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Conference report: Thinking Outside the Box

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Between June 17 and 21, 2007, close to 1,500 international researchers, representing various disciplines, convened in Norrköping, Sweden, for **The 13th International Conference on Thinking**. The very first conference took place at the University of the South Pacific in Fiji in 1986, following an initiative by **Edward de Bono**.

“Thinking outside the box” is a buzzword of the ‘90s that has been carried over into the first decade of the twenty-first century. Allegedly originating from the Disney industries and Walt himself in the 1950s as a management tool, it is today used broadly to illustrate originality in many contexts. It could well be a tagline for the series of biannual conferences on thinking; here the general ambition is to develop new ways of thinking, of understanding the process of understanding, and to apply the new insights in a multidisciplinary multitude of situations.

Ingegerd Ericsson participated at the conference with a peer-reviewed paper based on her extensive and successful research on the effects of early and systematic motor training for children on their physical and intellectual development, and she took the opportunity to listen in on several other speakers, among them Hans Rosling, Jean-Pierre Changeux, Peter Gärdenfors and Howard Gardner. There were a total of 40 plenary and featured speakers, 26 peer-reviewed presentations and some 110 workshops. Dr. Ericsson notes the disappointing lack of attention to sport, body movement and the whole human being – “Sports” was featured in the program as one of the disciplines to be represented at the conference.

And another disappointment was, of course, the absence of Edward de Bono himself, following heart surgery.

The International Conference on Thinking focuses on new ways of thinking across different disciplines such as Arts, Business, Culture, Education, Health, Politics, Media, and Sports. It also emphasizes that innovation and creativity may result in new concepts and practice that could lead to new ways of thinking about old problems. The challenge is to create societies that enhance thinking about social and environmental development as well as economic and cultural development.

The first Thinking Conference took place in 1982 at the University of the South Pacific, where the author **Edward de Bono** talked about “Lateral Thinking”. The Fiji seminar grew to become *The First International Conference on Thinking* with 250 participants from 42 universities. Over 1500 delegates attended *The 12th International Conference*

on *Thinking* in Melbourne, July 4-8 2005.

At the 13th International Conference on Thinking in Norrköping, Sweden, June 17–21 2007, there were over two hundred presenters covering a wide range of contents and presentation formats. Most of the sessions were parallel sessions giving delegates a choice from up to fourteen different presentations. There were 40 plenary and featured speakers, 26 presenters of peer reviewed research papers, and more than 110 other workshops and presentations. (See [Appendix](#) over speeches and peer reviewed research papers. Many of the papers and presentations can be found on the [conference website](#).)

The presentations varied in types and quality, from just reading out loud from a written manuscript without any illustrations at all (Nussbaum) to a lively, hilarious and most spectacular presentation (Rosling). The latter received standing ovations from the whole audience after his most interesting speech on the development of global health over the last 50 years. **Hans Rosling** also illustrated the use and pedagogical value of the program Gapminder, when educating students on topics such as economic growth, child mortality and public health. He offered delegates the opportunity to download it free of charge from www.gapminder.org, where you can search statistics and watch them move to visualize world development concerning different aspects of global health.

The following provides a brief outline of a selection of the wide spectrum of speeches and paper presentations at the conference.

Jean-Pierre Changeux talked about a neural model for access to consciousness, thereby establishing plausible links between the molecular and cognitive levels with the general aim to account for the molecular and neuronal bases of behaviour. The aim was to establish a plausible bridge between humanities and the neuroscience on the basis of Paul Ricoeur's concept of the capable person as a rational and conscious individual engaged in social relationships and with personal identity, in other words taking "oneself as another". Will the neuroscience, in particular cognitive neuroscience, bring any help in our understanding of the capable person and conversely can one anticipate an impact of such debate on the evolution of the neuroscience? A first paradox is raised with the universal species-specific traits of the brain of *Homo sapiens* qualified by Aristotle as a "rational and social animal". The progress of genomics reveals a remarkable non-linear relationship between the fast increases of anatomical complexity of the brain (from primitive mammals up to humans) compared to the modest changes in genome organization which account for it.

