strategies for Teaching and Communicating in a Culturally Diverse Classroom

**17.00-18.00      WORKSHOP**

Ava Numminen

When there are difficulties to sing in tune. Some standpoints how an adult learns to sing

**18.30-19.15      GENERAL SYMPOSIUM**

**Theme: Motivation**

**Chair Kirsti Lonka**

John Richardson

Motivation, attitudes and approaches to studying

Linda Gilmore and Gillian Boulton-Lewis

Lazy children: Do they just need to try harder?

**Sunday June 20, On the boat: Tallinn, Estonia**

**9.00-10.45      INTERACTIVE ROUND TABLE SESSION SIG HIGHER  
EDUCATION**

**Chair Sari Lindblom-Ylänne**

TABLE I

Alexander Minnaert and Jan Vermunt

Changing dissonance between student learning strategies and learning conceptions in the context of a student-oriented learning environment

TABLE II

Sinikka Kaartinen

Meaningfulness via participation – Sociocultural practices for teacher learning and development

TABLE III

Liisa Postareff, Anne Nevgi and Sari Lindblom-Ylänne

The effect of pedagogical courses on approaches to teaching in higher education

TABLE IV

Anne Nevgi, Liisa Postareff and Sari Lindblom-Ylänne

The university teachers' motivational and self-efficacy beliefs and self-regulation skills of teaching

TABLE V

Steven Wilkinson

Clinical Governance, appraisal and revalidation – How do they relate?

**09.00-10.45 INVITED SYMPOSIUM 2: KNOWLEDGE BUILDING**  
**A Conversation on Critical Issues in Idea Improvement.**  
**Moderator: Blake Melnick**

Carl Bereiter, Marlene Scardamalia, Earl Woodruff, Ann Russell, Kai Hakkarainen, and Ritva Engeström

**16.00-18.00 INTERACTIVE SYMPOSIUM SIG HIGHER EDUCATION**  
**Assessing assessment**  
**Chair Jonas Nordquist**

Sid Bourke, John Hattie, Lorin Anderson and Allyson Holbrook  
Predicting examiner recommendations on PhD Theses

Gordon Joughin  
Oral assessment from the students' perspective

Allyson Holbrook, Kerry Dally, Anne Graham, and Miranda Lawry  
The perspectives of examiners on the processes of research higher degree supervision and examination in Fine Art

Sharon Lynne Bryant, Andrew A. Timmins and Marie Josee Berger  
Portfolio assessment in higher education: A case study of motivation and improving learning while building knowledge

**16.00-17.45 KNOWLEDGE BUILDING SYMPOSIUM: THEORETICAL INNOVATIONS**  
**Discussant: Matti Sintonen**

Romain Zeiliger, Marisa Ponti, and Liliane Esnault  
Constructing Knowledge As a System of Relations

Kai Hakkarainen, Kirsti Lonka, and Sami Paavola  
Networked Intelligence: Psychological Implications of Actor-Network Theory

Sami Paavola and Kai Hakkarainen  
Mediation through conceptual artifacts

**18.00-19.00 WORKSHOP/CONVERSATION 1**  
**Rising Above Project Based Learning**  
**Moderator: Blake Melnick**

**18.00-19.00 WORKSHOP**  
**Interprofessional practice in health care education, service and delivery**  
**Moderators: Kirsti Lonka and Ann Russell**

## **Monday June 21, On the boat: Mariehamn, Sweden**

### **09.00-10.45 INTERACTIVE ROUND TABLES SIG HIGHER EDUCATION**

**Chair Alexander Minnaert**

#### TABLE I

Timo Honkela, Annamari Heikkilä and Kirsti Lonka  
Modeling Motivational factors in learning

#### TABLE II

Sari Lindblom-Ylänne, Keith Trigwell, Anne Nevgi and Paul Ashwin  
Variation in approaches to teaching: the role of discipline and teaching context

#### TABLE III

Laura Hirsto  
Long-term learning groups in higher education: practical and theoretical perspectives

#### TABLE IV

Pierre J. van Eijl, Peter de Voogd, Albert Pilot and Wilfried Admiraal  
Characteristics for the design of blended, computer supported collaborative learning

#### TABLE V

Anna Parpala, Klara Bolander, Kirsti Lonka and Sari Lindblom-Ylänne  
Exploring quality in Higher Education in three Nordic universities. Teacher's perspective.

### **09.00-11.00 KNOWLEDGE BUILDING: INTERACTIVE SYMPOSIUM**

**Networks and theories**

**Chair Clare Brett**

Haapalainen Päivi, Lonka Heikki, and Naaranoja Marja  
How to Prevent Project Knowledge Management Failures

Donald Philip

The role of networks in the use of knowledge forum and knowledge building

Jiri Lallimo and Lasse Lipponen

Future oriented actions in producing hybrid solutions

Heiskanen Tuula

Reflections on the preconditions of knowledge building communities

Pirita Seitamaa-Hakkarainen, Henna Lahti and Kai Hakkarainen

Virtual Design Studio as learning environment knowledge

### **11.00-13.00 Closing panel discussion**

Participants:

Chair Mien Segers, Kirsti Lonka, Carl Bereiter, Monique Boekaerts,  
and Noel Entwistle

# Abstracts

**Klara Bolander, Kirsti Lonka and Anna Josephson  
Sweden**

**Mapping teaching aims from pre-clinical to clinical courses – an interview study of Anatomy and Surgery teachers.**

The general impression among clinical teachers is that students at the time of entering the clinical part of education have forgotten or somehow “lost” knowledge that has been taught at pre-clinical levels (a problem of transfer). Research on the development of medical expertise helps us to understand this problem, which has to do with students being at different levels of expert development. We wanted to understand the aims and objectives of teachers and how these match with the aims and objectives communicated by the Core Curriculum. It was of interest to see how they dealt with the transfer problem. We looked at two levels of teaching in the medical curriculum: a) anatomy, a pre-clinical topic which is regarded central to the learning and understanding of b) surgery, which is taught at the 4<sup>th</sup> year of medical school. An interview-study was performed where pre-clinical and clinical teachers were asked their aims and objectives of their teaching. The study showed that teachers had two main aims with teaching, *content-oriented* and *competence-oriented*. Pre-clinical teachers emphasised the content-oriented aims whilst clinical teachers referred to both content- and competence-oriented aims. These aims responded well to the aims expressed in the Core Curriculum with the exception that the teachers of the Anatomy course did not refer to any competencies mentioned in the Core Curriculum. Some teachers expressed that the ‘final goal’ with teaching was unclear to them. It was obvious that some clinical teachers viewed the activation of prior knowledge as a problem which they had taken action upon whilst others had never considered it as a problem. When analysing the interviews in relation to Core Curriculum, we found that teachers’ personal aims and objectives of teaching at different levels were influenced by the Core Curriculum. However, Core Curriculum did not give teachers support in linking pre-clinical and clinical courses or direct teachers in what the ‘final outcomes’ of teaching medical students are.



**Gillian Boulton-Lewis, Hitendra Pillay and Lynn Wills**  
Australia

## **Teaching for inclusivity and diversity at university**

**Aims:** These are to:

- describe how a sample of lecturers across discipline areas, favourably evaluated by students, manages their teaching, to cater for inclusivity
- investigate how such teaching matches with student expectations, experience and outcomes
- develop a set of principles and recommendations concerning the most effective ways of teaching for inclusivity.
- trial these with the participating lecturers and investigate students' experiences.

**Theoretical framework:** The student mix in Australian universities is diverse and it is contended that teaching is not sufficiently inclusive to address their various learning needs effectively. University mission statements acknowledge the situation but appropriate action does not necessarily occur in teaching. There is information and research about teaching for single groups such as Chinese or Aboriginal students but no comprehensive statements of principles for working with mixed groups other than, for example, the assertion that an 'educating' approach is effective for all students (Biggs, 1999). A working model of best practice for inclusivity will be derived from the literature in learning, teaching and diverse needs. This will guide data collection and analysis.

**Methodology:**

1. Interviews (semi structured) with 20 lecturers, across 4 discipline areas with good evaluations for teaching diverse groups, about their teaching for inclusivity.
2. Diaries kept by purposive samples of 10 students in each lecturer's class for about 4 weeks about their learning needs, experiences and teaching.
3. Principles and practices for effective inclusive teaching derived from analysis of student and lecturer data and implemented in the subsequent year.
4. Focus groups of students be interviewed about their learning and experience of subsequent teaching.

**Results and Implications:** The research will provide descriptions of effective teaching for inclusivity from both lecturer and student perspectives and trial and assess the implementation of these.

**Linda Gilmore and Gillian Boulton-Lewis**  
**Australia**

### **Lazy children: Do they just need to try harder?**

**Aims:** This is a description of proposed research which will address, theoretically and practically, the issue of young children who are apparently lazy at school. The first aim is to determine the individual characteristics of children whose classroom behaviour is interpreted as lazy. The second aim is to investigate the extent to which multifaceted interventions can enhance motivation in these children.

