Mindful Learning: why attention matters in education

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Mind wandering and happiness

“In conclusion, a human mind is a wandering mind, and a wandering mind is an unhappy mind. The ability to think about what is not happening is a cognitive achievement that comes at an emotional cost.”

What is mindfulness?

- Paying attention to the present moment with an attitude of openness, curiosity and acceptance
Murray Rose on mindfulness

- Reporter: Do you have any philosophy on life as an individual?
- MR: I think it revolves around this perhaps secret of concentration on one thing. When you’re eating, you do nothing else but eat. And when you’re swimming, you do nothing else but swim, and I think that by doing that you achieve the greatest satisfaction by devoting your whole self, your whole energies, your whole thoughts to just one activity at a time. And I think that perhaps would be the essence of my personal philosophy.

http://www.abc.net.au/austory/content/2012/s3893380.htm
Screen time and attention

- Higher TV watching at 3 y/o associated with higher ADHD at age 7
  - Friedland RP et al. Proc Nat Acad Sci USA, 10.1073/pnas.061002998
A field experiment examined whether increasing opportunities for face-to-face interaction while eliminating the use of screen-based media and communication tools improved nonverbal emotion cue recognition in preteens. Five preteens spent five days at a nature camp where TVs, computers, and mobile phones were not allowed, while 54 school-based matched controls retained usual media practices. Nature camp preteens’ recognition of nonverbal emotion cues improved significantly but not the control group. (Uhlsa YT, Michikyan M, Morris J, et al. Computers in Human Behavior 2014;39:387–392. DOI: 10.1016/j.chb.2014.05.036)
Attention Deficit Trait

- Newly recognized neurological phenomenon: attention deficit trait (ADT)
  - Response to hyperkinetic environment

- Trying to deal with too much input, results in:
  - Black-and-white thinking; perspective and shades of grey disappear
  - Difficulty staying organized, setting priorities, and managing time
  - Feel a constant low level of panic and guilt

Mobile phone use and motor vehicle accidents

- Driver's use of a mobile phone within 5 min before a crash associated with fourfold increased likelihood of crashing (OR 4.1)
On the performance of extreme multi-taskers

“These are kids who are doing 5, 6, or more things at once all the time. ... It turns out multi-taskers are terrible at every aspect of multitasking! They get distracted constantly. Their memory is very disorganized. Recent work we’ve done suggests that they’re worse at analytic reasoning. We worry that it may be we’re creating people who may not be able to think well, and clearly.”

150 undergraduate university students performed a simple task

On the second run through, they were split into three groups
1. Called on the phone
2. Received a text
3. Not interrupted

Participants didn't know they were being contacted as part of the study

Phone calls were the most distracting (28% more likely to make a mistake)

Those who received a text were 23% more likely

Students nearly all had their phones set to vibrate and didn't take them out or look at them during the study

Stress
Performance

Relaxation without awareness or engagement – inertia, apathy

Higher performance – stress lifts out of apathy and engages

High stress and poor performance
Three regions of the brain

- Frontal lobes (prefrontal cortex) - centre for executive functioning
  - Attention regulation
  - Working memory
  - Reasoning and decision making
  - Emotional regulation
  - Appetite regulation
  - Impulse control
  - Directs immune system
- Limbic system – emotion centre
- Mesolimbic reward system – appetites
Exam stress and performance

- High math anxiety led to smaller working memory

- “Performance pressure harms individuals most qualified to succeed by consuming the working memory capacity that they rely on for their superior performance.”
The Default Brain

- **Active tasks**
  - Tasks associated with paying attention
  - Brain efficient and quiet

- **Default state (mode)**
  - Mind is inattentive, distracted, idle, recalling past, daydreaming
  - Areas active in default mode similar to areas affected by Alzheimer’s Disease
“The faculty of voluntarily bringing back a wandering attention over and over again, is the very root of judgment, character, and will. No one is compos sui if he have it not. An education which should improve this faculty would be the education par excellence.”

