

Overall Faculty Summaries

Ginna: The Learning + The Brain Conference was both a validation of what we do at Sage, and an inspiration to better promote attentional training, health habits (ex. Sleep), biological self-knowledge, and integration (→harmony→dance) within the classroom and individual student. The take away message was ATTUNEMENT + RELATIONSHIP = mechanism of action in teaching, healing, growing, etc.

Chris: WE MUST DESIGN A SCHOOL THAT ACKNOWLEDGES THE BIOLOGY OF OUR STUDENTS THAT IS BUILT AROUND THEIR EMBODIED MINDS.

Nathan: The theme was something like "Expanding the Definition of 'Learning.'" Or perhaps "You mean we can learn during Chicken??"

Keynotes Summary

The three days of keynotes can be nicely summed up by the "Three R's" given by Dan Siegel: Relationships, Reflection, and Resilience. The importance of relationships (interpersonal, inter-subject, inter-world) cannot be understated, as relationships create learning. Siegel stated, "The mind is a relational process" and thus we understand things only in relation to other things. Yvette Jackson likewise broadened this with the idea that what we "know" relates to our cultural background. When someone says, "I don't get it," what he or she is actually saying is "This isn't connecting with my prior knowledge."

Next, reflection was repeatedly stressed as a way of identifying strengths and cultivating strategies for success. This was also related to the "growth mindset," the idea that parents and educators ought to emphasize the process rather than the result. The analysis of the process is only possible through reflection. Finally, Christine Carter emphasized reflection and taking time to be grateful as a key way to cultivate happiness.

The final "R" is resilience. Yong Zhao indirectly highlighted resilience in pointing out that China has its own crisis in education due the dearth of creativity and resourcefulness of its students. American students, Zhao asserted, are more likely than Chinese students to take risks and they aren't as afraid to be different. David Walsh also spoke about the importance of resilience in terms of how children respond to being told "no." If a child is told no, his or her first reaction is to escalate. If the parent (or teacher) gives in, the child learns simply that no means escalate. If, however, the parent still says no, the child must learn how to deal with not getting what they want. In other words, they learn to adjust in the face of setbacks and to be resilient.

The overall sense was two fold: 1.) The importance of understanding our basic, human biology, and 2.) That this biology functions as a whole in a broader environment. For example, essential are emotions, sleep, social relationships, diet, and the need to move. Our experience and environment in these regards shape all of our learning, and we really need to see the learning environment as a complete package, including all of these, rather than specific interventions for some of these. This is when we build the tool shed, not the tool kit, or the individual tool.

Break Out Session Summaries

Healthier Minds, Play and Learning

Feelings control learning, and emotions represent a very ancient solution for living. Play is essential to learning in everything from attitude, to good behavior, to the relationship with adults. Critical kinds of play are unstructured and outdoor, which offer diversity, creativity, choice, and the ability to develop executive function through filtering what is not important and focusing on

what is. Sleep and activity are critical, as is not being sedentary. Strong results in Executive Function, Math (even when math wasn't being tested), and reduction of ADHD.

Smarter Minds and Smarter Reading

A fundamental awareness that we should pay attention to the entire student- at once this is both biological reductionism in that we recognize the importance and fundamental nature of our animalistic biology (e.g., the key to reading is the sound and shape of letters and words, not their names), and a deeper, systematic approach in that learning is not just one thing, but the interrelation of many. As an example, dyslexia is not a disease to be cured, but a tool looking for its appropriate use. The total cognitive package of dyslexics is really strong, and while they have trouble reading, they have strong material, interconnected, narrative, and dynamic reasoning.

The three stages of insight: 1.) Active focus/gather, 2.) Relaxation and mind wandering, 3.) Eureka moment highlight the importance of periods of intense work, followed by intentional "non work."

David Walsh

David Walsh described adolescence as a major hormonal event in which girls experience a surge in estrogen, progesterone, and oxytocin, and boys experience a 1,000% surge in testosterone. He cites these hormonal changes as the root of all behavioral and affective changes during adolescence. The amygdala is densely packed with receptors for these sex hormones, and so it is extremely reactive during puberty. The resulting surges of anger can be confusing for both boys and girls. Both sexes experience anger and aggression during this time, but boys express it physically and girls socially and verbally. In addition to the difference in reactivity between the hormonally stimulated amygdala and the adult amygdala, another interesting difference in neural processing is that adults interpret nonverbal cues in the PFC, while adolescents interpret nonverbal cues in the amygdala. This means that adolescents are far more likely to interpret social cues emotionally and with anger and aggression. This hyperreactivity is no surprise, but the difference in nonverbal processing was news. My take away from all of this is that adolescents (or perhaps even pre-adolescents) might benefit from learning the biological basis of their changing experience. In fact, prior knowledge of the impending emotionality might help prevent kids from developing habits of self loathing as a result of feeling shame about their own behavior, thoughts, and feelings.