**Theoretical Framework:** The theoretical framework is derived from the literature concerned with theories of motivation and the learning environment, interventions which provoke intrinsic motivation, explanations for persistent low motivation in some groups of children, attribution of success and failure, child characteristics such as cognitive functioning, learning difficulties, psychological disorders and environmental factors, the effects of external control and boredom

**Research Methodology:** Diagnostic instruments, questionnaires and interviews will be used to provide information about cognitive functioning, achievement and motivation for a sample of 220 children who have been reported as lazy. This will be followed by interventions and follow up testing

**Results:** Not available

**Discussion and implications:** The analysis of detailed data will provide a better understanding of factors affecting motivation and performance. If it is demonstrated that many so-called lazy children have unrecognized cognitive and learning characteristics which are impeding their academic progress the results will create an increased awareness and understanding amongst educators and families that will have enormous applied significance for children's learning, behaviour and emotional well-being. The inclusion of an intervention phase moves the study beyond a description of children's characteristics to a demonstration of the ways in which these children may be helped to become more motivated and more competent.

**Sid Bourke<sup>1</sup>, John Hattie<sup>2</sup>, Lorin Anderson<sup>3</sup> and Allyson Holbrook<sup>1</sup>**  
**<sup>1</sup>Australia, <sup>2</sup>New Zealand, <sup>3</sup>USA**

### **Predicting examiner recommendations on PhD theses**

**Aim:** This paper is concerned with testing the efficacy of the textual content of the examiner report in predicting the overall examiner recommendation on the written thesis. The importance of a wide range of candidate and candidature characteristics is also examined together with some examiner information, recognizing that almost 50% of examiners of Australian theses are international.

**Framework:** The general expansion of higher education in Australia (among other countries) has included significant increases in the numbers of doctoral student enrolments across disciplines, but particularly in the social sciences. Concern with candidate supervision has a history of research, but more recently concerns about outcomes and the processes of assessment have been expressed (for example Tinkler & Jackson 2000). This study attempts to link examination processes with outcomes.

**Methodology:** The study uses an integrated mixed-methods approach. The texts of examiner reports, which had been pre-coded into categories, were collected into five coherent groupings using confirmatory factor analysis for the first set of 303 examiner reports from one university. The consistency of the category groupings was tested for a second university and a few minor adjustments were made to the categorization.

Text and candidate data are now available for four Australian universities. The category groupings were then used in conjunction with candidate and candidature characteristics in multiple regression analyses to predict examiner overall recommendations for theses (recorded on a 5-point scale). As each thesis was examined by either two or three independent examiners, and the theses come from a wide range of disciplines at four universities, a multi-level model was applied to the data with examiners at level 1, candidates at level 2 and disciplines at level 3.

**Results:** Analyses are proceeding, but preliminary results indicate that about 32% of the total variance in examiner recommendation could be predicted using the five category groupings plus two candidate variables. In descending order of importance for examiner recommendation the category groupings were prescriptive instruction, formative instruction, positive summation, negative summation, and dialogic elements. The only candidate variables related to the recommendation were whether the candidate had been upgraded to a PhD from a masters degree (positively related), and whether the candidate was an overseas student (negatively). Discipline area and other candidate, supervision and examiner information were not related to the recommendation.

**Discussion and implications:** It is often difficult to relate what examiners write in their reports to the overall recommendation they make on the thesis being examined.

Clearly what is more important for one examiner may be less important for another and this cannot, with certainty, be known in advance for individual examiners. This study has begun to provide advice to research students and their supervisors about what aspects of examiner reports generally are related to recommendations – that is, presumably what is seen as more important. It also has implications for the possibility of examiner ‘training’. These study outcomes have a strong potential to influence what research candidates value and consequently to improve the learning environment and research training process for doctoral candidates.

**Clare Brett and Cauleen Stanley**  
**Canada**

**Beyond best practice: Promoting a knowledge building orientation toward technology enhanced curriculum development among preservice educators.**

The work to be reported here is part of a larger technology infusion initiative within the preservice teacher education program at OISE/UT. It combines development work on a shared curriculum database with professional development strategies designed to promote a knowledge building orientation among preservice faculty and instructors (approximately 200 people)--particularly notions of idea improvement, epistemic agency, and collective cognitive responsibility. The presentation will include examples from the curriculum database, demonstrating the features that encourage a "beyond best practice" approach. Additionally, we will present the principles and strategies guiding the professional development work to disseminate this approach. The project provides extended support to faculty and instructors to develop and contribute examples of research-informed learning objects (detailed lesson plans with supporting digital materials) used to teach pre-service candidates during their pre-service program as well as those that could be used in elementary and secondary classrooms. The resulting materials are uploaded to a shared SQL database, the design of which is currently being refined. Refinements include facilities for commentary and questions to be appended to any element of the multimedia curriculum documents; automatic notification to authors of user questions; author administrative access for revision and update of entries; and a moderated Knowledge Forum environment connected to the SQL database to provide ongoing support for professional development activities. These professional development activities will involve working with faculty within cohorts based on subject area of teaching in the preservice program--they have a common interest in the content and it creates a natural focus for ongoing collaboration. In series of small sessions, with clear online follow up activities, different examples from the shared repository will be used to illustrate how technology can be used to support a wide variety of learning outcomes, and faculty will be invited to discuss, critique and collaboratively design new modules, or try out existing examples in their own classrooms.

**Marie Josee Berger<sup>1</sup>, Sharon Lynne Bryant<sup>2</sup> and Andrew A. Timmins<sup>2</sup>**  
**<sup>1</sup>Canada, <sup>2</sup>Hong Kong, China**

### **Portfolio assessment in Higher Education: A case study of motivation and improving learning while building knowledge**

It is evident that results of traditional standardized tests characterized by pencil and paper formats, multiple-choice responses and time-restricted completion are not sufficient in determining how students engage in the learning process. There is a general belief that the emphasis on testing and grading does raise basic skills but fails to promote and measure higher-level thinking and problem solving (Broadfoot, 1991; McLaughlin, 1995). Based on the shared belief that portfolio assessment is an important alternative assessment strategy, a team of faculty members worked collaboratively focusing on student teachers motivation to learn and have shown portfolio assessment improves their learning (Bryant & Timmins, 2002). This paper focuses on that research and on how it has improved the quality of learning and has enhanced their knowledge of teaching and learning for students and staff during its implementation in higher education settings (Farr & Tone, 1994). Additionally the three authors have been working collaboratively in higher education on portfolio assessment publications and staff development activities based on the findings of this research and will report on these activities as well.

**Michael Christie**  
**Sweden**

### **Engendering good learning in groups**

In this paper the author reports on an educational development project aimed at building a model of good group work suitable for a University of Technology such as Chalmers. The project aims at creating and testing a model of good group-work that engenders quality learning and the development of specific and generic engineering capabilities. The model is intended to make group-work more equitable for minorities within groups and by doing so improve the learning experience of all students who participate in groupwork. For example, group-work involving men and women always entails, consciously or unconsciously, a gender aspect. Often this works against women. Salminen-Karlsson's report from Linköpings Technical University (1998) and Göransson's earlier report at Chalmers (1995) make this clear. The problem is not only about being outnumbered. Assumptions about male and female roles and capabilities play a part. As one woman student from M section at Chalmers explained: "When one does group-work there are always some guys who try to control everything" (Göransson, 1995:83). Women are subtly silenced during group discussions. This is not so much a deliberate exclusion but rather a lack of available space within discussions. Men are often louder, quicker to talk, quite sure of their opinions and pushy. It is not easy for women to steer or break into the group discussions. As the title suggests the project has gender issues as a focus but the main thrust is group work pedagogy. The project is particularly aimed at the early years of an engineering education. We argue that students can bring with them attitudes to group work that can undermine the efficacy of this type of learning. If the sort of model we intend to develop can be used early in the students engineering education we believe we can help establish good habits of group learning both in terms of equity and quality learning.