Howard Gardner presented the major findings of a study on *Good work in education*, with particular emphasis on the achievement of good work in precollegiate education, collegiate education, and the training of scholars. Good work is work that is at once excellence in quality technically, personally engaging and meaningful, and carried out in a responsible and ethical manner. The study comprises how good work occurs, or fails to occur, in nine separate professions. He also described interventions that are being undertaken in secondary schools and colleges in the United States.

Peter Gärdenfors talked about how *Homo became Sapiens and the Evolution of Thinking*. Focus was on two aspects of human thinking: The capacity to plan for future goals – many animals can plan for present goals, but humans (and maybe the great apes to some extent) can plan for something that contradicts their current needs. The second was the abilities to understand the minds of others – a so called theory of mind. Humans seem to be unique in understanding the beliefs of others. Human language depends on these two capacities, according to Gärdenfors. It is therefore no wonder that *Homo Sapiens* is the only species with a language. These capacities opened up for new forms of cooperation. Advanced forms of cooperation are necessary to create and maintain the culture, societies and technologies that are unique for humans.

Art Costa made two presentations, *Five thoughts for a more thought-full curriculum* and *Teaching and assessing habits of mind*. Educators recognize the growing need for informed, skilled and compassionate citizens who value truth, openness, creativity, interdependence, balance and love as well as the search for personal and spiritual freedom in all areas of one's life. This demands that the school's curriculum must be open and flexible enough to accommodate these new perspectives. Five themes were presented as "lenses" with which to view a thought-filled curriculum. Earlier education focused on teaching students to know the right answers in tests. Today teachers also need to prepare students for the tests of life. Teachers were encouraged to use scientific words in the classroom, e.g. *predict, analyze, evidence, hypothesis etc.*, since "[o]ne's intelligence is the sum of one's habits of mind" (Lauren B. Resnick, 2001). When students

learn to think about their thinking (meta-cognition) thinking together and “thinking aloud is allowed”. Thinking big and long-ranged is encouraged, since “The best way to predict the future is to invent it” (Alan Kay).

Martin Ingvar walked a lot when he talked about *Rationalizing thinking by means of memory consolidation*. He walked when he talked about automatization of brain processes and mentioned walking, and learning how to ride a bike, as examples. He also talked about the stability-plasticity dilemma and learning in terms of adaptation, automatization and consolidation. Learning can be declarative (with high cortical dependence and simulations in the frontal lobes) or non declarative (implicit, with low cortical dependence). Memory consolidation is a process that involves reduction of meta-information and considerable stereotyping of the memory content. It seems that this process may be substantially augmented by timed repetitions of exposure to a material. On the brain systems level, lately functional imaging has led to considerable advances in the understanding of the functional anatomical underpinnings of memory. The concept of multiple interdependent memory systems has proven to be a fruitful model for human memory, according to Ingvar.

Bodil Jönsson gave a speech on *Lived health, illness or disability*. During the information age there have been operational changes in the sectors of healthcare, disability and medication – better information, second opinions, e-prescriptions, new forms for distribution, etc. However, there are other levels than the operational to consider. The lived health and illness of a person will increasingly influence the course that health as well as illness takes. Although sometimes labeled “subjective” by the professionals, it could be reconsidered and given due status as the experienced health and illness. The acronym “FACE” might be used as a reminder: Functioning is not the same as Enabling but is strongly influenced by Attitudes as well as by the sense of being in Control, i.e. F = F(ACE). On the experiential side, the lived side, there is a need for new concepts, new personal measuring methods, new formulations of demands based on recommendations and medication that is subordinated to the life you want to live. The patient Community of Practice requires tools and opportunities to develop its knowledge as has been the case for centuries for the professional community of practice.