Ron Dahl

Rob Dahl's framed adolescence as a time of both vulnerability, and valuable opportunity. Puberty is hormonally equivalent to the prenatal period, and can therefore be termed a "second birth." The adolescent's neural plasticity and heightened emotionality make this a time of "igniting passions." Although risk taking increases in socially and emotionally charged contexts (due to a desire to master fear and demonstrate courage to peers as a means of gaining admiration), so does the desire for novelty and exploration and the motivational salience of social status. Despite what many say, adolescent cognition is coming along at the same old pace. The only difference is that the affective experience is intensified, thereby creating high emotionality without equally ramped up cognition to mediate it. Dahl emphasized that development is not just about the PFC, but about CONNECTIVITY + INTEGRATION. (This echoes Dan Siegel's definition of health, wellness, and resilience as a process of integration.) With experiences that promote this type of integration, adolescence is also a time of intensified goal-directed desires and behavior (including long term and abstract goals). As a result, adolescence is a time during which many young people discover a passion and pursue it. After also discussing the changing sleep needs of teens, Dahl concluded by reiterating that adolescence is a period of multiple vulnerabilities but also of igniting passions. He added a suggestion: change start times and educate

parents and students. I believe that combined with an embodied awareness of self, an intellectual understanding of the underlying processes of puberty would benefit adolescents and help facilitate internal integration by promoting self acceptance.

Yong Zhao

Yong Zhao artfully flattered American audiences, while simultaneously and discretely discrediting their schools. His prescriptions for schools that promote creativity and entrepreneurship are in line with much of what we do at Sage. He advocates for education as expansion, with students acting as “global entrepreneurs” engaged in personalized and autonomous learning, real outcomes (authentic products or services), as well as disciplined and sustained work. He envisions this as a strength and project-based curriculum framed in a global campus. Our culmination of the sage curriculum in the experience of the global citizen seems to fit well within his model. Eventually, might we even aim to offer more international experiences?

Breakout sessions: Happier Minds & Self-Regulation

The gist of this session was that self-regulation and self-discipline are stronger predictors of academic success than intelligence. For example, students who were able stop and think before reacting in a game or activity in preschool were more likely to graduate from college than those who didn't think before reacting in preschool. Thankfully, self-regulation is a skill that can be taught, but it is increasingly hard to teach in our society. David Walsh asserted that we now have a culture of Yes: one that emphasizes More, Fast, Easy, and Fun. The number one concern of American business leaders is work ethic and our job is to equip our kids with shock absorbers to handle the bumps in the road, not to shield them from every obstacle.

Breakout sessions: Social Brains & At-Risk Children

This presentation was about the importance of educating the whole child. The first talk seemed a bit behind the times. Carol Kochhar-Bryant and Angela Heishman talked about creating a school environment that is conducive to learning- healthy students and teachers, beautiful and colorful landscaping, a safe learning environment, etc. The second presentation, by Janet Giler, was about helping special needs children (and all children) learn to read other people better and adjust their reactions as it is appropriate. Giler stated that teasing becomes bullying when it becomes more consistent and when the teaser gains support from other children. In addition, Giler stated that we will never be able to stop teasing and bullying, but we can help children learn to react to it differently.

Breakout session: Intelligence, IQ, Smarter Brains

Dennis Garlick (Researcher).

Intelligence depends as much on the process of *pruning* one's neurons and neural networks as it does on "learning" (defined here as the building up of neurons and connections involved in information storage). One's brain prunes through experience, and does so most effectively in a "sensitive period" before age 16.

(Panel discussion on curiosity)

Children are innately curious, and schools can easily squelch it. Our brains are primed to look for novelty, which in turn generates curiosity (what is that? why are you doing that strange thing?). We (educators) must incorporate novelty into our lessons in a way that makes what we're doing the most interesting thing in the room, and which, obviously, relates to the content we're seeking to convey.

Breakout session #2: Happier Minds, Mindfulness & Stress

Jelena Obradovic, Researcher.

People are variably susceptible to environmental effects. Put another way: physiologically

speaking, one person will react more (or less) strongly to stress and adversity than another (aka "orchid children" and "dandelion children"). In one way this is common sense, but for me it has been a useful reminder that stressful situations (presentations, tests, etc) affect some students way more than others (cortisol release, autonomic NS freaking out, etc). This also relates to Posner's 7-repeat allele and biological susceptibility to context.

Teaching self-calming to special-needs children (Debra Collins and Louise Goldberg)

As I mentioned, some of this goes for all of us. Stress short-circuits the reflective, prefrontal cortex brain and puts us in the reactive, fight-or-flight brain. To reverse this, we must relax, *but it is not self-evident that students know what this means, or how it feels*. We can (once we have the appropriate space) practice such relaxation during quiet time. Sounds stupid; it isn't.