**Barbara de la Harpe and Alex Radloff**  
**Australia**

### **Challenges and opportunities for learning environments that support the development of ‘generic skills’**

Efforts to ensure that graduates leave university with the skills needed for career wide lifelong learning have been the focus of much activity in Australian universities for over a decade. In line with employer and graduate feedback, valued ‘generic skills’ include skills such as communication, problem-solving, critical thinking, information literacy and teamwork. In this paper we describe a number of projects we have been involved in aimed at changing learning environments to support student skill development as part of the discipline content, and their outcomes to date. The projects focus on helping instructors from different disciplines to identify skills important for their discipline and to integrate these into regular teaching through changes to subject content, teaching methodology and assessment. This task requires instructors to reflect on their current instructional goals and practices and where necessary, to change these. Specifically, they need to consider what constitutes effective learning environments according to current theory and research in student learning, that is, to change environments from content to process oriented and from teacher to student centred, and to align learning outcomes, learning activities and assessment tasks. We identify common themes and issues related to attempting such changes, which include gaining a shared understanding of skill development and student learning, commitment to and ownership of skill development, and recognition of the importance of cognitive, metacognitive, motivational and affective factors in creating learning environments that foster skill development. We draw on the Australian Universities Quality Assurance audit reports of more than a dozen universities to validate our findings and to provide a national perspective on the current status of ‘generic skill’ development initiatives. Finally, based on our experiences and those of others reported in the literature, we consider the ephemeral and fragile nature of attempts to optimise learning environments.

**Noel Entwistle**

**Plenary presentation**

**Teaching and learning in diverse university settings: conceptual frameworks and empirical findings**

This paper draws on an on-going major research project in Britain which has been exploring contrasts in the teaching-learning environments provided in five contrasting subject areas. Research studies have already provided a variety of conceptual frameworks designed to describe student learning and approaches to teaching, but most of work has been generic or limited to one or two subject areas. The great advantage we have in our project is the opportunity to work directly with university teachers in the five subject areas and see to what extent existing concepts and conceptual frameworks fit the situations in differing types of university and across disciplines. The project is entering its fourth and final year and we have collected a wealth of both quantitative and qualitative data. The paper will seek to draw from the on-going analyses insights to prompt discussion about the extent to which conceptual frameworks map onto the experience of staff and students experiencing the everyday pressures and constraints of university life.



**Haapalainen Päivi, Lonka Heikki and Naaranoja Marja  
Finland**

## **How to prevent project knowledge management failures**

This article discusses how the failures of construction projects could be prevented. The article is based on the findings of the PROLAB-project. The project seeks to find solutions for how the information can effectively be used in project management, specially in construction projects, what kind of procedures help the management of the knowledge and how the obstacles for efficient ways of administrating the information can be removed. These obstacles can be either related to use of new technology or to organization culture. Even very simple building project contains an enormous amount of information. One reason for failures of the projects is certainly the problems with knowledge management. One solution to this could be information systems. Naaranoja (2001) discovers in her research that information systems are not developed enough to be able to understand the information they are handling or create new understanding based on the old one. It is possible that they will never be able to do this. Thus information systems can only be a helping tool, thinking must be done by humans. Even the project utilizing the most sophisticated information systems have succeeded or failed based on human actions. Human brain is able to handle huge amounts of information. Therefore if only people with right education and right properties are selected for projects then they should succeed. However, this is not the truth. Projects with top experts have failed. Human thinking is very defective and deduction mistakes are common (Tversky ja Kahneman 1974). We have difficulties dealing with situations with multiple variables. Stress, depression, and circumstances can affect our thinking (Kobasa et al. 1982). We may succeed in a good day but there are not many of them. Researching individual cognition is not enough if we want to develop project work. But if we can't rely on an individual, surely we can trust a group of people, a team? If a well-trained team has enough time for problem solving, it would end up with a good solution, wouldn't it? Decision making related literature is, however, filled with opposite examples (Parkin and James 1996). Tension between team members may destroy the teamwork, but also too much consensus may be bad and lead to "groupthink" -situations (Janis and Mann 1977; Fink et al. 1971). Team thinking may be as problematic as the thinking of an individual: we don't examine all the possibilities and accept the first solution without posing enough questions (Busby 1999). It seems that we can't solve knowledge management problems in a project by using information systems or by researching individual cognition or teamwork. Is there any perspective that could help? The viewpoint for the research is socially and physically distributed cognition. The aim of the research is to show how communication between different parties should be arranged so that the relevant information is passed from one to another and also understood in the right way.

**Kai Hakkarainen, Kirsti Lonka and Sami Paavola**  
Finland

## **Networked Intelligence: Psychological implications of Actor-Network Theory**

Bruno Latour's and others' actor-network theories explain scientific activity and sociotechnical change in terms of heterogeneous networks of people and artifacts. This approach may be criticized because it does not at all take human expertise or participants' intellectual competencies into consideration but tends to reduce everything to network structures. Even if this kind of psychological criticism is valid, its relevance is constrained by the fact that it almost always is based on examining collective intelligence embedded in actor-networks through an individualist lens. Psychological criticism typically represents *weak distributed cognition* that considers human mind as the only source of intelligence of which other people and knowledge embedded in artifacts merely supports. *Strong distributed cognition*, in turn, examines intelligent activity, in the spirit of cultural-historical activity theory, as a process distributed among dynamic activity systems consisting in humans and artifacts. This latter unlike the former approach has seriously worked for overcoming *the centralized mindset* (Resnick, 1994) that guides investigators to explain complex organized intellectual activity as coordinated, managed and orchestrated by a single center (human mind). The present investigators examine psychological implications of strong distributed cognition by developing framework of *networked intelligence*. They propose that reduction of intelligence to an individual attribute is a category mistake based on the centralized mindset. The authors argue that intellectual performance is a measure of the strength of actor-network and cultural learning taking place in it, rather than represent a mystic dimension of human mind. The framework of networked intelligence allows investigators to simultaneously consider individual and collective intelligence. Human beings are able to organize their intellectual activity in relation to other people and cultural-historically developed tools into a seamlessly integrated higher-level system that has systemic properties different from individual attributes. Productive functioning in this kind of network requires a high level of expertise relying on creative *cognitive adaptation* constantly working at the edge of one's competence. Consequently, networked intelligence presupposes human competencies that emerge through co-evolution of individuals and communities; thereby it does not only represent characteristics of a network. In this process, the participants actively and creatively shape the actor-network, develop new intellectual skills and competencies anchored in actor-network, and continuously adapt their activities to gradually transforming network. Simultaneously it is essential to acknowledge that in dynamically changing environments emerge tensions and disturbances between elements of actor-networks (agents and tools) that push the participants to develop new social practices and develop new tools.

**Pirita Seitamaa-Hakkarainen, Kai Hakkarainen, Maiju Iivonen, Marianne Bollström-Huttunen and Ritva Engeström**  
Finland

## **Practices of teacher guidance in the Computer Supported Collaborative Learning**

In the context of computer supported collaborative learning (CSCL) teachers are orienting their efforts towards supporting higher-level processes of inquiry in education. The research described in this paper is a case study of a 4<sup>th</sup>-5<sup>th</sup> grade teacher's (Marianne) efforts to create classroom activities and social practices that support progressive-inquiry learning (Hakkarainen, 2003) and creation of a *knowledge building* community (Bereiter, 2002; Scardamalia, 2002). In this kind of inquiry learning, the teacher's role is to support students' deepening question-explanation process and a shared process of knowledge building through computer supported collaborative learning environments, such as Knowledge Forum. While there is a long tradition in CSCL research of analyzing products and processes in virtual learning environments, only a few studies have been published concerning how teacher's and students' actual classroom practices facilitate knowledge building. The present study is part of a larger three-term research project concerning computer-supported learning at the elementary level of education. The progressive-inquiry project to be reported was started in a Finnish grade 4 class in the Spring 2003. In the first phase of the project, the students (N=30) were asked to examine and analyze the meaning and role of selected artefacts within a cultural context. The project continued in the Autumn 2003, and students (now at grade 5) were focusing on investigating physical-scientific phenomena (e.g., the lever, conduction of heat, light,) as related to the artefacts. The present analysis relies on video recordings of the teacher's interaction with the students, and teacher's reflective project diaries. For our analysis, we selected all those video episodes (lasting 5 to 30 minutes) that represented teacher guidance and teacher's and students' joint discussions. The classification schema for video segments consisted of the following categories: 1) Specific type of teacher's pedagogical activity, 2) Organization of classroom activities (e.g., teacher-driven, joint discussion), 3) Role of shared knowledge-building (KB) view (projected on the wall by a video projector), and 4) Instructional tools used by the teacher. The teacher's project diaries were used to complement the video analysis. The preliminary results indicated that the teacher used shared KB-view extensively during her teaching sessions; further, she actively helped students connect their learning processes to their former educational activities and to future actions. Knowledge Forum provided an important tool for the knowledge-building community in question with respect to constructing shared knowledge, rising above earlier inquiries, and guiding the current inquiry.