David Perkins gave two very well-attended sessions (some speakers really talk well, captivating on almost any subject).

The thoughtful Will. We have all said to ourselves something like, “I know what to do but I can’t get myself to do it!” The “it” might be an exercise program, a diet, an awkward conversation, or any number of challenges that come up in our everyday lives. Informally we talk about such dilemmas as matters of the will -- we lack the willpower. Research now shows that the will can be looked upon as a resource in directing our lives. The question is: what kind of a resource is it? A sophisticated conception of the will treats it like a reservoir of strategic wisdom about self- management... the “thoughtful will.” The session explored how the thoughtful will works.

The five languages of War. Chronic conflicts plague many nations in Africa, the Middle East, and other parts of the world. Most of these conflicts appear to be self-defeating, with no likely winner but no easy exit either. So what are the patterns of thinking among the general public and the political elite that generate and sustain no-win conflicts? Five ‘languages of war’ were identified, the languages of *gain and god, dominance and resistance, good and evil, regrettable necessity, and zealous allegiance*. This session explores how the five languages stir deep currents of human thought and feeling and how political figures use them to inflame passions and inspire commitment. The prospects of peace were examined and conditions for a more peaceful world were discussed. Perkins quoted Gandhi’s answer to the question: “What is your view of Western Civilization?” The answer was: “I think it would be a very good idea.”

Hans-Åke Scherp is the scientific leader of a research and development project together with 800 schools all over Sweden. The topic of the session was *School leadership and problem based school development*. Teachers emphasize the importance of clarity with the pedagogical vision of the school and that it is important that school leaders both have a good knowledge and a deep understanding. To be able to build up a deeper understanding of the daily pedagogical work, a school leader needs to understand the sense making conceptions that compose the whole from which teachers understand and handle the different situations they encounter. Results from the research project in a network of 800 schools in 40 Swedish municipalities were presented. 679 pre-school teachers, 1460 secondary school teachers, and 220 upper secondary school teachers were asked to write down the most important factors for learning to occur. The three most common answers concerning teaching were: 1. Develop good relations, 2. Relate to pupil’s questions, 3. Give feedback.

Lars Björklund talked about *the Intuitive practitioner: Cognitive aspects on the development of Expertise*. The

expert's know how or procedural knowledge is often hidden even for him or her self, it is tacit. Björklund showed new aspects of experience based learning and the development of expertise. Results from brain imaging studies and from neuropsychology give reason to believe that experts utilize non declarative, implicit memories to perform better. New ways of understanding tacit knowledge, intuition and holistic perception were presented.

Ingegerd Ericsson presented the intervention and research results from the “MUGI project – Motorisk Utveckling som Grund för Inläring” and the “Bunkeflo Project – Promoting a Healthy Lifestyle”, where the pupils have Physical Education on the schedule every school day and also extra motor training when needed. In the doctoral thesis “Motor skills, attention and academic achievements”, effects of increased physical activity and motor training in the Bunkeflo project are described during the first three school years. The study was hypothetic-deductive and had three hypotheses: children's (1) motor skills, (2) attention, and (3) academic achievements in Swedish and Mathematics, will improve with extended physical activity and extra motor training in school. Results showed positive effects on motor skills, attention and academic achievements in Swedish and Mathematics. The conclusions are that schools both could and ought to do more to stimulate children's motor development since motor training could be of importance to balance, coordination and academic achievements. There is a need of qualified motor training in pre schools, schools and sport societies as well as motor skill observations at school start. There is also a need of extra motor training for children who have motor skill deficits. Teachers and pre school teachers need education in how to observe and stimulate children's motor development. Adults who work with children need to experience pleasure and joy in physical activities for themselves as well as together with the children. More information about the study can be found on <http://www.mugi.se> (in Swedish).

