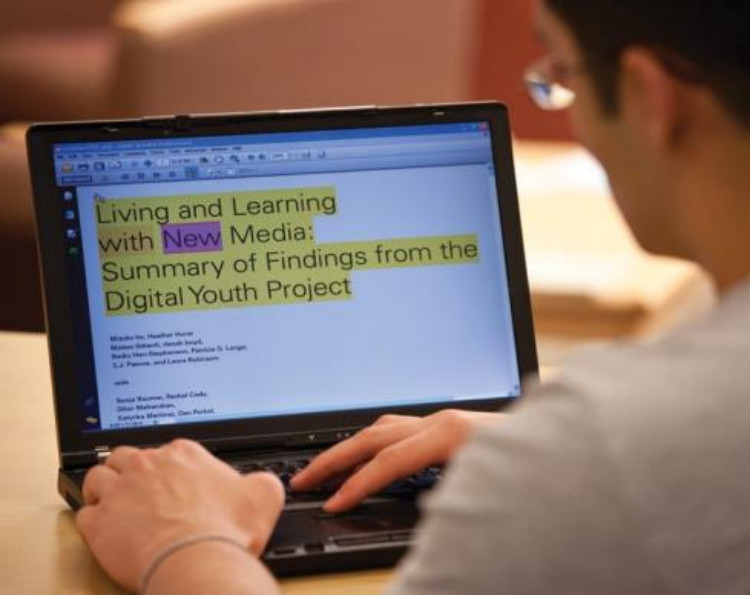

The 21st Century Study Skills: Activating the Inactive Learner

Landmark College Summer Institute

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Agenda

- **New Understanding of How We Learn**
- **Strategies based on brain-based learning** (study supplements)
- **Designing for optimal approach to engagement and study skill**
- **Landmark College pedagogies for engaging learners with LD**

New Understanding of How We Learn – Day 1

Strategies and study skills are most effective when anchored in brain-based processes of learning

Our brains are uniquely organized

Learning is a physiological process

Brain attributes meaning through pattern seeking

New Understanding of How We Learn- Day 2

Strategies and study skills are most effective when anchored in brain-based processes of learning

Influenced by emotions and inhibited by threat

Learning is developmental process

Effect of Novelty and Learning through Gamification

Study Skills and Technology - Day 3

Selected Tech Tools for:

Reading

Memory and Recall

Note Taking

Brains are Uniquely Organized

- Neurons – 100 billion (1,000,000,000,000)
- Neurons communicate through electrical and chemical impulses (neurotransmitters)