**Pirita Seitamaa-Hakkarainen, Henna Lahti and Kai Hakkarainen  
Finland**

## **Virtual Design Studio as learning environment**

Designing has a more important role in the 'knowledge society' in which design constitutes an essential aspect of the value of products that are more and more often tailored to customers' specific needs. To respond to today's requirements, effective design education must prepare students to work in teams that include specialists from various disciplines. As the complexity of artefacts being designed increases, involvement of the users becomes more and more important for ensuring usability of the product. Further, empirical analyses of collaboration in networked virtual design studios have appeared recently. The emergence of environments for CSCL encourages one to explore the possibilities of virtual design studios. In order to be able to function productively in teams representing heterogeneous expertise, designers need to have experiences of breaking their boundaries during their education. In this paper we describe our three design experiments where the virtual design studios have been used to educate future designers. The starting point of the studies is the knowledge-building model (Bereiter, 2002). To develop a relevant design education program and pedagogical model and tools for supporting Virtual Design Studio our aims were: 1) to create and develop an authentic and meaningful design context and tasks for students, 2) to create community of multidisciplinary experts and to support participatory design in virtual design studio, 3) to support conceptualization of the design constraints and design ideas and to support visual designing, and 4) to rise above and reuse of the previous shared database to construct new design cycle. In the first design course students designed clothing for the prematurely born babies. In the second design course the students designed conference bags together with the end user. In the third virtual design studio the students collaborated with the multidisciplinary experts in order to create tactual books for visually impaired children. In this paper we will shortly describe the construction of the virtual design studio phases, our efforts to support participatory designing, the role of the design scaffolds and role of the teachers' and experts' community in projects.

**Tuula Heiskanen**  
**Finland**

## **Reflections on the preconditions of knowledge building communities**

The concept of "knowledge building communities" (KBC) is taken for this presentation from Bereiter and Scardamalia (1993). They have introduced the concept as related to the process of expertise. They define the concept through examples. According to them, examples of KBC are successful research teams and industrial firms in high-technology fields. Distinctive for both types of communities is their striving for continually advancing the community's collective knowledge and skill. For Bereiter and Scardamalia, the key medium to create and maintain KBC is progressive discourse, which they define as a type of discussion that results in the advancement of knowledge. I analyse with two examples preconditions of a KBC. The first example highlights some obstacles and the second supports factors in the route to create a KBC.

Example 1. Riitta Kuusinen's (2001, 2004) case relates to an action research project whose aim was to examine modes of web-assisted information processing. The empirical phase involved the creation of a web forum for about seventy ongoing projects, all funded by ESF. The joint task for all the projects was to study, from different angles, changes in working life. The aim was that as a result of the interaction between the projects a shared public forum could be created, which would convey the latest "anticipatory information" for policy makers and others that might benefit from knowledge regarding future needs of working life. The shared knowledge processing proved very difficult. The case brings forth factors which regulate shared information/knowledge processing and which may impede it, altogether.

Example 2. The second case relates to an education program that was offered to professionals working in the public sector and interested in the problems involved in developing the public sector. The presentation illustrates how the discussions proceeded in a multidisciplinary and multiprofessional setting and what factors helped the development towards a progressive discourse. The two examples allow bringing forth cognitive, interpersonal and organisational factors that may support or hinder creation of a knowledge building community.

**Laura Helle and Päivi Tynjälä**  
**Finland**

### **Facilitating work-based project learning**

It has been acknowledged that there is very little serious research on the supervision of project-based learning (Askeland, 1999, 249; Vesterinen, 2001). Our starting point is that research on work-based project-learning could profit from models generated within studies of student regulation of learning. Of special interest for our purposes is the theory by Vermunt & Verloop (1999) on the interplay between teacher regulation and student self-regulation of learning processes. Based on the framework by Vermunt & Verloop the ultimate goal of this study is to present a grounded theory on the role and action possibilities of the faculty instructor in facilitating work-based learning in different action contexts. The outcome of the work-based learning process will be also discussed. Data have been gathered on a work-based project course in information systems design at the University of Jyväskylä. Twelve teams composed of four to five students received an authentic project assignment related to information systems from a client. They completed the assignment under the supervision of a faculty instructor and a representative of the client during a period of six months (400 hours). The students (n=46/59), the instructors (n=4/4) and the client representatives (n=4/12) were interviewed. The data has been transcribed and part of it has been analyzed using the grounded theory procedure as described by Corbin & Strauss (1990). The preliminary results reveal how the framework based on the work by Vermunt & Verloop (1999) can be used for explaining differences found in facilitation of work-based learning. Results also suggest that the authentic business environment affords definitely worthwhile, but not all embracing opportunities for learning.

**Laura Hirsto**  
**Finland**

### **Long-term learning groups in higher education: practical and theoretical perspectives**

The use of the intensive small group in the studies lies in the socio-constructivist view in which learning is seen as participation in actual communities (e.g. Handbook of educational psychology 1996). This learning can be seen as a process of active participation instead of a process of acquiring (see e.g. Sfard 1998, Wenger 1998). The functioning of the long-term group can be described in terms of community of learners, which rises from thinking of Leve and Wenger (Leve & Wenger 1991, Wenger 1998). In this paper some aspects of studying in that kind of long-term learning group are approached through an experiential teacher education program. In the program, teacher students engage in participation in an intensive small group in which they set goals for their studies and plan their studies. To provide students with tools to take care of their group communication and climate, studies start with an intensive phase of group work, in which group members discuss and test different roles, and analyse the climate and communication styles in their group. The aims in the long run are to enable a fertile, constructive and confidential climate in which student can negotiate shared meanings. There are many challenges this kind of approach sets for higher education processes. For example, small group based learning and teaching in this form require skills of self-regulation from the students on the level of the student, and on the level of the group. However, self-regulation or group-regulation has to be seen as something that develops slowly during the course of the studies. As Boegaerts (1997) argues, students who have been socialized into traditional schooling are not ready to begin studies that require self-regulation.

Allyson Holbrook, Kerry Dally, Anne Graham and Miranda Lawry  
Australia

## The perspectives of examiners on the processes of research higher degree supervision and examination in Fine Art

**Aims:** The study reported in this paper aimed to investigate what examiners regard as appropriate and desirable outcomes from a research higher degree in the discipline of Fine Art. This perspective gives an insight into the types of learning environments that are conducive to enhancing art practice as well as developing research skills in an arena where the higher degree award is a relatively new phenomenon.

**Theoretical Framework:** The recent merger of art schools into academic institutions and the consequent proliferation of higher degree courses in the visual arts has created pressure for these courses to justify that their research content ‘measures up’ to more traditional research practices (Ball, 2001). In order for research practice in Fine Art higher degrees and particularly the doctorate to gain legitimacy as an equivalent qualification it is necessary to firstly, define how this research is conducted and secondly, to ensure that effective research training and supervision is being provided.

**Research methodology:** Two approaches were adopted. Firstly, 30 Fine Art examiner reports were compared to 600 examination reports from other disciplines in order to investigate whether examiner expectations about the content and quality of research higher degree awards differ across disciplines. Secondly, interviews were conducted with a small sample of Fine Art examiners in order to elicit information about what constitutes desirable outcomes and appropriate standards in higher degree Fine Art courses as well as how institutions and supervisors may structure courses and/or support students in order to facilitate students’ research training and development.

**Results and Discussion:** The results of the comparison of examiner reports revealed that Fine Art examiners wrote significantly shorter reports, devoted less comment to issues of research methodology, provided less instructive comment on how the work could be improved, but provided more praise and positive comments than examiners from other disciplines. The interviews are in the process of being transcribed, but preliminary analyses suggest that examiners consider that successful art research practice involves similar steps to traditional research practice, that is, the identification of a problem or issue, locating this issue in the current field, exploring and resolving the issue and communicating this process both through the art work and the exegesis.

**Practical Implications:** This study will provide valuable insights into the learning environments that are most conducive to supporting effective research training in fields where research practice takes a non-traditional form.



**Timo Honkela<sup>1</sup>, Annamari Heikkilä<sup>1</sup> and Kirsti Lonka<sup>2</sup>**  
**<sup>1</sup>Finland, <sup>2</sup>Sweden**

## **Modeling motivational factors in learning**

Artificial neural networks in general and the self-organizing map (Kohonen 2001) in particular provides means for modelling constructivistic learning processes (Honkela et al. 2000). The self-organizing map appears to provide a more realistic model of certain aspects of human learning than many alternative models, which are often based on the idea of learning as memorizing facts or propositional structures. In this article, we present a survey of research on motivational factors in learning (consider, e.g., Boekaerts 1999, Hidi and Baird 1986, Järvelä et al. 2001), analysis of empirical data related to the theme, and a framework for computational modeling of motivation. Central aspects include contextuality and the role of emotions.