There are now 1, 100 schools in the Bunkeflo network trying to do something similar with extended physical education and motor training. The curriculum for the Swedish compulsory school received amendments 2003:

The school shall strive to offer all students daily physical activity within the scope of the entire school day.
(Lpo 94)

The school shall also strive to give upper secondary/high school students opportunities to engage in regular physical activity. (Voluntary School Forms Lpf 94)

In 2003 the NCFE National Center for Promotion of Physical Activity in Children and Youth was started. In 2004 Handslaget (“The Handshake”) was initiated by the Swedish Government's who put 1, 000, 000, 000 SEK over a four year period as a handshake with the Swedish Sports Confederation, RF, in order to get children and young people more physically active. The new Government puts 500, 000, 000 SEK each year for an additional four years in the so called Idrottslyftet (“The Sports Lift”) for the same purposes. These events are all positive and one has to be optimistic for the future, even if there is still much more work to be done in educating children and young people and promoting a healthy life style, including a life long interest in being physically active.

M. Griffiths, S. Bevins, L. Williams & J. Quartly from Cardiff High School presented new innovations and initiatives which have improved examination results despite a more diverse population at Cardiff High School over the last seven years. The 2007 Estyn Inspection Report of the school described examination results as outstanding and made positive reference to high quality teaching and learning, which motivates and challenges, and a pervasive research culture. A Thinking for Learning course has been launched successfully, aimed at developing habits of mind that lead to students becoming resilient, independent learners.

Charlene Tan explained how music videos or MTV can be used creatively to teach critical reasoning, which refers to the identification, analysis and evaluation of arguments. Different types of knowledge were portrayed, e.g. knowledge by information, knowledge by acquaintance, knowledge by competence (skill), and knowledge as justified true belief. The question *What are the necessary and sufficient conditions for knowledge?* was discussed. Analysis and evaluation of arguments were based on six questions:

- How are the terms defined in an argument?
- What type of premises, conclusion and argument are given?
- What are the criteria for a good argument?
- Are the premises true or acceptable?

- Do the premises support the conclusion?
- Are there other relevant known factors to take into consideration?

Henry Toi talked about how *Game-based learning* is rapidly gaining popularity in Singapore. As educators seek to find better ways to engage students in problem solving and applied thinking, game-based learning becomes increasingly important as a strategy for teaching. He showed different ways of how games can be used successfully in classrooms to teach flexibility in thinking and the *Habits of Mind*, e.g. vocabulary learning and mathematics.

Lars Lindström talked about assessment in the visual arts based on the article "Creativity: What is it? Can you assess it? Can it be taught?" which was published in *The International Journal of Art & Design Education* last year and for which he was given The Brian Allison Award. Lindström also talked about this work when he visited Malmö University earlier this year. In short, it consists of a discussion of how, with the help of portfolios, assessments may extend to include both the unpredictable and the ambiguous. The progression of young people's creativity in the visual arts has been studied from preschool to upper secondary school. The assessment was based on both product criteria (visibility of intention, composition and craftsmanship) and process criteria (investigative work, inventiveness, ability to use models, capacity for self-assessment). The materials assessed were portfolios of work containing sketches, drafts and finished works, log books, sources of inspiration and videotaped interviews with the students. Is there any progression in students' visual design, in their ability to work independently and assess their work? What is the degree of correlation in the assessments of different judges of student portfolios? These are some of the questions in a discussion of how schools can build a culture of learning that fosters the creative powers of young people.

In the conference programme was stated that The Louis De Geer Buildings and the square outside would be filled with activities, where you would be given the opportunity to talk and act, and to use all your senses. This was a good ambition and it also gave high expectations. One special event was when the two choir leaders Lisa Tilling and Kate Ulett managed to get almost all participants united in one big choir, which was an interesting and loud experience. Also the spectacular performance of Sirqus Alton's street theatre gave joyful both auditive and visual input. When it comes to the other senses such as the kinaesthetic, the tactile and the vestibular system some stimulation could be found by those who visited the "sort of open air" dance floor at a typical Midsummer Folkets Park ("The People's Park"), constructed exclusively for this occasion.