William James, Principles of Psychology, 1890
Mindfulness and attention regulation

- Mindfulness involves **attention** and **attitude**

Attention regulation has three aspects

1. To know where our attention is
2. To prioritise where the attention needs to be
3. For the attention to go there and stay there

Mindful attitude

1. Openness
2. Curiosity
3. Acceptance
Mindfulness and student performance

- Three studies examined the effects of mindfulness meditation on the knowledge retention of tertiary students

- Participants from three introductory psychology courses randomly received either brief meditation training or rest

- Then listened to a class lecture and took a post-lecture quiz that assessed students’ knowledge of lecture material

- Results indicated that meditation improved students’ retention of the information conveyed during the lecture in each of the three experiments

Hassed / mindfulness stress-performance curve

Higher performance – stress lifts out of apathy and engages

Highest performance (zone / flow) – mindful i.e. relaxed but fully aware and engaged

Relaxation without awareness or engagement – inertia, apathy
Mindfulness and the brain

- Mindfulness training improves functioning in areas related to executive functioning, attentional control, self-regulation, sensory processing, memory and regulation of the stress response
  - Thickening of cortex in regions associated with attention, self-awareness and sensory processing thicker in meditators
  - “The regular practice of meditation may have neuroprotective effects and reduce the cognitive decline associated with normal aging.”
Mindfulness and mental flexibility

- Mindfulness leads to:
  - reduced cognitive rigidity via the tendency to be "blinded" by experience
  - "a reduced tendency to overlook novel and adaptive ways of responding due to past experience, both in and out of the clinical setting."

Emotional Intelligence & mindfulness

- Mindfulness related to aspects of personality and mental health
  - Lower neuroticism, psychological symptoms, experiential avoidance, dissociation
  - Higher emotional intelligence and absorption

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<tr>
<th>EI</th>
<th>Definition</th>
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<tr>
<td>Self-awareness</td>
<td>Ability to recognise and understand emotions, drives and effects</td>
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<td>Self-regulation</td>
<td>Can control or redirect disruptive impulses, can think before acting</td>
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<tr>
<td>Motivation</td>
<td>Passion for work that goes beyond money or status, energy and persistence</td>
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<tr>
<td>Empathy</td>
<td>Ability to understand emotions of others, skill in interacting with others</td>
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<td>Social skill</td>
<td>Can manage relationships and build networks, can find common ground, rapport</td>
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Mindfulness and doctor wellbeing

An 8-week mindfulness program: improvements on all measures of wellbeing including:

- Mindfulness
- Burnout (emotional exhaustion; depersonalization; personal accomplishment)
- Empathy and responsiveness to psychosocial aspects
- Total mood disturbance
- Personality (conscientiousness; emotional stability)

Improvements in mindfulness correlated with improvements on other scales
Mindfulness for teachers

- RCT of pilot program of Mindfulness-Based Stress Reduction adapted for teachers
- Mindfulness group showed significant reductions in:
  - psychological symptoms
  - burnout
- Improvements in:
  - observer-rated classroom organization
  - performance on a computer task of affective attentional bias
  - increases in self-compassion
- Control group showed worse cortisol levels and increased burnout
- Changes in mindfulness correlated with improved outcomes (e.g. psychological symptoms, burnout, and sustained attention)
Mindfulness for teachers

- Study of preschool teachers attending 8-week mindfulness course
- Results showed decreases in the students’ challenging behaviors and increases in their compliance with teacher requests
- Students also showed a decrease in negative social interactions and an increase in isolate play
- “Our results indicate that mindfulness training for teachers was effective in changing teacher-student interactions in desirable ways.”

Self-compassion and performance

- Can treating oneself with compassion after making a mistake increase self-improvement motivation?
- Self-compassion intervention compared to a self-esteem control group, no intervention or a positive distraction control group
- Self-compassion associated with:
  - Greater belief that a personal weakness can be changed for the better
  - Greater motivation to make amends and avoid repeating a moral transgression
  - More time studying for a difficult test following an initial failure
  - A preference for upward social comparison after reflecting on a personal weakness
  - Greater motivation to change the weakness

Applying mindfulness in the school

- Start with teachers then students and parents
- Formal practice
  - 5-10 minutes to be taken seated b.d. before meals
  - 15-60 seconds p.r.n.
- Informal practice
  - The senses are a gateway to the present moment: listening, eating, walking, reading, learning, communicating…
  - Move through your day one step, moment, job at a time
  - Avoid multitasking
  - Use screen-time discerningly

- Cultivate a mindful attitude
  - E.g. open, curious, flexible, non-attached…
  - Do things in non-habitual ways
  - Look for novelty / differences
- Mindfulness-based cognitive practices
  - Perception
  - Letting go
  - Acceptance
  - Presence of mind
- Contextualise and integrate it in the curriculum