**Gordon Joughin**  
**China**

### **Oral assessment from the student's perspective**

The role of assessment in determining how students go about studying is well established (for example, Biggs, 1999; Boud, 1995; Miller & Parlett, 1973; Ramsden, 1992; Snyder, 1971). The differential effects of different forms of assessment are also well documented (for example, Meyer 1934, 1935; Silvey, 1951; Scouller, 1998; Tang, 1994; Thomas & Bain, 1984). However, until recently, the literature on assessment has not addressed how students experience a common form of assessment, namely oral assessment. A phenomenographic study of students' experience of oral assessment identified six aspects of oral assessment that figured strongly in students' descriptions of their assessment. These aspects were the students' underlying intention in preparing for assessment, their conception of the subject matter they were studying, their experience of interaction, their feelings, their sense of audience, and the comparisons they made between written and oral assessment formats. Each aspect could be experienced in a variety of ways. For example, students may have a limited sense of interaction and see the assessment as a one-way presentation or they may see the assessment as highly interactive, involving probing questions that will test their understanding. Students' conceptions of oral assessment can be described in terms of the variation in ways of experiencing each of these aspects. The ways in which students can experience critical aspects of oral assessment may stand in contrast to the ways in which lecturers see these aspects. Students' ways of experiencing them are considered in the context of dimensions of oral assessment previously identified from lecturers' perspectives (Joughin, 1999). These contrasting perceptions have important implications for learning and teaching, as well as for assessment.

**Sinikka Kaartinen**  
**Finland**

## **Meaningfulness via participation: Sociocultural practices for teacher learning and development**

Sociocultural views of learning and development have aroused educational interest in teacher education. However, we lack information about how participants experience themselves as learners of teachership in socioculturally oriented teacher education courses. Therefore, the purpose of this paper is to investigate processes related to student teachers' learning experiences in classroom contexts. The theoretical approach of this study is based on the sociocultural approach to learning and development, which holds a conception of the learner as a cultural and historical subject, embedded within and constituted by a network of social relationships and interaction within the culture in question (Vygotsky, 1962; 1978; Wertsch, 1991). Methodologically, this study applies interpretative research methods in analysing participants' experiences embedded in the narrative stories of their learning. This paper reports a qualitative case study following a three-step research design: pre-narrative, student-teacher participation and post-narrative in order to highlight the processes involved in teacher learning and development. The data of the study consist of the student-teachers' written portfolios including documentation, self-narratives and analyses in terms of evaluation of specific aspects of their own past, present and future as learners of professional knowledge. In the analysis, the narrative data was divided into units on the basis of the structure and the content of the student-teachers' learning experiences. In this study, the progressive nature of the narratives was indicated by the changed voice reflecting the change in personal attitude, revealing student development in pedagogical and domain-specific questions. It seems evident on the basis of the findings that the practise as negotiated, rather than the practise as given, is an important condition for progressive teacher learning and development. The study sheds light on diverse paths of professional learning and development and provides valuable information for the design, implementation and evaluation of teacher education courses based on sociocultural learning theories.

**Minna Kaartinen-Koutaniemi**  
**Finland**

### **The development of scientific thinking in Higher Education**

The point of departure of this study is the fact that scientific thinking constitutes central goal of higher education. The purpose of this study is to deepen our understanding of what scientific thinking is and to discuss some applications for guideline of this in the university context. The aim is to construct an overall picture of the learning and development of scientific thinking during university education. Furthermore, the aim is to examine how the qualifications of scientific thinking could be defined in the curriculum. The theoretical frame is phenomenological and the results will be analysed on the basis of the Perry's model of the development of scientific thinking, the Habermas critical theory, and Watson and Glaser's theory of critical thinking. Participants are 40 students from different disciplines whose development will be followed during four years. The data will be collected in two interviews, two inquiries as measurements of critical thinking and learning diaries written regularly in BSCW database. The methods include a measurement with Watson and Glaser's test and survey of the interviews and diaries that will be analysed deductive-inductively with content analysis. The results of this follow-up study will enlighten what kind of different conception of knowledge and science, knowledge orientations and study orientations the students have as main components in the development of scientific thinking abilities. The analysis will concentrate on examining differences in the development of scientific thinking as well as different study- and learning paths. On the bases on these results the curriculum will be evaluated from the point of promoting the development of students' scientific thinking skills. The analysis will also concentrate on the significance of learning environments and instructional practices as best practices to support students' scientific thinking development. Practical implications will take place in the Resource Centre for the Development of Higher Education.

**Thérèse Laferrière**  
**Canada**

### **Preservice teachers' online progressive discourse about teaching in laptop classrooms**

The presentation will be on knowledge building as achieved by preservice teachers during a four-month long practicum in a PDS setting – a school-within-a-school program in which every student owns a laptop, and over a two-year period. Schön's (1983) approach to reflective practice was encouraged, and situated in authentic problems encountered in practice teaching. The only requirement that these students had to meet was to demonstrate, through verbal and online interaction, that they could be reflective practitioners. Most methods developed to study online discourse rely on quantitative measures (Anova, Manova, percentages, etc.) of qualitative categories. Some studies focus on critical thinking processes (Anderson and Garrison, 1995), analysis of patterns of participation (Howell-Richardson and Mellar, 1996; Bullen, 1998), content analysis of different sorts (Mowrer, 1996; Hara, Bonk and Angeli, 2000), teaching styles (Ahern, Peck and Laycock, 1992), social construction of knowledge (Gunawardena, Lowe and Anderson, 1997; Kanuka and Anderson, 1998), notions related to Vygotsky's zone of proximal development (Fahy, Crawford, Ally, Cookson, Keller and Prosser, 2000), and even argumentation (Marttunen, 1997). In addition, the unit of analysis varies from the phrase to a whole text (Rourke, Anderson, Garrison, and Archer, 2001). In this study, the Knowledge Forum Analytical Tool Kit was applied for quantitative analysis and the principles of knowledge building for qualitative analysis of their online transcripts. Results show that knowledge advancement in the conduct of laptop classrooms were made by student teachers, and that this knowledge is of use to others (incoming student teachers and teachers). In a number of different instances, they move beyond reflective practice, and became knowledge builders. The objectives of the presentation are as follows: 1) To show how preservice teachers can move beyond what is expected of them during student teaching, and 2) to document their progressive discourse, and 3) to draw implications for teacher education and professional development.

**Jiri Lallimo and Lasse Lipponen**

### **Future oriented actions in producing hybrid solutions**

This paper concentrates on the issue of knowledge advancement in multiprofessional teamwork. The focus of the study is to explore the territory where distributed expertise and areas of knowledge are merging. Data consists of a meeting with multiprofessional product development team of highly heterogeneous participants. The object of a multiprofessional composition was to produce new working practices and hybrid product solutions. That is, how do people with different domain knowledge, perspectives, and objects of activity merge their expertise and knowledge as new plans, suggestions or 'openings' to new hybrid solutions to a problem. The results suggest that in knowledge development different and (sometimes) controversial perspectives are negotiated through binding the mutually constitutive elements of past, present and future oriented actions.

Alexander Minnaert and Jan Vermunt  
The Netherlands

### Changing dissonance between student learning strategies and learning conceptions in the context of a student-oriented learning environment

This study focuses on the issue of theoretically incongruent learning patterns between learning strategies and learning conceptions. The phenomenon of what is now referred to as *dissonance* in students' learning patterns has its origins in a study by Meyer (1991) about individual differences. This study drew attention to patterns of learning engagement that were essentially theoretically not interpretable. For some (subgroups of) students, aspects of learning patterns that are theoretically incongruent with one another were actually empirically connected. In the last decades, e.g. many university students experienced a dissonance between the deep level learning strategies aimed at and the rather surface oriented type of assessments. A way to overcome this instructional dissonance was to redesign the university learning environment in line with the goals of process-oriented instruction (see Volet, McGill & Peers, 1995; Vermunt & Verloop, 1999; Vermunt & Minnaert, 2003). To evaluate the process of educational innovation towards more process-oriented education, a fine-grained, longitudinal study of students' stability and change in learning patterns was conducted. In this study, the changeability of dissonances between learning strategies and learning conceptions are focused upon. A longitudinal study was done among 244 first-year university students in an innovative, student oriented learning environment project. Students completed the Inventory of Learning Styles in the first and in the third trimester. A longitudinal within-subjects research design is used to analyse and interpret student learning patterns over time. Principal component analyses were performed on the total group of freshmen to compare the theoretically expected learning patterns with the learning patterns at Time 1 and at Time 2. Analysis showed that the amount of students reporting dissonances decreased significantly over time ( $z=2.17$ ;  $p=.03$ ), emphasizing the impact of the goals underlying the student-oriented learning environment project. To go beyond the actual understanding of the quantitative data, results of in-depth interviews will be elaborated. The study revealed interesting change patterns from dissonance to consonance. Early identification of these unfolding patterns may allow teachers to direct their coaching more effectively to at risk students and to critical episodes in the learning process.