Since the programme stated that different disciplines such as Arts, Culture, Education, Health, and Sports would be represented, one would have expected that more than a few presentations should focus on body movements and the whole human being. In fact you had to search quite thoroughly through the programme to find anything remotely related to body movement. One of the very few examples was the out door lesson led by **Anders Szczepanski** and **Lars-Owe Dahlgren** from the Center for Outdoor Environmental Education at Linköping University, which was a nice break from all "sitting down theory". In fact some very good examples of alternative ways of learning mathematics and language were given in this short and very intense session, which offered unique opportunities to learn movement and other skills with your whole body and all your senses.

Edward de Bono from [University of Malta](#) was supposed to give his presentation on the last day of the conference. But unfortunately he could not come, due to heart surgery. The audience was instead given the opportunity to listen to a telephone conversation between Perkins and de Bono, which was interesting enough. Edward de Bono originated the concept of "*Lateral Thinking*", which is concerned with changing concepts and perceptions. The methods are based on an understanding of the brain as a self-organizing information system. The techniques of lateral thinking can be used formally and deliberately in order to generate new ideas. "There is no doubt at all that creativity is going to be the most important economic driver of the future" according to de Bono. Focusing on the thinking process and its application in the business world, he believes that creativity is the most cost-effective way of getting added value from existing assets. Implementing creativity should double the profits of any company within 5 years, he says. During the conversation he also emphasized the importance of basic music understanding and to educate for the unknown, involving information seeking skills.

The last day of the conference also included a panel discussion on the topic *What is the role of schools and universities in the era of cyber-space and life-long learning?* The moderator **Lars-Owe Dahlgren** raised the question about the importance of perceptual skills and the new role for teachers in making knowledge available for all students, including the sensory handicapped, and pupils with learning deficits, dyslexia and ADHD. Earlier during the week he had talked

about the relationship between higher education and demands of students' future work. Among other things he presented results from a study, which had shown that only 25% of students' knowledge in anatomy was left when the same test was given 3.5 years later. Peter Gärdenfors and Jean-Pierre Changeux agreed upon the necessity in multidisciplinary learning and building bridges between neuroscience, cognition, ICT and psychology to improve understanding, i.e. to understand what happens in the brain when understanding takes place.

Despite the almost total predominance on theoretical speeches and presentations, the conference on the whole was very impressive and well worth attending, as it gave many new aspects of thinking and many interesting discussions with participants from all over the world. Hopefully there will be more of practical workshops at the next Thinking Conference, showing examples of how to put theory into practice, with focus on "learning by doing" and involving the whole body. Interesting sessions could be focusing on, for example, body knowledge and body language in different cultures, conflict solving skills and how body movements can influence self-esteem. Associations between automatized basic motor skills and improvement in thinking skills are other topics worth exploring.

The next International Conference on Thinking will take place 2009 in Kuala Lumpur, Malaysia.

Appendix

Speeches and peer reviewed research papers presented at the 13th International Conference on Thinking, most of which can be found on <http://www.liu.se/thinkingconference/>. There were 40 **plenary and featured speakers**:

