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| Butler University- College of Education -Butler Lab School  |
| Educational Neuroscience/ Brain and Trauma |
| Summation of first semester |
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| **12/13/2016** |

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| The purpose of this summation is to share with educators, faculty and students how educational neuroscience was implemented in grades three, four, five and six at the Butler Lab School in the fall of 2016. It is my intention to outline not only the activities, strategies and feedback, but to share how the brain states of curiosity, anticipation, novelty and prediction were embedded in our time together. This summation will also support the strategies we implemented in de-escalating the stress responses both in students and in educators. I want to thank Mrs. Heather Williams for supporting this work as she assisted in these classes with co-teaching, feedback, and yoga instruction.  |

**Fall 2016**

**Butler Lab School**

**August- December**

I began in two 5/6 classes this semester and ended the year in a 5/6 and ¾ class. The purpose of this summation is share the educational neuroscience topics and lessons that were introduced and hopefully these strategies and lessons will be further explored and differentiated this second semester. The staff at the Butler Lab School was wonderful to work beside and always open to new ideas! We encountered a challenging beginning to the academic year with two of the three 5/6 teachers leaving six weeks into the school year. It also became very apparent early on, that many of the students were struggling emotionally with a variety of significant adversity and the emphasis of my time in the classrooms each week was helping both teacher and student to understand the science beneath behaviors, calming the stress response, and engaging those students who entered school internalizing behaviors or hyper sensitive to their environment, instruction and to school relationships.

In the first weeks, I introduced the “brain” and why I was there. The students seemed very interested in this discipline and before we can ever truly model brain intervals, focused attention practices or engagement of standards and content, they needed to understand what was happening inside the science of their brains! Actually this age is ripe for the learning as their brains are developing in the most complex ways. To understand and have the awareness of why we feel the way we do is further calming and regulates the stress response system. In each of the three classes, there were approximately five to eight students who were not walking through the Lab school's doors with a brain primed to engage emotionally, socially or academically. There may be more that are challenged, but consistently I observed about 18 to 20 students who are daily reactors to their environments. I know that the teachers are deeply aware of this. This makes our job even more important!

**Topics from the First Semester**

Neuroplasticity

Amygdala

Prefrontal Cortex

Feelings

Hippocampus

Mirror Neurons/ Empathy

Triggers

Core Memories

Islands of Personality

Focused Attention Practices

Brain Intervals

EFT Practices/ Tapping

Brain as a Social Organ

Myelination/ Repetition and Emotion

Multiple Intelligences

Images and Stories

90 second rule

Adolescent Brain

August/ September 2016

1. In the 5/6 classes we observed paintings of neuronal connections and the students predicted, discussed, and shared what they had learned about neuroplasticity, the amygdala, and the prefrontal cortex. I wanted to see what they had retained from the first few weeks following an introduction of this discipline. I brought in almonds on a few occasions that resemble our amygdalae. They loved the treat and comparing the size and shape of this limbic brain structure.
2. We know the brain learns best through visual images and stories so I implemented these brain aligned strategies weekly. Joseph was especially intrigued by the paintings and loved guessing what they resembled and the association to what was happening in his brain.  I shared the story of Nellie, our rescue dog, and how the brains of dogs in stress resemble our brains in stress... they made several connections and loved the framed picture of Nellie and the story I wrote about her.

1. In early September, in Courtney's class, we also reviewed what the students had taken away from the past two weeks. The discussion was rich and engaging from this group as we focused this discussion on our feelings and how **contagious emotions. We implemented the Sentis v**ideos that discussed the working parts of the brain!   Courtney began teaching about magnetic power and this was a great introduction with :

A. realia- magnetic objects from my house as they were amazed how my Butler name tag bar could pick up an entire picture frame!