**Anne Nevgi, Sari Lindblom-Ylänne and Liisa Postareff  
Finland**

### **The validation of the Approaches to Teaching Inventory (ATI) and the Motivational Strategies of Teaching Inventory (MSTI)**

The purpose of this study is to examine the validity of the two inventories: Approaches to Teaching Inventory (ATI) developed by Michael Prosser and Keith Trigwell (1999) and the Motivational Strategies of Teaching Inventory (MSTI) designed by Keith Trigwell, Paul Ashwin and Sari Lindblom-Ylänne (see Lindblom-Ylänne & Nevgi 2003). The latter inventory was designed in order to complement the ATI and thus form a new University Teaching Inventory (UTI). Meyer and Eley (2003) have criticised the ATI in terms of its empirical dimensionality and in terms of its development process. Meyer and Eley claim the ATI is not valid measurement for the approaches to teaching it is said to measure, and the basic rules of psychometric testing are not applied in the development process of ATI. The ATI comprises 16 items which form two conceptually discrete scales representing two different approaches to teaching: the conceptual change/student-focused approach and the information transmission/teacher-focused approach. These two subscales can be divided into more fine subscales; whether the subscale represents intention or strategy. The MSTI comprises of 16 items measuring three subscales; regulation strategies, self-efficacy, and task value. The respondents of study are volunteer teachers from different disciplines of University of Helsinki and Helsinki School of Economics and Business Administration. Their academic rank varies from assistant lecturer to professor. They were instructed to fill in the questionnaire first in relations to their main teaching (e.g. lecture) and then secondly in relation to their different teaching (e.g. seminar) situation. The confirmatory factor analysis is applied to the model of four factor solution of the ATI and three factor solution of the MSTI. Further, each factor will be examined separately for assumed unidimensionality. The effect of teaching context to factor solutions will be examined. The proposals to improve the inventories will be done based on the analyses.



**Anne Nevgi, Liisa Postareff and Sari Lindblom-Ylänne**  
**Finland**

### **The university teachers' motivational and self-efficacy beliefs and self-regulation skills of teaching**

The purpose of this study is to explore University teachers' motivational and self-efficacy beliefs concerning teaching in different disciplines. Teachers differ in their self-regulatory skills (eg. self-regulation versus external regulation) to manage the teaching and learning processes. Teachers' self-efficacy beliefs concern their conceptions of themselves as academically competent teacher. Teachers' interest to teaching varies and thus the involvement to the teaching process is experienced differently according to the perceived value of teaching activity. University teachers struggle between the demands of their research work and teaching, and this affects their involvement to teaching. Teachers' approaches to teaching and learning also vary. Teacher-focused teachers value the transmission of content of subject as the basic element of teaching. Student-focused teachers emphasize their students learning as a main goal of their teaching. The data of study consists of surveys and interviews of the teachers of different disciplines of the University of Helsinki. Half of the participants have participated in the pedagogical training courses and half of them have no pedagogical training. Their academic rank varies from assistant lecturer to professor. The participants were instructed to fill in the questionnaire first in relations to their main teaching (e.g. lecture) and then secondly in relation to their different teaching (e.g. seminar) situation. Further, half of the participants have been interviewed. The descriptive and comparative analyses are done, the inventories are examined with factor analyses, and the interviews are content analysed. The comparisons are done between the pedagogically trained and not-trained teachers, between teacher-focused and student-focused teachers, and between teachers of different disciplines in order to find how the pedagogical training and teaching experience, and research interests affect to the teachers' motivational and self-efficacy beliefs and self-regulation skills. The results of the study will be presented. The implications for instruction and teachers' pedagogical training will be discussed.

Patil Nivritti, Hong Kong  
China

### **Traditional bedside teaching and clinical PBL - Are they compatible?**

There are unfortunate perceptions that: (1) PBL tutorials are paper-based, (2) PBL is best held in purpose-built tutorial rooms and are not suitable for clinical setting, (3) PBL process is time consuming and, therefore, impractical for busy clinicians, (4) PBL was only introduced to make basic sciences learning interesting and enjoyable in pre-clinical years, (5) Traditional bedside teaching is PBL! Realities: (1) Clinicians may not be involved in PBL tutorials and may be ignorant of the 'PBL process' and underlying philosophy. (2) PBL is equally best suited for real patient triggers in clinical setting as it is for paper-based scenarios. (3) Clinicians as 'content experts' can be trained to become effective 'PBL facilitators'. (4) Students who experienced PBL in basic sciences welcome and appreciate PBL in clinical years. The author will present the findings of the evaluation from the University of Hong Kong (HKU) medical faculty students. How to conduct PBL in the Clinical settings such as surgical/medical wards? (1) Students on their own or clinician can select a patient from the ward. (2) First tutorial can be conducted by the students themselves based on the presentation of patient to their own group in absence or presence of tutor. (3) Second tutorial could be in pure PBL format with clinicians acting as a facilitator only or in integrated approach where a clinician acts as facilitator and subject expert as and when necessary. Integrated approach works best-HKU experience.

## **Workshop**

**Ava Numminen**  
**Finland**

### **Does an adult learn to sing in tune? A workshop on singing blocks and their opening**

The purpose of my research is to explain poor pitch singing as a phenomenon and to develop a pedagogical method how to teach people sing in tune. In the present workshop I will demonstrate these techniques in this workshop.

The framework of the study lies in cultural psychology. Methodologically it is an action research.

There are several interacting standpoints in the study: culture (how singing and musicality are understood in a culture), individual experiences in singing, perceptual processes (cognition of music) and production of singing (physiological processes).

The empirical part of the work was to teach both in a group and individually ten adult people who were labeled as monotones. They had not sung for years or even decades. They had difficulties in hearing tone frequencies (perceptual blocks), in producing them correctly while singing (production blocks) and they were afraid to sing because of humiliating experiences as a child because of their singing (emotional blocks). Some had all these problems, some suffered mainly from emotional blocks.

Preliminary results show that singing is not an on-off- phenomenon: if a person cannot sing in tune it does'nt mean that she/he could not learn it. Even the ability to differentiate tone frequencies can be improved by practicing singing. In a short time span remarkable progress in singing skills was demonstrated. The range of voice enhanced and the ability to sing correctly was demonstrated by every participant in some way. Participants felt happy because of finding their singing voices which for many of them was important also in a professional sense. Amateur choir singers assessed participants' singing skills on the ground of a sample on a cd-record. They found participants' singing abilities improved after teaching periods compared to skills before the project. The difference was significant ( $p < 0.5$ ).

The atmosphere of the teaching environment must be encouraging, safe and not focused on errors but on success. Private tuition where one can get direct feedback from a teacher is important. A teacher must believe on the learning process and act patiently.

Sami Paavola and Kai Hakkarainen  
Finland

## Meditation through conceptual artefacts

In research projects concerning innovative knowledge communities, the present investigators have maintained that, besides the acquisition metaphor of learning (mentalistic “monological approach”) and the participation metaphor (“dialogical approach”) (Sfard 1998), one has to differentiate a *knowledge-creation metaphor* (“triological approach”). This latter focuses on how new knowledge, practices, products, etc. are developed systematically in long-term processes (Paavola, Lipponen & Hakkarainen 2002; Hakkarainen, Palonen, Paavola, & Lehtinen, in press). We propose that, for instance, Carl Bereiter’s knowledge building approach and Yrjö Engeström’s model of expansive learning represent essential aspect of the third metaphor of learning. A defining character of the knowledge-creation approach is to highlight the role of *mediation* in epistemology. This means that intelligent activity in general and knowledge creation in particular are mediated processes that are organized around shared objects of activity. Models of innovative knowledge communities aim at avoiding Cartesian dualisms by bringing in elements of mediation, and this concerns both the dualism between individual (mind) and matter, and the dualism between individual (mind) and culture. Bereiter’s model emphasizes the role of *conceptual* artifacts, which belong to Popperian World 3, in distinction to World 2 (mental states) and World 1 (physical reality). Activity theory emphasizes mediation by *tools* and *signs*, and the focus is on *material* artifacts and *practices* but also on conceptual models. In our paper we compare these different theories, and examine the meaning of conceptual artifacts for understanding the epistemology of the knowledge-creation approach. We also discuss the challenges that this kind of approach faces when applied to empirical research, especially in order to analyze computer supported collaborative learning.

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**<sup>1</sup>Finland, <sup>2</sup>Sweden**

### **Exploring quality in Higher Education in three Nordic universities. Teacher's perspective**

This study focuses on exploring approaches to teaching in medicine in three different contexts. The aim is to examine what is important in teaching in different contexts from the academics' point of view, and what means are used to enhance teaching. The theoretical background of this research is based on quality enhancement consisting of three different elements: 1. constructive alignment in teaching, 2. the ways of enhancing quality (e.g. support from the department) and 3. the quality impediments (e.g. institution priorities) (Biggs 2001). The data will be collected by interviewing pre-clinical and clinical teachers in cardiology in the University of Helsinki, Karolinska Institutet and the University of Turku. Five to six semi-structured interviews in each participating university are planned. The education structure in medicine varies in the focal universities. This may have an influence on what is considered effective teaching. They may all have shared features of what is considered good teaching, and conceptions about how to enhance it. The results are vital when developing a quality assurance system for higher education, as it is necessary to define the quality of Higher Education before focusing on its assurance. The study will enlighten the definition of quality in teaching in one particular discipline.