- Jean-Pierre Changeux**, The Institute Pasteur, Paris, France, *Toward a Neuroscience of the Capable Person: Unity, Diversity and Oneself-as-another*
- Howard Gardner**, Graduate School of Education, Harvard University, MA, USA, *Good Work in Education: When Excellence, Engagement and Ethics Meet*
- Peter Gärdenfors**, Lunds universitet, Lund, Sweden, *How Homo Became Sapiens: On the Evolution of Thinking*
- Bill Martin**, Bill Martin and Associates, USA, *Creating and Sustaining a Culture of Leadership*
- Åsa Nilssonne**, Karolinska Institutet, *Thinking – The Psychiatric Perspective*
- Martha Nussbaum**, The Law School, University of Chicago, IL, USA, *Elephants Looking in a Mirror: Animal Minds and Animal Rights*
- Hans Rosling**, Karolinska Institutet, *Is the world becoming a better place? or Fact based world view!*
- Philip Adey**, Kings College London, *The Curious Case of Intelligence, and why educators avoid it*
- Julia Atkin**, Learning by Design, Australia, *Ways of Thinking, Ways of Knowing*
- Britt-Mari Barth**, Institut Catholique de Paris, *Knowing – Process or Product? The role of the teacher-mediator in the construction of meaning*
- Göran Carstedt**, The Natural Step International, *Co-creating a Desired Future*
- Ilan Chabay**, Göteborg University, *Curiosity, Complexity, and Science Communication*
- Lane Clark**, Ideasys Inc., *Where Thinking and Learning Meet!*
- Guy Claxton**, University of Bristol, *Cultures of Powerful Learning: Infusing Schools with the Spirit of Learning to Learn*
- Art Costa**, Institute for Intelligent Behavior, *Five Thoughts for a Thought-filled Curriculum; Teaching and Assessing habits of Mind*
- Gunilla Dahlberg**, Stockholm Institute of Education, *Difference as a potential for learning*
- Lars-Owe Dahlgren**, Linköping University, *What's the Use of Higher Education?*
- Bo Ekman**, Tällberg Foundation, *Rethinking Thinking*
- Åsa Falk-Lundqvist**, Umeå University, *Forumplay – to challenge traditional teaching*
- Per Frankelius**, Örebro University, *Time has come for a new innovation perspective*
- Cristobal Gaggero, Johanna Nordström**, Instituto de Formación Matriztica, *A view upon human living in productive organizations: The fundamentals of spontaneous ethical action and reflection; A view upon human cultural living in the anthroposphere: Understanding how human action is guided by desires*
- Martin Ingvar**, Karolinska Institutet, *Rationalizing Thinking by Means of Memory Consolidation*
- Urban Johansson**, Scania AB, *Principles – a way of thinking*
- Bodil Jönsson**, Lund University, *FACE it – on lived health, illness or disability*
- Lars Lindström**, The Stockholm Institute of Education, *Understanding the Creative Mind: Portfolio assessment in the Visual Arts*
- Bill Martin, James Nottingham**, Bill Martin & Associates, Sustained Success, *Leading Change from the Inside*
- Ference Marton**, Göteborg University, *Dealing with the Unknown by Means of the Known*
- Elisabet Nihlfors**, Uppsala universitet, *Decentralisation, Control and Administration of the School Sector in Sweden*

James Nottingham, Sustained Success , *Challenging our Thinking, Challenging our Schools*
David Perkins, Harvard University, *The Thoughtful Will; The Five Languages of War*
Paul Plsek, Consultant, Roswell, GA , *Integrating science, creativity, and learning in the complex work of health care*
Karl-Henrik Robèrt, The Natural Step , *Systems Thinking within Strategic Sustainability Constraints*
Jonathan Rowson, Graduate School Education , *What is it like to be a Chess Grandmaster?*
Hans-Åke Scherp, Karlstad University , *School leadership and problem based school development*
Bob Swartz, National Center for Teaching Thinking, *Infusing Critical and Creative Thinking into Content Instruction; Metaemotional Thinking*
Bob Swartz, **Art Costa**, (se above), *Thinking-Based Learning*
Marlys Witte, **Michael Bernas**, University of Arizona , *Unanswered Questions and Unquestioned Answers*

There were 26 presenters of **peer reviewed research papers**, highlighting new views or interesting results from different research areas:

Mohamed A. Albaili, United Arab emirates University, United Arab emirates. *Differences in Thinking Styles among Low-, Average-, and High-Achieving College Students.*

Iouri Belski, Royal Melbourne Institute of Technology, Australia. *Improvement of thinking and problem solving skills of engineering students as a result of a formal course on TRIZ thinking tools.* (Publicerad)

