The emotional brain in the classroom
The constituent parts of every educational system

- Student
- Teacher
- Parents
What is a teacher?

“If (the teacher) is indeed wise, he does not bid you enter the house of his wisdom, but rather leads you to the threshold of your own mind.”
A teacher should transmit knowledge.

interact with students

secure smooth learning process

converge interstudent variations
“Great expectations”

- Encouragement & reward
- Peer collaboration, acceptance & support
- Reasonable decision making
- Successful problem solving
- Positive & supportive classroom setting
- Rigid classroom management plan
- Evaluation of the students’ affective charge
The learner

- Motivation
- Age
- Variations
The learner

a) Age:

- Brain plasticity improves linearly with age
- Birth to childhood $\Rightarrow$ synaptogenesis
- Puberty $\Rightarrow$ myelination
- Life-long learning $\Rightarrow$ mind architecture is reshaped (in terms of development, adaptation and functioning)
The learner

b) Variations:

- Aptitude, style, knowledge level
- Individual brain functioning: multiple & emotional intelligences
- Learn how to learn, how to preserve, & how to retrieve knowledge
- Methods of learning: visual imagery, brain exercise, learning while sleeping
- Unexpected failure due to congenital reasons, e.g. dyslexia
The learner

c) Motivation:

- Fundamental component of learner’s profile
- Desire, willingness, enthusiasm
- External: punishment or reward, social or cultural factors influence attitude to learning
- Internal: fulfillment of needs & desires
- Critical factors to initiate & continue: teacher / methodology / proximity of goals / physical learning environment / emotional atmosphere / lesson delivery
In the classroom

learning

social

physical

emotional

intellectual
- Living organism
- Subject to changes
- Reshaped continually
- Miniature society
- Complex network of relationships
Emotional fluctuations in the classroom

- Negative: Enjoyment, Hope, Pride, Anger, Anxiety, Shame, Relief, Hopelessness, Boredom
- Positive:
  - Necessary:
    - social & emotional learning
    - empathy
    - temperament & behaviour control

- Deactivating
- Activating

affect the educational setting dramatically
Classroom environment

Non-threatening

- Respect
- Supportiveness
- Opportunity for self-disclosure
- Productive interaction
- Effective communication behaviour
- Empathy

Threatening

- Thoughtless negative actions
- Fights & confrontations
- Rules or procedures disregarded

Learners are unprotected against stress or fear ⇒ inhibitors to learning
Peer victimization or “bullying”

= inappropriate behaviour of peers towards peers; it can be of physical, verbal or cyber form

Effects:
- physical & mental health and longevity
- physical pain
- social pain (exclusion, rejection)
- fear towards school life
- compromised learning
- deteriorated cognitive performance
- blurred social judging
- dimmed self-esteem
- depression symptoms
- desperate ventures
The emotional brain

The emotional brain: What & Where

- Locus of an array of emotions: anger, fear, pleasure, sadness, joy, sociability, sexuality

- Involved in emotional processing, learning and memory

- Comprises limbic structures and subcortical structures
  - the **amygdala**: detection of stressful events and initiation of a response to them
  - the **hippocampus**: its integrity is associated with learning and memory tasks
The emotional brain: A defense system

• Result of the evolution of primitive cortices (alert the brain, respond to dangers) ⇒ phylogenetically older than adjacent areas

• Developed within the animal and human temporal lobe ⇒ adapt, survive and protect themselves

• Animal and human emotional patterns with respect to fear are similar

• When in danger, animals and humans:
  ▪ rendered inoperative
  ▪ heart rate augments
  ▪ stress hormones released
The emotional brain: Cause & effect

**Emotional arousing stimuli:**
- explicit \(\rightarrow\) sounds, visual inputs, language prompts \(\rightarrow\) fear
- implicit \(\rightarrow\) not cognitively processed \(\rightarrow\) anxiety

Physical / psychological / perceived stress

\[\downarrow\]

Neuroendocrine system:
the hypothalamic-pituitary-adrenal (HPA) axis

\[\downarrow\]

Glucocorticoids
The emotional brain: Affective charge

<table>
<thead>
<tr>
<th>The amygdala</th>
<th>The hippocampus</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Negatively charged stimuli ⇒ successful memory</td>
<td>• Positively charged stimuli ⇒ successful memory</td>
</tr>
<tr>
<td>• Exposure to prolonged stress ⇒ experiential memory intensified</td>
<td>• Exposure to acute threat ⇒ HPA dysfunctioning ⇒ neurotoxicity ⇒ explicit memory impaired</td>
</tr>
<tr>
<td>• Wider spectrum of stimuli received by working memory if affectively charged</td>
<td></td>
</tr>
</tbody>
</table>

Stress has ultimately **detrimental** effects to both the hippocampus and the amygdala
Neuroscience + Pedagogy = ...

• Classroom microcosm ⇒ fertile ground for neuroscience findings

• Neuroscientists ⇔ Educators {= *in vitro* ⇔ *in vivo*}

• Cognitive neuroscience: guidelines / practical solutions ⇒ Education: teaching methodologies / tools

• **Future challenge**: exemplification of strengths & weaknesses of the learning brain with precise & applicable suggestions for the classroom
= ‘Neuropedagogy’ or ‘Emopedagogy’?

- Mind, Brain, and Education (MBE)
- Comprehensive, transdisciplinary, conceptual field
- Biology, Cognitive Science, Development, Education
- Mediator between teaching & learning researchers and educationalists ⇒ enhance educational materials & suggest reforms
- Emotional Response Theory (ERT)
- Theoretical model
- Causal effects of teacher behaviours onto students’ feelings and onto learning outcomes
- Teacher nonverbal immediacy, communication competence, and clarity ⇒ emotional arousal in students
Science vs. Reality

• Rapport with students ⇒ classroom climate ⇒ teaching-learning process

• Good behaviour, self-discipline, respect, responsibility, cooperativeness ⇒ immune teacher & students against awkward, threatening situations

• Rewards, sanctions, discipline

“I am indebted to my father for living, but to my teacher for living well.”

Alexander the Great
Bibliography


THANK YOU FOR YOUR ATTENTION

Evangelia Tigka, MSc
1st Technical/Vocational Special Needs Secondary School of Nea Ionia Magnesia
e_tigka@yahoo.co.uk