**Donald Philip**  
Canada

## **The role of networks in the use of knowledge forum and knowledge building**

Recent work on the theory of networks has resulted in a greater understanding of how the structure of networks is important in the flow of information. Networks show a number of universal characteristics including small-world properties, scale-free properties and the presence of highly connected hubs and these have been found in networks ranging from power grids, transport systems, etc. to biological and social networks. Recent discoveries will be reviewed (Amaral, Scala et al. 2000; Barabási, Albert et al. 2000; Jeong, Barabási et al. n.d.) and related to educational environments. Although much of this work has been done on very large networks ( $N=1000+$ ), it will be shown that smaller networks (the size of a class of students) also exhibit these effects (Dunne, Williams et al. 2002; Girvan and Newman 2002). Knowledge Forum (KF), a second generation descendent of the CSILE learning environment (Scardamalia and Bereiter 1991), is a groupware product in which students add text and graphical notes to work areas and through which learning proceeds by knowledge building. Previous studies of the social network created by the use of Knowledge Forum (Palonen and Hakkarainen 2000) have produced interesting results showing the trends of centrality and density in communication in KF. Results of a pilot study of KF database work areas will be given showing the network characteristics of linked notes as evidentiary traces of social networks in action, and early results of a study linking the spread of ideas through the social network in the classroom to the database will be presented. Implications of these findings for teachers will be discussed.

**Liisa Postareff, Anne Nevgi and Sari Lindblom-Ylänne**  
**Finland**

### **The effect of pedagogical courses on Approaches to Teaching in Higher Education**

The aim of this study is to find out how pedagogical courses for university teachers affect teachers' approaches to teaching in higher education. These approaches have two components: an intention or motive (why the teacher adopts a particular strategy) and a strategy (what the person does). Previous research by Trigwell and Prosser has shown that a Student-focused Strategy is associated with a Conceptual Change Intention, while a Teacher-focused Strategy is associated with an Information Transfer Intention. The traditional form of academic development focusing on teaching strategies is unlikely to be successful without an ongoing focus on the intentions which are associated with the strategy. So far there has not been profound research on how pedagogical courses affect the adoption of these intentions and strategies in higher education. This study also focuses on examining whether teachers' intentions and strategies are in line with one another or whether disintegrated combinations could be found. The hypothesis of this study is that pedagogical courses enhance the adoption of both Student-focused Strategy and Conceptual Change Intention. The data consist of questionnaires and interviews. The participants are teachers of the University of Helsinki representing different disciplines. Total number of teachers will be around 200, of which half have participated in pedagogical training and the other half have not. Around 80 semi-structured interviews will be conducted. It is important to analyse the effect of teachers' pedagogical courses on their approaches to teaching since the University of Helsinki made a decision that all new teachers have the possibility to attend pedagogical courses in order to improve teachers' pedagogical thinking and skills. Many other countries have also made similar decisions. This study will deepen our understanding of university teaching and gives important information about how to develop university teachers' pedagogical training.

**John Richardson**  
**United Kingdom**

### **Motivation, attitudes and approaches to studying**

In North America, research on student learning in higher education has tended to focus on the impact of variations in students' motivation and self-regulation upon their academic attainment. However, in other countries, researchers have been more concerned with the quality of student learning, particularly as reflected in students' approaches to studying. There has been relatively little research on how these two conceptual frameworks are related to one another. The present study was designed to address this question by examining the relationship between students' motivations and attitudes towards studying and the approaches to studying that they adopt on their courses. A postal survey was carried out of a random sample of 100 students who were taking each of 10 different courses by distance learning with the Open University in the United Kingdom. The survey included the motivations and attitudes scales taken from the Motivated Strategies and Learning Questionnaire (MSLQ: Pintrich et al., 1991) and the Revised Approaches to Studying Inventory (RASI: Entwistle et al. 2000). The results are still being analysed, but they will address a number of issues. First, can the MSLQ and the RASI be employed to understand variations in student learning in the distinctive context of distance education? Second, what relationships exist between students' scores on the MSLQ and their scores on the RASI? In particular, do students' motivations and attitudes predict their approaches to studying across different courses and within the same course? Finally, do students' scores on the MSLQ and the RASI predict their academic attainment on courses taken by distance learning?



**Hanne ten Berge, Stephan Ramaekers and Albert Pilot**  
**The Netherlands**

## **The design of cases that promote higher-order learning**

The use of realistic cases, problems and project assignments to promote self-directed and meaningful learning has received much attention in the last decades and in various forms. Case-based learning and assessment have in higher education substantially won ground. A crucial aspect of case-based learning is the actual design of the problem to be solved, as the way cases are designed to a large extent affects the way students go about their studying. Designing cases for higher-order learning appears for many like a daunting task; simply putting hands-on, case-centred activities in place does not ensure learning but could easily result in a scavenger hunt for information and answers. Researchers have considered many issues related to various forms of case-based learning. From the studies on case design a number of factors that have a larger impact on learning processes, comes to the fore: how realistic or *authentic* are those cases/assignments (*physical, functional* and *psychological fidelity*)? How *complex* or open (well- and ill-structured) should these problems be? Which types of cases are given when during the process of developing competence (*timing*)? Etc. The purpose of this study is to review recent research literature revealing the design features of cases that promote higher-order learning. In particular, this paper will address two questions: which case dimensions/features are crucial for learning? How do they relate to development of competencies? The theoretical framework builds on concepts concerning case-based and analogical reasoning as a source of knowledge generalisation and transfer, well- versus ill-structured problems and fidelity or the design of authentic problems. The results of this study will be available in March and represented in our paper. The paper focuses on indexation of design factors related to various levels and domains in Higher Education. The discussion will focus on the cohesion of the various design factors and the ways in which they relate to the level of the problem task.

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## **Variation in approaches to university teaching: the role of regulation and motivation**

In this study two aspects of university teaching were explored. First, variation in teachers' approaches to teaching was investigated using an adaptation of the Approaches to Teaching Inventory. Second, using the same inventory, teachers' motivation and interest in teaching, and their regulation of teaching a particular course, were related to their approach to the teaching of that course. The Approaches to Teaching Inventory (Prosser & Trigwell, 1999) has been used successfully in a number of contexts as a way of describing qualitative differences in university teaching on two fundamental dimensions – a conceptual change/student-focused approach, and an information transmission/teacher-focused approach. The 16-item version of the ATI was used in this study along with an additional 16 items developed for use with teachers from the Motivated Strategies for Learning Questionnaire (Pintrich, et al., 1989) and the Inventory of Perceived Instructional Activities (Vermetten, et al, 1999; Vermunt and van Rijswijk, 1988). The outcomes include a discussion of the relations between the new variables and qualitatively different approaches to teaching for over 300 teaching contexts, and how approaches to teaching vary in different contexts for over 90 teachers. The relational model used to describe the experience of teaching (Prosser & Trigwell, 1999) helps explain some of the variation in approaches to teaching in different contexts, but it does not include teachers' regulation or motivation in teaching. We conclude by discussing how these new variables contribute to the explanation of the variation in approaches to teaching. The results of these studies provide important information about how university teachers' approaches to teaching are related to their regulation of and motivation in teaching. Furthermore, knowledge about how teachers' approaches to teaching vary from one teaching context to another, may help us to design more powerful learning environments and enhance student learning in higher education.

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<sup>1</sup>Finland, <sup>2</sup>United Kingdom

### **Variation in approaches to teaching: the role of discipline and teaching context**

The aim of this study is twofold. First, the aim is to analyse how discipline is related to university teachers' approaches to teaching. Second, the aim is to explore the effects of teaching context on approaches to teaching. The participants of the study were 204 teachers from the University of Helsinki and Helsinki School of Economics and Business Administration and 136 teachers from the University of Oxford who returned *University teaching inventories*. Thus, altogether there were 340 teachers from a variety of disciplines in Finland and UK. The results showed that there was variation in both student- and teacher-focused dimensions of approaches to teaching across disciplines and across teaching contexts. These results confirm the relational nature of teachers' approaches to teaching.