Carmen Biel Sanchis, Furniture, Wood and Packaging Technology Institute, Valencia, Spain. *Design of a mobile support adapted to domestic environment for physically challenged people.* (Publicerad)

Lars Björklund, University of Linköping, Sweden. *The intuitive practitioner: Cognitive aspects on the development of Expertise.* (Publicerad)

Carol Collins, **Sue Knight**, University of South Australia, Australia. *Engaging students in the processes of rational ethical justification: a way forward for social and environmental education?* (Publicerad)

Carol Collins, University of South Australia, Australia. *The role of dialogue-based ethical inquiry in educating for a just democracy: an intervention study.* (Publicerad)

Ingegerd Ericsson, Malmö University, Sweden. *Effects of Increased Physical activity and Motor training on Motor skills, Attention and Learning.* (Publicerad)

Per Frankelius, Örebro University, Sweden. *Towards a new perspective on innovation – With empirical inspiration from creation of an opera scene.* (Publicerad)

Thomas Fritz, Umeå University, Sweden. *Close encounters-University course at Lunastorm.* (Publicerad)

Suzan Hirsch, St. Patrick's Catholic Primary School, Australia. *Adapting Curriculum and Teacher Pedagogies to Cater for Boys K-6.* (Publicerad)

Fotis Kousoulas, Athens University, Georgia Mega, Open University of Greece, Greece. *Creative and critical thinking in the context of problem finding and problem solving: a research among students in primary school.* (Publicerad)

Lars Lindström et.al., Stockholm Institute of Education, Sweden. *The Multiple Intelligences Questionnaire (MIQ) A Useful Tool in School Research?* (Publicerad)

Rolf Lövgren, Mälardalen University, Eskilstuna, Sweden. *A generic model of common sense applicable to problem solving or product development – Ideas as precursors to actions.* (Publicerad)

Carol McGuinness et.al., Queen's University, University of Ulster, Belfast, Northern Ireland. *Building Thinking Skills in Thinking Classrooms: ACTS in Northern Ireland.* (Publicerad)

Erica McWilliam et.al., Queensland University of Technology, Kelvin Grove, Australia. *From passive consumers to active prod-users: student-led pedagogy in a popular music program.* (Publicerad)

Erica McWilliam et.al., Queensland University of Technology, Kelvin Grove, Australia. *Learning or Performance: What should educational leaders pay attention to?* (Publicerad)

Alireza Muola, Linköping University, Sweden. *An Model for Systematic Thinking and Decision Making.* (Publicerad)

Deborah Nanschild, Heather Davis, Deakin University, Australia. *The 'V' Factor: thinking about values as the epicentre of leadership, learning and life.* (Publicerad)

Ananda Kumar Palaniappan, University of Malaya, Malaysia. *Intelligence thresholds in achievement and creativity relationship.*

Luís Moniz Pereira, Ludwig Krippahl, Universidade Nova de Lisboa, Caparica, Portugal. *On Teaching Critical Thinking to Engineering Students.* (Publicerad)

Ann S Pihlgren, Stockholm Institute of Education, Sweden. *The Features of Socratic Seminars.* (Publicerad)

Kristen M. Snyder, Mid Sweden University, Sweden. *Global Emancipation through Educational Social Networks: Shaping a new dialogue of action through community.* (Publicerad)

Kay Stables, Richard Kimbell, Goldsmiths University of London, UK. *Evidence through the looking glass: Developing performance and assessing capability.* (Publicerad)

Helge Strömdahl, Linköping University, Sweden. *Critical features of word meaning as an educational tool in learning and teaching natural science.* (Publicerad)

Steve Trickey, Clackmannanshire, UK. *Promoting social and cognitive development through collaborative enquiry.*

There were also more than 110 **Workshops and other Presentations**, 9-10 of them in parallel sessions.

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