Break out with Mary Helen Immordino-Yang and Sam Goldstein

Our brains are embodied entities that help create 'the sensation of being me'. The very circuits that react when we eat bad food give us 'gut feelings' during moral judgements. Our job as teachers is to be the skilled adult in the room who helps kids feel their own lives in ways that are meaningful and purposeful. Education can provide many opportunities for developing different senses of self and the ability to maintain multiple mirrors in the mind. The way we feel our emotions is shaped by cultural values. Story, art, social interactions, cultural interactions, reflective space. Learning is not rational, not alone, not without culture.

ADD, the autistic spectrum, are social and communication problems, ultimately those are interrelated into one phenomenon. We need to stop pathologizing childhood- these kids need more good teaching, not simply different teaching. We as teachers are facilitators of social development, and need to get them into the world and work with real people. We need to realize the complexity that is inherent in social interaction- it taxes the whole brain. Schools need to work with and develop intrinsic motivation. Are schools a liability- do they hurt kids social development? Schools need to focus on the 5c's: Competence, Confidence (positive identity), Connections, Character, Caring/Compassion

Break out with Judy Willis 'engaging the whole child' and Dr. MA Greenstein "growing spatial intelligence"

As teachers, we would be wise to tap into the dopamine-pleasure effect that naturally occurs in our kids, and develop their skills at accessing their pfc (reflective brain). Boredom and frustration that kids experience in our classrooms, when we are not paying attention to the above, are natural and healthy responses in kids. We should pay attention to the success of video games: get buy in, design an achievable challenge, and demonstrate incremental progress. In order to tap into kids dopamine system: have individuals make predictions, achieve challenges, movement, music, being read to, social interactions, humor, choice, intrinsic satisfaction, optimism.

Schools don't use spatial intelligence enough- but space and time are 2 things that we intuit naturally because we actually feel them. The brain connects to neural receptors on joints and inside the organs. By developing Spatial intelligence, we grow the hippocampus.

Breakout Session: Teenage Brain

This session included talks from David Walsh, Amanda Guyer, and Judy Moskowitz. David most succinctly described the teenage brain as, "having the gas pedal to the floor with the brakes on order." This then brought the conversation around to how adults and teachers can act as the brakes and regulator through love, connection and communication.

Judy Moskowitz focused on the power of positive emotion. Most specifically to students, positive emotion has been tied to greater levels of success through better problem solving, decision making and integration of information. She included a list of ways to generate positive emotion, including gratitude and mindfulness, and was clear that it could absolutely be approached in a buffet style.

Key words and phrases from keynotes

Relationship	Wired to attach	Growth Mindset vs Fixed
Non-linear	Novelty	Gratitude
Energy flow	Curiosity	Happiness
Connection	Attention training	Kindness
Embodiment	Mindfulness	Pattern recognition
Intuition	Compassion	Play
Attuned communication	Empathy	trust
Self-knowledge	Attachment	

“focusing the mind changes the brain”

we can teach kids to be more empathic

honor the differences, get them to work together

self reflective essay writing is integrative, good for the immune system

During kids meltdowns: Connect with their nonverbal- ‘feeling felt’, then redirect with their left-solutions, words planning

Your job as a teacher is an integrator

what does school give kids to experience? What does it teach?

We outsource stress response to early caregivers

Intelligence is what we use when we don’t know what to do

Brain has 2 attention systems- reactive and focused attention

Must build on prior knowledge

First month of school= identify strengths, get rid of labels

Adolescent brain very sensitive to oxytocin (bonding chemicals)

Happiness Precedes Success!

Analogy is fundamental

Sociability is basic value of mammals

The biological structures of reward are far more powerful than grades or money

Experience shapes specific habits and preferences

Executive function improves with practice

Moral & Conventional thinking are different,-14 years is the low point of respect for convention

Morality is constructed, not taught. It involves assessing complex situations and weighing moral and nonmoral factors.

"School can be an alternative world"

Teachers should practice: a) unconditional positive regard and b) non-punitive discipline

We are evolutionarily predisposed to altruism

Kindness = honoring and supporting another’s vulnerability

MIND: an embodied and relational process that regulates the flow of energy and information.

Teaching as energy sharing

Education is a relational process + relationships create learning

Entrepreneurship and innovation do not emerge where bad behavior is not tolerated

Confidence is the basis of creativity + entrepreneurship

Can you allow outcasts? (how many steve jobs have been thrown away ?)

test prep improves scores but causes loss of real interest

EDUCATION needs to be an EXPANSION → passionate, unique individuals...not to find jobs, but to CREATE jobs.

Students as GLOBAL ENTREPRENEURS Freedom to learn = CHOICE

Real outcomes: authentic products or services

High expectations: disciplined and sustained work

STRENGTH-BASED, Project-based

GLOBAL COMPETENCE: the globe as the campus!