**Active Learning in an Innovative Learning Environment.**

At the 19th of April 2017 an event for teacher in service training was organized by Neuroforum and hosted at Chalmers. The participants were from different schools in Göteborg, its surroundings and from Haverdal. About forty teachers participated.
Anders Gustavsson, editor for *Nyhetsbrev from Strömstad academy*, who was there, asked me to write shortly about my personal impressions of this event – to which I, as coordinator, slightly reluctantly, agreed. This event was one in a succession of a number of similar events. Every event was thoroughly prepared by many lengthy but fruitful discussions by the members of the board. Finally one member of the board was elected to take responsibility for the practical organization of the upcoming event.
 Göteborg Tuesday May the 23th. *Aadu Ott*

**This event,** which started with a presentation of, the informal organization, *Neuroforum* by Axel Eriksson (see homesite). This event consisted of the following two distinct parts:
 **# Input:** Academic lecturers gave short lectures on selected subjects. The aims of these subjects were:
1. To study possibilities to integrate the sociocultural theory for learning with *educational neuroscience* orneurodidactics;
*This implied a short introduction with the aim to expose how, in our globalized, digitized and continuously changing world, culture and communication play an increasingly important role.
It is however important to give attention to the cultural changes in the keyfactors in this theory: the Subject, the physical and mental World and the Mediating Artifacts, which the Subject places between herself and the World in processes of interaction and exploration.*

2. To present some successful examples of application of *educational neuroscience* for teaching and learning in some schools;
*Ulrika Ahlquist made a presentation of her book “Tio Goda Vanor” (Ten Good Habits) and presented how this approach to neurodidactics had been successfully tested during five years at the Kattegattgymnasium in Halmstad. A group of teachers from Haverdal reported about sucessful application of these Ten Good Habits at a lower level in compulsory school.*
3. To introduce possibilities to apply the concept *creativity* to teaching and learning;
*Per – Olof Nilsson gave an excellent lecture in which he pointed out the importance of including the subject Creativity into educational activities in our school system.
In a globalized economy which relies on being competitive Per – Olof argued that creativity is utterly important.*
4. To point out the importance to including the *emotional* dimension into learning;
*Carl – Gerhard Gottfries and Sven – Olof Olsson gave a lecture in which they argued for a new subject in the school system “Emotik”. They introduces their new book “EMOTIK. Emotionellt lärande I skolan”. They argued that emotion is as important as cognition in the process of learning and memory encoding, storage and retrival.*

5. To point out the importance to regard the negative effects of stress on learning.
*Rolf Ekman talked about stress as a contagious phenomenon.*

**# Workshop:** The teachers were, after two hours of lectures, divided into five mixed groups which contained participants from different schools. The groups were located in separate rooms for their discussions. The lecturers visited the groups in regular intervals. It was very interesting to listen and to participate in these discussions at just the same terms as the other teachers.
*The evaluation pointed at the fact that the teachers seemed to like this part. The lecturers were able to meet them were they were mentally and in their own subject knowledge.*

**Reflexion and metacognition**This short and seemingly innocent organization of this event seemed however to contain quite a few challenges of established academic traditions:
This event was not just aimed at exposing the pros and cons of the sociocultural theory of learning.

**# 1. The aim was primarily** to try to find ways to reach “*beyond the Vygotskian legacy”.*
 **# 2, The aim was secondly** to try to find ways to satisfy the wish, that teachers expressed in for example the future study *School 2031 from Kairos Futures,* about getting to know about possible applications of educational neuroscience (neurodidaktik) in schools.

From the academic point of view we can not argue that the teachers don´t know about educational neuroscience. Our contemporary media expose a lot information about how the brain and learning functions. This information is however often fragmented for laymen.

The workshop was thus aimed at answering questions which the teachers, themselves, *actively* formulated, instead of letting them passively listen to information they had not asked for. This implies a challenge, to the deep – rooted academic tradition of giving lectures.
To dare to state that: “*I will only learn what I want myself”* is not appreciated at any level in any school system.
 **# 3. A third aim** was to move from the academic seminar tradition of having an academic teacher to lead a seminar with pre-formulated questions. This implies a “*top – down”* approach, as in the first part of this event.

