Making the Connection: Student Success and Critical Thinking

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Session Overview

• Definitions
• Research
• Inquiry into what is working well
• More research for other strategies
• Considerations of what can be implemented now and what else is needed
• Questions
Critical Thinking

• Broward College defines critical thinking as a process of evaluating information by questioning and testing assumptions, accepting and rejecting arguments and/or perspectives, and applying reasoning to make informed decisions.
Guiding Questions

• How well are you embedding critical thinking into your curriculum (Ennis, 1997)?

• How well are you able to identify aspects of critical thinking in your courses?
Report Out

What are your successes?
What are your challenges?
You have Already Studied

• Ennis (1991)
• Facione (2006)
• Facione & Glittens (2013)
• Bloom’s Taxonomy (1956, 1985)
• Fink’s Taxonomy (2003)
• Paul (2005)

All as a part of your QEP
How has your Practice Changed?

• Choy and Pou San (2012) state that faculty themselves have to engage in reflective inquiry of their own teaching practices as an indicator of their own critical thinking.

• Your QEP recognizes you need to be provided with professional development in order to enhance the critical thinking design of your courses.
Have you made your Assumptions Clear about who your students are and how they engage in the learning and development environment you have provided?
The Linear Student Learning and Development Experience

Performance Indicators

Inputs  Integrated Exp.  Outcomes

Outcomes-based Evidence
The Non-Linear Learning and Development Experience
(adapted from Baxter-Magolda)
Learning is not Linear

- Content Knowledge from Courses
- Life Experience /Co-curricular
- Meaning Making/integrate

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Here is the Challenge…

Your students may have no idea how to access the regions of their brains that will activate the critical thinking processes you are teaching
In other Words…

Students haven’t learned to focus…
The good news: The brain can be trained to focus...
What You Focus on Changes the Structure and Function of your Brain

(Alvarez & Emory, 2006; Chan, Shum, Toulopoulou, & Chen, 2008; Chiesa, Calati, Serretti, 2011; Goldin & Gross, 2010; Hölzel, Carmody, Vangel, Congleton, Yerramsetti, Gard, & Lazar, 2011; Kozasa, Sato, Lacerda, Barreiros, Radvany, Russel, Sanches, & Mello, 2012; Lutz, Slagter, Dunne, & Davidson, 2008; Todd, Cunningham, Anderson, & Thompson, 2012)
We can Intentionally Change the Structure and Function of the Brain

Via Attention, Emotion, and Cognitive Regulation Training

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Behavioral & Neurological Changes
Behavioral & Neurological Changes

REGULATION STRATEGIES

- Attention
- Prefrontal Cortex
- Insula
- Precuneus
- Amygdala
- Hippocampus

Emotion

Cognitive
Behavioral & Neurological Changes

Additional Constructs

- Resilience
- Prefrontal Cortex
- Insula
- Amygdala
- Hippocampus
- Precuneus

Empathy
Choice Making
Behavioral & Neurological Changes

Neural pathway to mindful response

Frontal Lobe
I think rationally here

Limbic System
I feel here

Spinal Cord
My experience enters here

Bradberry & Greaves (2005), 12
Integrative Inquiry
(Under Review, anticipated publication 2014)

Unknown/Spontaneous Creativity

Feel/Sense

Student learning and development

Known/Evidence
Integrative Inquiry (INIQ) Logic Model

**Inputs**
- Google’s SIYLI
- Interdisciplinary Research Team
- Neuroplasticity
- Attention, Emotion, and Cognitive Regulation

**Activities**
- Focused Breathing and Movement Exercises; MBSR; task-switching
- Self-Inquiry, Journaling, Group Dialogue
- Applied Community Service Project
- Via Online Modules

**Measures**

**Summative:**
Pre- and Post-:
- CCTDI, MAAS, TMMS, SCS, Beck, PSS, Resiliency

**Formative:**
Pre- and Post- Test survey, -AAC&U Rubrics applied to journal analysis, assignment analysis, and applied project analysis

**Outcomes**
- Truthseeking, Open-mindedness, Analyticity, Systematicity, Confidence in Reasoning, Inquisitiveness and Maturity of Judgment
- Increased attention, emotion, and cognitive regulation

**Impacts**
- Increased critical thinking dispositions
- Increased academic success
- Decreased stress and anxiety
- Increased Resiliency
Integrative Inquiry
(Under Review, anticipated publication 2014)