B. We used prediction, questions, discussion, and analogies as they made guesses and predicted the biggest magnet in the world and the smallest. They also discussed common every day magnets or occurrences that we all use, i.e. cell phones, electricity, (we talked about our recent storms and power outages). This discussion led to the HUMAN MAGNET!! We talked about how we too are magnets and we attract unintentionally the feelings of others because emotions are contagious. It was a simple but enjoyable introduction to the standard of magnet charges, poles, and the intricacies of what they would learn that week.

4. In all classes, I introduced a new brain interval/ focused attention practice that combined movement and breath! We called this the **domino effect**...we breathed through our noses (warming up our bodies and brains)  as we began wriggling our toes, ankles, legs, shoulders, and arms;  then proceeded to do the reverse as they mimicked me. I will continue to help them to understand that the only ways we are able to calm down in negative emotion is through breath, movement and some space and time.

1. In the 5/6 classes we honed in on "feelings." We are feeling creatures that feel first and then think... Each day I invited students to lead with me and will continue this procedure next semester. We passed out colored straws that represented our feelings and chose various classmates to answer the questions based from the Inside Out curriculum. As they shared the questions they chose and their responses, there was lots of "red anger straws"   but also much joy and disgust shared too! I noticed fear and sadness were not mentioned much often. This was strong perceptual data for me as well. They were given six colored M n M's representing the feelings in their prefrontal cortex. I modeled this exercise with photos and a story- two brain aligned strategies that stick to the brain like Velcro.

1. In the 5/ 6 class we took educational neuroscience into memoir writing. Here is an example we could use to teach the details of a memoir or story. When introducing this concept (details) we have one large piece of colored construction paper in the center of our group and hidden in the hands of the teacher is the same piece of colored construction paper that has been torn into 25 to 50 pieces!  We then begin the few minutes of direct instruction with a question: What would this large piece of orange paper (and then we toss into the air the tiny pieces) and these small pieces of orange paper have to do with our memoirs and the details that we write into our wonderful stories?  The students take a minute and share out their guesses with a partner and then we predict. We come to the conclusion that we would not have a story without all these wonderful details! Then we can begin showing the contrast.
2. I brought in almonds, a pair of torn jeans, a hand written ten word poem. The students reviewed the amygdala and prefrontal cortex while we ate salted almonds. I then explained that we would move to our PFC as we predicted what was in the brain bag, observed the jeans and “wondered” about how the yellow poem, the torn jeans, and red sheets of paper could help us to think clearly. We reviewed details by having them listen to the words in the poetry and then after listening and observing… they took 30 seconds of quiet and returned to their seats where they tried to remember all the details from the poem and/ or the details observed from the pair of jeans! They wrote their details and words on red paper with black pens and then shared all the details of the observations. We honed in on active listening, details, prediction, analogy, working memory and even raised lots of dopamine as we guessed, laughed and shared!
3. “How to Train Your Dragon” – we shared in this film clip and talked about trust and how we earn one another’s trust… these were questions for the teachers and students!

<https://www.youtube.com/watch?v=6MDCamjAQVA>

There are so many ways to watch and implement this video clip! For me as a teacher... studying this, I am learning:
1. Trust takes time and space with students who come into our classrooms not trusting adults!
2. I am unable to connect with a child or adolescent until I have provided some modeling of calm predictable behavior! Mirror Neurons!
3. I don't always have to have a child look at me when I am redirecting or communicating!

When I show this to my students this week, we will talk about the power of connection, empathy and mirror neurons!
We will discuss the power of nonverbal communication and being patient with differences! Where are amygdalae in this clip? How do you know? How do Toothless and Hiccup move to connection in the prefrontal cortex? What did you notice about neuroplasticity from this clip? How can you apply the creation of this new friendship in your own life?

Our circle times were spent together greeting one another, but also focusing on a topic or a question. Below are a few of our questions for community circle.

