

LEARNING AND THE BRAIN CONFERENCE, Boston, November 18-20, 2011

A Summary

David S. Martin, Ph.D., Critical and Creative Thinking Program
University of Massachusetts at Boston

A special 3-day conference brought together leading scholars from many places on this subject, and enrolled 1600 participants (largely classroom teachers) at the Westin Hotel in Boston. Following is a summation of the key points that would be of greatest direct interest to members of the Critical and Creative Thinking Program community, as well as to school leaders and teachers who are committed to enabling students to acquire critical and creative thinking in their lives.

The presenters' names, backgrounds, presentation titles, and summary points now follow below:

7 Survival Skills for Careers, College, and Citizenship

Prof. Tony Wagner, Harvard University, Technology and Entrepreneurship Center

Critical Thinking and Problem-Solving are essential

Collaboration across networks makes it happen

Characteristics needed:

Agility and Adaptability

Initiative and entrepreneurialism

Assessing and Analyzing Information

Curiosity and Imagination

Effective Oral and Written Communication

5 Habits of Mind— Weighing Evidence
Awareness of Varying Viewpoints
Seeing Connections
Speculating on Possibilities
Assessing Value, socially and personally

Neuroplasticity in the Brain

Helen Neville, Ph.D., Brain Development Laboratory, University of Oregon

Training parents in cognitive strategies will change their parenting behaviors and stress levels.

A New Essential for a New Time

Heidi Jacobs, Ph.D.

2 myths:

We're better off if we all think alike—and not too much

Too much creativity is dangerous—and the arts are frills

21st Century Skills: The Imperative for Teaching Creativity and Innovation in Schools

Charles Fadel, MBA

We are educating students for a future and for problems that we haven't even heard of yet.
Most young people today want to learn SOCIALLY.

Tips for Enhancing Creativity in the Classroom

Shelley Carson, Ph.D., Harvard University Department of Psychology

Creative cognition includes: divergent thinking, forming associations between distantly-related items, thinking in metaphors, using mental visualization, and imagination.

Cognitive flexibility is the ability to switch from one thinking style to another—a hallmark of creative thinking.

Creative process involves preparation, incubation, insight, solution, evaluation, elaboration, and implementation.

21st Century Learning: Implications for Teaching

Christopher Dede, Ph.D., Harvard University

Digital Life outside of class:
all information is instantly available
distance and time don't matter
multi-tasking is how people work
machines have “intelligence”
powerful tools for creative work are taken for granted
options are abundant
multimedia interactive entertainment is omnipresent
change is constant and rapid

A New Culture of Teaching for the 21st Century

Stone Wiske, Ph.D.

We need 3 networks—recognition, use of strategies, and affect—all need to be engaged

How Visual Arts Teaching Can Promote Disciplined Habits of Mind

Ellen Winner, Department of Psychology, Boston College

Relationship between academic skills and classroom activities in the arts:

Classroom drama improves verbal skills
Listening to music improves spatial reasoning
Making music improves spatial reasoning

The Development of Argument Skills in Students

Deanna Kuhn, Ph.D.

The development of argument skills requires peer dialogues
Argument skill development leads to increasing frequency of using powerful
discourse strategies and improved supports for claims made

Brain-Based Teaching Strategies to Build Executive Functions in Students

Judy Willis, M.D.

Judgment
Prioritizing
Setting Goals, providing feedback, and monitoring progress
Activating prior knowledge and transfer opportunities
Metacognition

Critical Thinking: Why is it so Hard to Teach?

Daniel Willingham, Ph.D., University of Virginia

Critical thinking is not a set of skills—it is a type of thought
3 types of thinking—reasoning, making judgments, decision-making
3 key features of critical thinking –effectiveness, novelty, self-direction
Critical thinking should be taught in the context of subject matter
Strategies should be made explicit and be practiced regularly

Future Minds and Skills

Ellen Galinsky, M.S.

7 skills essential to success

focus and self-control
perspective-taking
communicating
making connections
critical thinking
taking on challenges
self-directed engaged learning

Panel discussion—how to teach critical thinking

increase length of school day
more teacher content knowledge
change policies
scaffold
focus on functions
model the skills

Creativity and Education

Mark Runco, Ph.D., California State University at Fullerton

Creativity is not always problem-solving
Both convergent and divergent thinking are needed
Tactics—shift perspectives, work backward, enlarge or reduce its size,
take time and put problem aside temporarily,
change the problem, question assumptions, modeling;
ego-strength or self-confidence is needed
Creativity is basically an individual accomplishment, and is
not the result of group brainstorming

How is Critical and How can we Teach it?

Robert Swartz, Ph.D., Director of National Center for the Teaching of Thinking

A thinking skill results from engaging in one or another type of thinking
3 domains or types of thinking—generating ideas, clarifying ideas,
assessing the reasonableness of ideas
We operationalize skillful thinking by teaching students a set of questioning strategies

Brain-Targeted Teaching Model

Mariale Hardiman, Ph.D.

Targets—Emotional Climate
Physical Environment
Learning Design
Teaching for Mastery
Teaching for application
Evaluating Learning

Five Minds for the Future

Howard Gardner, Ph.D., Harvard University; author of Multiple Intelligences

4 Megatrends as the context for the Five Minds—
globalization
biological revolution
digital revolution
lifelong learning

The 5 Minds—Disciplinary: steady work, becoming expert, learning major ways of thinking (history, math, etc.), focus on the traditional disciplines; learning to think probably CAN'T be done on-line
--Synthesizing: lots of information, different kinds of syntheses; methods involve mind-mapping, equations, narratives, images, schemata, taxonomies, metaphors, systems
--Creating: mastering a discipline (usually takes 10 years), synthesizing, going beyond the known, asking good questions, being judged by the field, risk-taking,

- innovation; creativity is partly personality-based
- Respectful: diversity is everywhere; moving beyond mere tolerance, understanding others' perspectives, learning from bottom-up, conciliation
- Ethical: a higher level of abstraction than the Respectful Mind, conceptualizing the self as a good worker and citizen, acting appropriately, moving around fear and greed.

In the Digital Age:

Disciplinary depth could lose out to breadth
Synthesis of too much information
Creativity is inhibited by the young being averse to risk-taking; web 2.0 is promising
Respectful and Ethical require moving beyond the inner circle

Figure-Ground Struggle

The figure—will it be test scores and counting comparative school rankings?
or instead the kind of individual and society that we really need?

Check websites: goodworktoolkit.org and goodworkproject.org

It is now recommended that specific programs for teaching critical and creative thinking be seriously considered for implementation within schools. One such program which has yielded consistently positive results and is well-researched is “**Instrumental Enrichment**” authored by Israeli psychologist Reuven Feuerstein. Well over 1000 research studies have documented its positive effects with a wide variety of populations. The proposal for **The Thinking Academy**, available at the address below, is another means of organizing a school-wide commitment for infusing cognitive education across the curriculum. For information, see the website www.ictaweb.org or contact davidmartindr@aol.com; cell phone--508-527-0460.

--David S. Martin, Professor/Dean Emeritus, Gallaudet University
President, North American Feuerstein Alliance
Director of Training and Research for IC&TA, Inc.