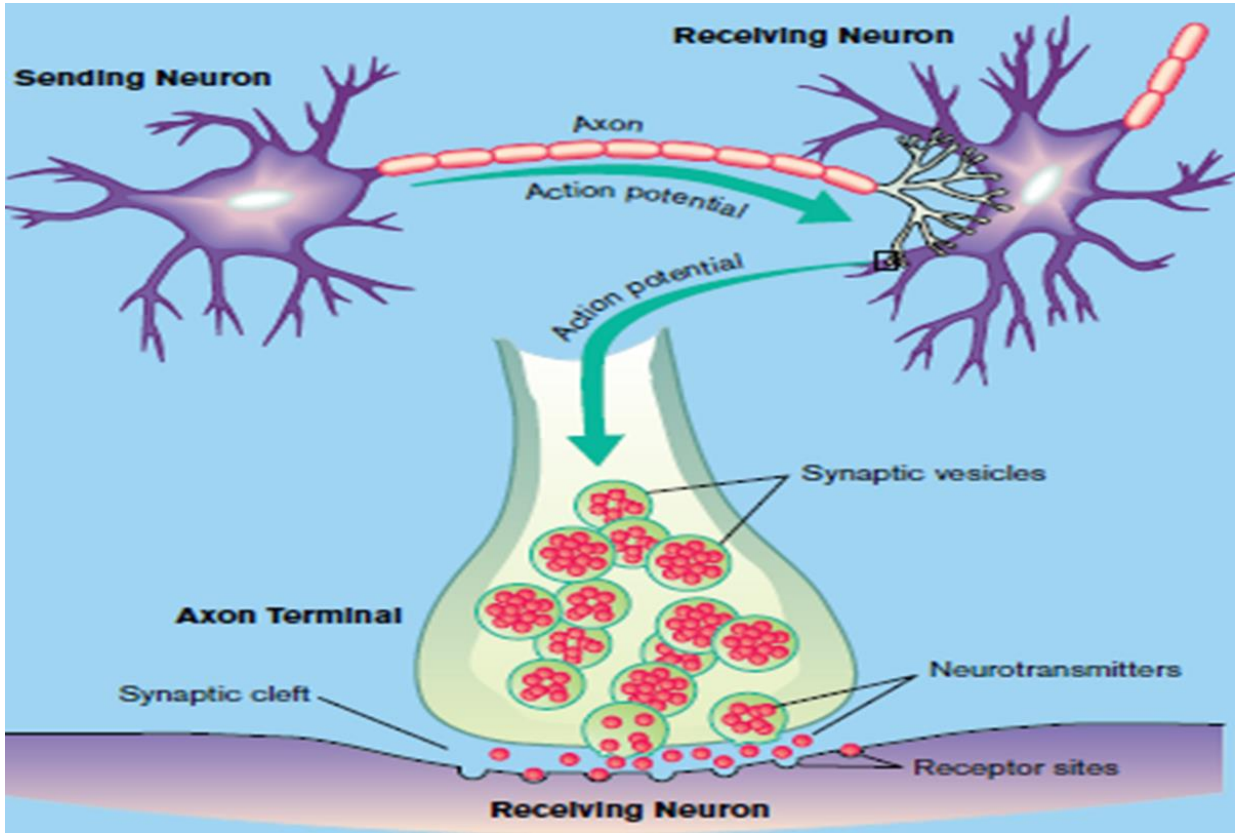
Neurodiversity

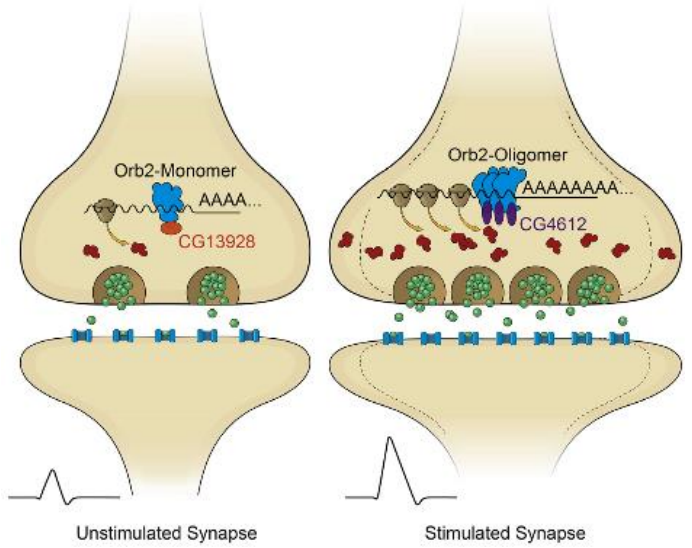
Neuroplasticity

Connectivity

- Ecosystem that is in constant competition with itself; survival = neural activation

Brains are Uniquely Organized





- The human brain can interpret images that the eye sees in just **13 milliseconds**

Our brains are uniquely organized

The wiring of our brains change with learning; and no two brains are wired alike.