1. What are your strengths?
2. What triggers you?
3. What do I do well now that I wasn’t able to do well in the past?
4. What did I use to do that I don’t do much of anymore?
5. Are you more like a cracker or a cookie? Why?
6. When were you in your PFC recently?
7. When were you in your amygdala?
8. Which emotion from Inside Out do you relate to the most? Who shows up in headquarters more often?
9. Name one personal goal you will change to show neuroplasticity? How will you do this?
10. What is one school goal you will change to show plasticity in the brain? How will you do this?

October/ November

1. In these months, we took a hard look at the amygdala, memories, and neuroplasticity and our triggers. We also looked at how the brain is a social organ and we need each other. We revisited “Inside Out” and core memories discussing how many of our core memories are sad and filled with joy, but what makes them “core” are the emotions tied to these memories. The students were also given glass marbles as these represented their “sparks” their passions, interests and areas of expertise. Next semester, we will focus on creating “Islands of Future Personalities” keeping neuroplasticity in mind.
2. Students created candy models of neural connections and we even made human models with students lying on the floor representing axons and dendrites connecting which shows learning in the brain.
3. We delved into Multiple Intelligences and I hope next semester teachers will take off with this activity creating an MI wall reminding students of all the ways we are smart… focusing on the question- “How are you smart?” rather than “How smart are you?”
4. Academically, in the ¾ class, Kate and I co-taught with great success (we laughed a lot too!) When we co-taught in writer’s workshop, we acted out immigration, fracking, and healthcare when students were creating their “candidate for presidency” work. Each candidate held a different stance on these issues, so Kate and I acted out the issues, while the students took notes, predicting, making associations, while excited to give us feedback. We did the same co-teaching model for teaching punctuation and editing. I wrote up a horribly misspelled paragraph with all kinds of punctuation errors and as we read this to the students, they assessed the work we had done! They loved finding the errors and sharing those with us.
5. In teaching memoirs, we compared the main idea to the meat inside a cheeseburger! We discussed what might be the meat, what represented the cheese, lettuce and other toppings. We began to see how details do support the main idea.
6. We also incorporated a brain interval and a focused attention practice each time I came to class. This is very important for teachers to implement every part of the day when I am not there. We taught the students (EFT, tapping), which they loved! In one format, they mimicked me and had to pay close attention to the areas I tapped so they would not get lost (mirror neurons). This went so well, that I began incorporating student leaders to lead the “Tapping” during each class. The students loved this leadership role.
7. In our last week, I cut sentence strips into 25 questions for a review of the semester and hid them in stockings. The students broke into small groups and answered these with personal examples. I was happily surprised at how much they had remembered and shared during our last time together this semester.

**Goals for Spring Semester/ 2017**

**Educational Neuroscience/ Brain and Trauma**

***As we talked about the second half of the school year, we discussed creating a neuroscience fair for the younger grades, and a team of student leaders visiting classrooms to teach the lower grades about their brains. I am so excited to continue at the Lab School as take this work further into the students’ lives and into classrooms.***

Below are links to videos we used and Edutopia articles that include brain intervals, FAP, and brain aligned bell ringers.

How we are born for kindness!!

<https://www.youtube.com/watch?v=BmWGJMD9Umk&index=40&list=PLzkQfVIJun2KAMnYl6i0vnM91zm9Z-A8T>

 Brain Intervals and Focused Attention Practices

<https://www.edutopia.org/blog/brain-breaks-focused-attention-practices-lori-desautels#comment-247386>

<https://www.edutopia.org/blog/energy-calm-change-it-up-lori-desautels>

Brain Lab in your Classroom!

<https://www.edutopia.org/blog/brain-labs-enliven-learning-lori-desautels>

<https://search.yahoo.com/yhs/search?hspart=pty&hsimp=yhs-pty_extension&p=Brain+Videos+for+students&param1=20160625&param2=7f832852-d29c-419a-b0c3-fe8a62f0ec45&param3=transit_3.1.1~US~appfocus29&param4=gemini-cstore-bb8~Firefox~Brain+Videos+for+students>

Sentis Videos

<https://www.youtube.com/user/SentisDigital>

With great respect,

Dr. Lori Desautels

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