Instead the intention, of the workshop, was aimed at focusing on “*bottom – up”* questions from the teachers in the groups, according on their own Mindsets. This is an application of the Socratic “majeutical” principle of dialogical interaction for active learning. “*Find out where the student is. Teach them from there.” As* David Ausüble pointed out, half a century ago.

It is, in this context, appropriate to remind that Vygotskij proposed, in his theory, that there exists two phases in a learning process: *First there is a* ***social*** *phase where knowledge is created* ***interpersonally*** *among participants in the learning process. Then, Vygotskij pointed out, that this phase was followed by a* ***psychological*** *phase in which learning took place* ***intrapersonally.*** The learner is the only one who has access to the keys to her own learning processes. This means, that construction of knowledge out of information, in terms of educational neuroscience, means to construct *neural networks* in which knowledge physiologically takes place as small circulating currents.

This will take place in an *Innovative Learning Environment where the teacher is the second most important person next to the Learner, who has to be in the center – stage.*

# 4. **A forth aim** was thus to carry the event through, in the spirit expressed by the seven learning principles for an *Innovative Learning Environment.* These areformulated by a group of scientist, working for OECD in the book, edited by Dumont et.al. (2010); “Using Research to Inspire Practice”.

These learning principles are:
1). The student should be active, engaged and be at the center of the learning process.
2). Learning should be constructive, social, situated and co – laborative.
3) Learning is affected by emotional and motivational factors.
4). Students preconceptions and experiences affect her learning.
5).The student should always try to exceed her abilities and performances.
6). Formative assessment should be regarded as a bridge between teaching and learning.
7). Formal learning in schools should be supported by informal learning.

**Summary and evaluation**All these features were, more or less, appreciated by the participating teachers in their written evaluations. One outstanding aspect was however that the teachers wanted to have more lectures. The content of the event was however very carefully selected and it is difficult for teachers to be free from their lectures in the different schools more than half a day within an ongoing semester. At the same time they liked the fruitful discussions in the workshops.

**Litterature** which has affected the thoughts expressed in this text.These are some of the books, which act as “secondary experiences” to support the presented arguments:
Staffan Selander “*Didaktik efter Vygotskij. Design för lärande.”* 2017, Liber.
Susan Greenfield *“MIND CHANGE” . How digital technologies are leaving their mark on our brains.”* 2014, Random House.

Bengt Arnetz & Rolf Ekman “*STRESS – Gen, Individ, Samhälle.”* 2013,Liber.

Carl – Gerhard Gottfries & Sven – Olof Olsson “*EMOTIK – Emotionellt lärande i skolan.”* 2017, Book on Demand.

Tino Sanandaji: ”*MASSUTMANINGEN – Ekonomisk politik mot utanförskap & antisocialt beteende.”* 2016. Kuhzad Media AB.

Roger Säljö: ”*LÄRANDE & KULTURELLA REDSKAP – Om lärprocesser och det kollektiva minnet.”* 2005. Norstedt.

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To these publications, two books by the Nobel Laureat Eric Kandel are appropriate to add. The first book is: “*THE AGE OF INSIGHT – The quest to understand the unconscious in Art, Mind and Brain – From Vienna to the present.”* 2012, Random House.

This book poses the question: “*Are we living in the age of insight today?”*

The second book has the title: “*AUF DER SUCHE NACH DEM GEDÄCHTNIS – Die Entstehung einer neuen Wissenschaft des Geistes.”* 2006. Siedler.

This paper is, in a way, written in the same spirit that Eric Kandel exposes in these two books: He is searching for insight and for a new scientific paradigm.
The old and established scientific traditions do not make him fully satisfied.
He expresses a wish to go beyond classical ways of explaining phenomena in science and in the learning process.
Just as every true scientist.