Jensen 2015

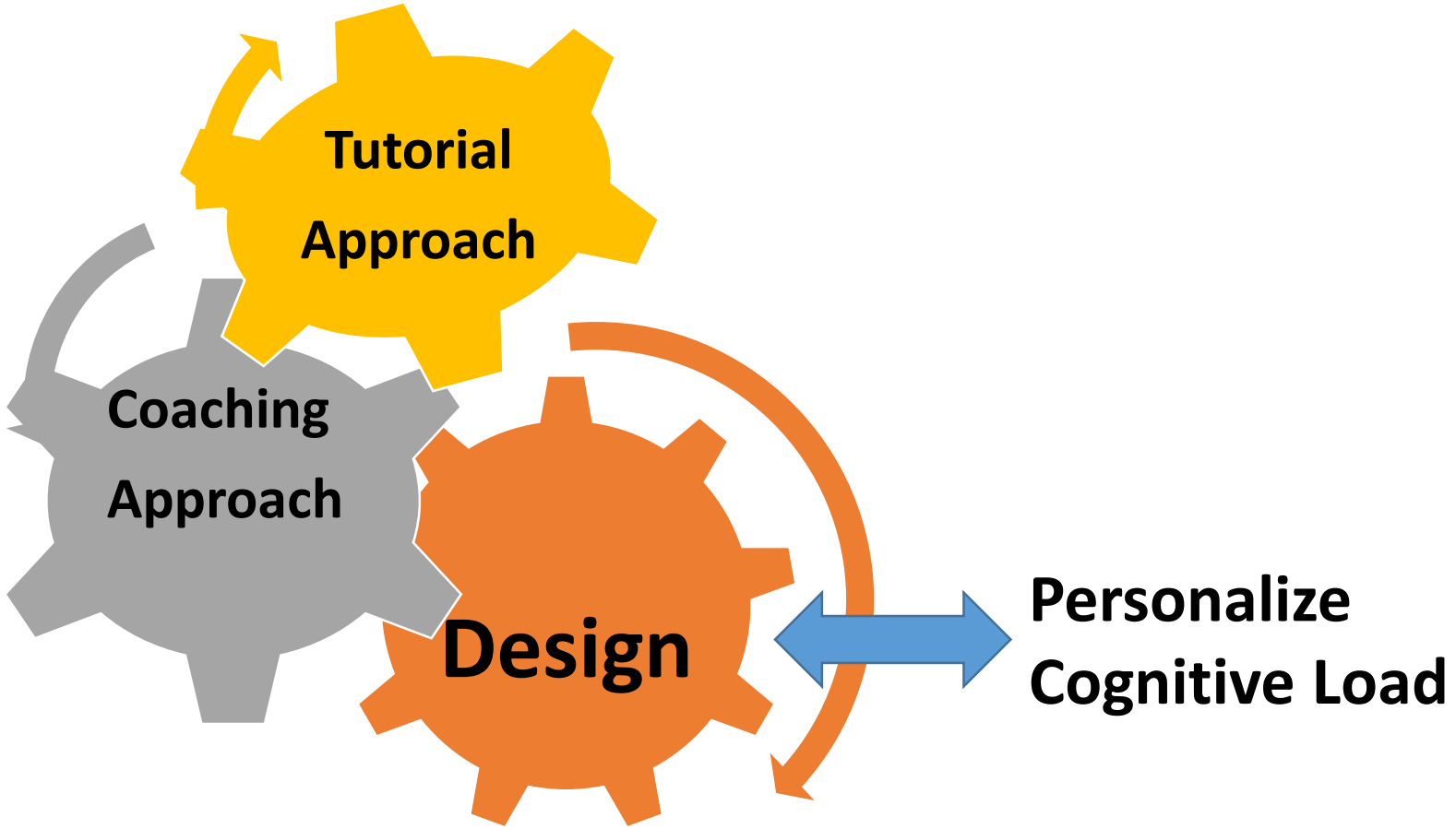
Wiring is malleable; changing one's pattern of thinking changes the wiring

J. Schwartz - OCD patients
C. Dweck - Mindset

Repeated thought and action can change the brain's structure; robustness of feedback from the environment is key

Our brains are uniquely organized

What does this mean for Study Skills?