**Pierre J. van Eijl, Peter de Voogd, Albert Pilot and Wilfried Admiraal**  
**The Netherlands**

### **Characteristics for the design of blended, computer supported collaborative learning**

In Higher Education the optimal design of a virtual learning environment (VLE) in courses is an important issue. The search is for an application that suits teamwork, provides synergy between F2F and virtual learning activities (the 'blending') and gives a substantial contribution to the learning process of the students (Lou et al., 2001; Woolfolk 2001). A further important criterion in the pedagogical design is that it should not require extra work for the teacher. Within the programme English of Utrecht University a pedagogical model has been developed, tested and evaluated that fits the above mentioned requirements rather well. It can be characterised as an example of blended learning, with optional collaborative learning and distributed assessment. As a follow-up of previous research the effectiveness of this model has now been tested for differential preference for students that work part-time or have to travel more than other students to join the lectures or to meet other students. Also we wanted to investigate the occurrence of free riding and plagiarism by students. These questions are investigated by a statistical analysis of the learning results, students' answers in a questionnaire and the messages on the discussion forum of the VLE. The results show that the pedagogical model works evenly well for the different types of students. Collaboration in course activities shows positive effects on learning results for high ranking students, and even more for medium ranking students. The 'social presence' on the VLE forum correlates positively with student satisfaction with the course. Free riding and plagiarism, as reported by the students themselves, can be characterised as a side phenomenon. Generalisation of the results of this research to other domains and learning aims is the next question.

## **Workshop**

**Pierre van Eijl, Sophie Wils, Wim Westerveld, Joost van Hoof, Patricia Huisman-Kleinherenbrink and Richard van der Stam**  
**The Netherlands**

### **Educational development and research in research-oriented project learning**

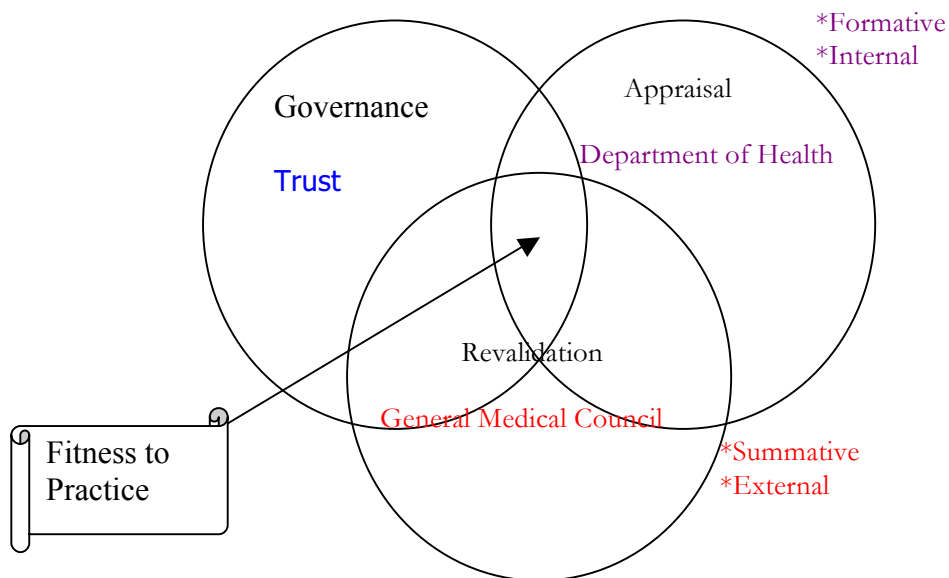
The wish to make higher education more efficient can lead to highly structured educational programmes and courses in universities. This can contradict the development of academic skills (in the sense of 'Bildung'), to teach students to work and think more independently and to teach them to work with complex tasks. In this workshop an alternative is presented where students are allowed to formulate a research question and carry out a small research project in a team to find an answer. Different theoretical angles are used with respect to the pedagogical design: guided discovery learning, collaborative learning, meta cognitive skills and working with distributed assessments. The course has been carried out and extensively evaluated by questionnaires, observations and document analysis. Students in the course attained the pre formulated learning objectives, namely research skills (formulating a research question, design and planning the research), teamwork skills and reporting skills. A series of important factors of success of this pedagogical design has been explicitly formulated. Workshop participants are invited to think themselves about questions concerning the educational design of this type of project learning, the evaluation and educational research (possibilities of a comparative research design, the effectiveness of the pedagogical design and guidance of the teachers, the possible specification of the research questions) and generalisations concerning the conceptual and methodological aspects. Feedback will be provided by the outcomes of the original research in a university physics programme, the contributions of the participants and the workshop leaders.

**Steven Wilkinson**  
**Canada**

## **Clinical Governance, Appraisal and Revalidation – How do they relate?**

Appraisal for doctors in England is an invention. It serves multiple agenda including quality assuring performance, identifying problems, reassuring the doctor and the public that the individual is practicing with the confidence and support of their colleagues. Appraisal and Revalidation requires significant changes in the management of doctors in England. However, change must be embarked upon cautiously. This paper will address the relationship among Governance, Appraisal and Revalidation. It will also address the introduction of Appraisal and use of peer rating for the purpose of personal and professional development. It will include an approach to training in Appraisal and embedding this into practice based on experience gained in 40 NHS Trusts.

### **The Relationship**



The diagram above shows the relationships between Governance, Appraisal and Revalidation (relicensing)

Governance – a trust driven data set

Appraisal – a DoH driven internal process for formative discussion

Revalidation – a GMC driven external process for summative evaluation

Revalidation seeks to use Appraisal to discover an individuals Fitness to Practice (as described by the GMC) using the 7 elements of Good Medical Practice

1. Good clinical care
2. Maintaining good medical practice
3. Teaching and training
4. Relationships with patients
5. Working with colleagues

6. Probity

7. Health

The information used to discover an individual's fitness to practice is provided by the individual in a portfolio. The task of the appraiser is to help the appraisee to collect and discuss the right information over a 5 year period. The task of the revalidator is to draw from this information a conclusion regarding the individual's demonstrated fitness to practice.

Peer Surveys: Surveys usually take the form of a questionnaire that is distributed to a selected group of people with the intention of collecting information, views and opinions from them. 360° surveys collect information about the performance and practice of an individual. They are referred to as '360°' because all those who work with the individual, including people higher up or lower down than them in the organisation and peers or allied colleagues have a view of the person being surveyed. This view provides insight to the person being surveyed as it tells them how others perceive them.

**Romain Zeiliger<sup>1</sup>, Liliane Esnault<sup>1</sup> and Marisa Ponti<sup>2</sup>**  
**<sup>1</sup>France, <sup>2</sup>Sweden**

## **Constructing knowledge as a system of relations**

Situative/pragmatist cognitive theories (e.g., Lave and Wenger, 1991) and sociological theories of knowledge (e.g., Berger and Luckmann, 1966) agree that individuals build their knowledge by actively engaging in dialogue and collaboration, through which they build their own systems of meanings and form their social identities. Following these theoretical frameworks, individuals need a social space where they mutually interact and participate in shared activities in order to make sense of the external world and construct knowledge. We examine how Nestor Navigator, a web browser and cartographer, supported the social dimension of the Transformational Process of information into knowledge (Diemers, 1999). We describe a qualitative descriptive case study on a mixed mode nine-week course on network organizations. The course was aimed to develop a complex networked knowledge system that comprises interacting individuals, their goals, “authentic” activities, and constructed knowledge, and supports the related transformational process. Groups of students worked through a network-based environment to gather web information on the theme of network organisations and “transform” it into meaningful knowledge. Nestor was used to create a graphical information space, based on the map metaphor, serving as a social mediator of knowledge construction. Not only does it allow individual, monologue-like publishing of pages and map creation, but more dialogic types of publishing including annotations and commentaries of existing maps. We argue that the hybrid web maps built by students (representing both individual experience and shared conceptual structures) can support dialogue and negotiation better than other kind of documents. Our emergent findings indicate that, while physical proximity constitutes the main “broad” social medium, specific activities as the one we are analyzing need their own “tailored” social space: an instantiation of the broader social space that takes into account the particular aspects of the learning task at hand and the mediating effect of the tool.



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<sup>1</sup>Canada, <sup>2</sup>China

## **A research on peer collaboration during scientific discovery learning based on computer simulation**

Effective learning and knowledge building is achieved through learners' active interactions with their social and physical environment. This study was dedicated to explore these social and physical interactions by looking at how learners interact with their peers and with a simulated world during scientific discovery learning. In most studies, scientific discovery learning is regarded as an individual scientific reasoning process that involves the generation of hypotheses and testing them against the collected evidence. The perspective of social interaction has however been overlooked to some extent. This study implemented an experiment among 44 eighth graders to investigate the effects of peer collaboration and questioning-explanation prompt on simulation-based scientific discovery learning. Questioning-explanation prompt was designed to remind learners the questions they can ask their partners or ask themselves during the exploration processes. These questions included: (1) What is the objective of this experiment? (2) How should the experiment be designed to achieve this objective? (3) What does this experiment mean? (4) How can the experiment support this conclusion? (5) I think the result doesn't support this conclusion, because... (6) I think this is not the exactly right conclusion, because... In the result, peer collaboration had prominent effect on the discovery outcomes, intuitive understandings and variable control skills. The influence of the questioning-explanation prompt was less clear, hence need to be addressed in depth in further research.

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