Student learning and development

Known/Evidence
Via Courses, PLA

Feel/Sense
Via Facilitated Experiences

Unknown/Spontaneous Creativity Via Intentional “Messy” Opportunities
<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Exemplary instructions</th>
<th>Self-reported and experimental behavioral findings</th>
<th>Associated brain areas</th>
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</thead>
<tbody>
<tr>
<td>1. Attention Regulation</td>
<td>Sustaining attention on the chosen object; whenever distracted, returning attention to the object</td>
<td>Enhanced performance: executive attention (Attention Network Test and Stroop interference), orienting, alerting, diminished attentional blink effect</td>
<td>Anterior cingulate cortex</td>
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<tr>
<td>2. Body awareness</td>
<td>Focus is usually an object of internal experience: sensory experiences of breathing, emotions, or other body sensations</td>
<td>Increased scores on the Observe subscale of the Five Facet Mindfulness Questionnaire; narrative self-reports of enhanced body awareness</td>
<td>Insula, temporo-parietal junction</td>
</tr>
<tr>
<td>3.1 Emotion regulation: reappraisal</td>
<td>Approaching ongoing emotional reactions in a different way (nonjudgmentally, with acceptance)</td>
<td>Increases in positive reappraisal (Cognitive Emotion Regulation Questionnaire)</td>
<td>Dorsal prefrontal cortex</td>
</tr>
<tr>
<td>3.2 Emotion regulation: exposure, extinction, and reconsolidation</td>
<td>Exposing oneself to whatever is present in the field of awareness; letting oneself be affected by it; refraining from internal reactivity</td>
<td>Increases in nonreactivity to inner experiences (Five Facet Mindfulness Questionnaire)</td>
<td>Ventro-medial prefrontal cortex, hippocampus, amygdala</td>
</tr>
<tr>
<td>4. Change in perspective on the self</td>
<td>Detachment from identification with a static sense of self</td>
<td>Self-reported changed in self-concept (Tennessee Self-Concept Scale, Temperament and Character Inventory)</td>
<td>Medial prefrontal cortex, insula, temporo-parietal junction</td>
</tr>
</tbody>
</table>
Spring 2013 Pilot Results

- Significant decrease in
  - Perceived Stress (PSS)
  - Anxiety (BAI)

- Significant increase in
  - Confidence in Reasoning (CCTDI)
  - Observing (FFMQ)
  - Describing (FFMQ)
  - Acting with Awareness (FFMQ)
Pilot Results, cont.

• Significant increase in
  – Non-judging of inner experience (FFMQ)
  – Non-reactivity to inner experience (FFMQ)

• The research continues…
  – Ethnic Identity
  – Resilience
  – Self-Compassion
  – Critical Thinking
Other Potential Outcomes

• Improved immune function (Carlson, Speca, Faris, & Patel, 2007; Davidson et al., 2003)
• Reduced blood pressure and cortisol levels (Carlson et al., 2007)
• Increased telomere activity (Jacobs et al., 2010).
• Increased overall well-being (Holzel et al., 2011)
Other Outcomes, Cont.

- Increase in gray matter in the temporo-parietal junction (Blank et al, 2005) which increases self-awareness and can lead to overall self-regulation (Arzy, Thut, Mohr, Michel, & Blanke, 2006)
- Students’ mental reconstruction of how the student perceives their environment - and even re-framing them in more creative ways (DeSteno, Gross, & Kubzansky, in press)
Other Outcomes, Cont.

• The ability to remain open to all alternatives presented to them. In doing so they can select the decision that most aligns with their values and articulate this decision in a clear way (Goldin & Gross, 2010; Valdesolo & DeSteno, 2011).

• Increased self-compassion (Neff, 2012)

• Changes in genetic composition (Davidson, 2013)
How might this proposed model help you achieve this?

• Broward College defines critical thinking as a process of evaluating information by questioning and testing assumptions, accepting and rejecting arguments and/or perspectives, and applying reasoning to make informed decisions.
Discussion Questions

• How do you want to leverage the aforementioned research in the design of what you do?
• How do you want to collaborate with each other to implement necessary refinements?
• How do you want to evaluate your success?
Questions?

Contact Marilee Bresciani Ludvik, Ph.D. at rushingtoyoga@gmail.com or at mbrescia@mail.sdsu.edu
References


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• For details on (Alvarez & Emory, 2006; Chan, Shum, Toulopoulou, & Chen, 2008; Chiesa, Calati, Serretti, 2011; Goldin & Gross, 2010; Hölzel, Carmody, Vangel, Congleton, Yerramsetti, Gard, & Lazar, 2011; Kozasa, Sato, Lacerda, Barreiros, Radvany, Russel, Sanches, & Mello, 2012; Lutz, Slagter, Dunne, & Davidson, 2008; Todd, Cunningham, Anderson, & Thompson, 2012) please refer to the Supporting Research tab at www.rushingtoyoga.org.