Our brains are uniquely organized

Individual Cognitive Load and Cognitive Capacity

- **Lower order and higher order processes compete for cognitive working space**
  - Example: *concentrating on spelling or mechanics vs. analyzing the validity of ideas as they relate to a central thesis*

Ibrahim Dahlstrom-Hakki

Banerjee & Brinckerhoff, 2017

Our brains are uniquely organized

- **What are some common constrictors of cognitive working space?**
  - Weakness in working memory, attention, and executive functions
  - Speed of information processing
  - Poorly automatized skills
  - Anxiety, stress, or other affective issues
  - Multi-tasking

Ibrahim Dahlstrom-Hakki

Banerjee & Brinckerhoff, 2017

Our brains are uniquely organized

Each of the cognitive loads are additive, and instructional design's goal should be to reduce extraneous cognitive load to free up working memory

Cognitive Load

- Intrinsic
- Extraneous
- Germane

Sweller, 2010

Ex: 3+5; 2745 + 132

Presentation

Automating schema into LTM

Our brains are uniquely organized

- **Working Memory and Short-Term Memory are the work horses of our cognitive abilities**

Banerjee & Brinckerhoff, 2017

Our brains are uniquely organized

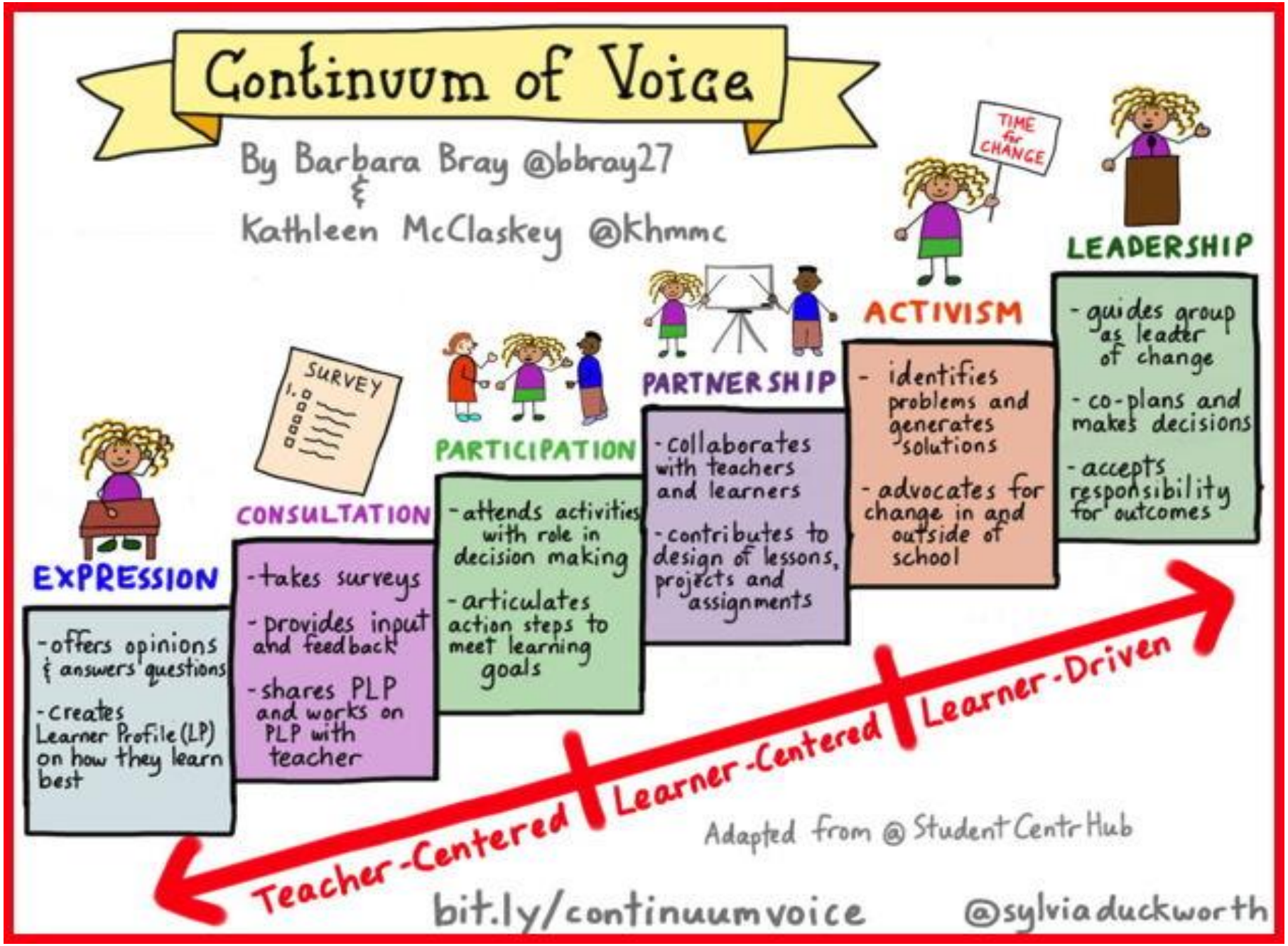
- **Reducing cognitive load is personalize the learning system.**

Components:

- Differentiated instruction
- Greater agency to the student
- More inclusive learning environments
- Clear and varied definition of success

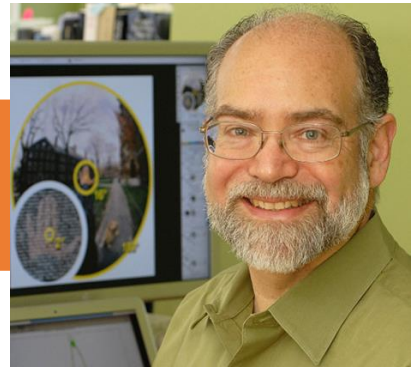
(NCLD)

Banerjee & Brinckerhoff, 2017



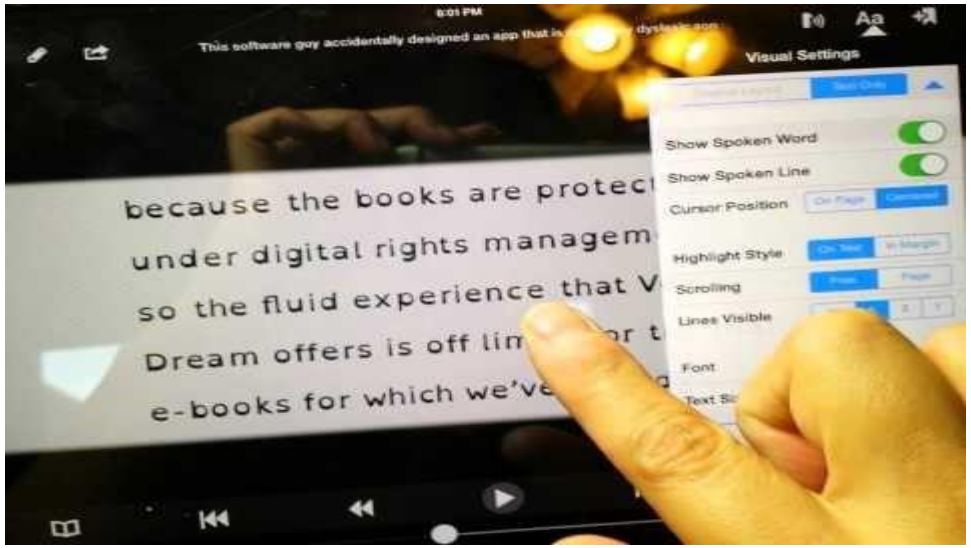
http://www.personalizelearning.com/2016/01/continuum-of-voice-what-it-means-for.html

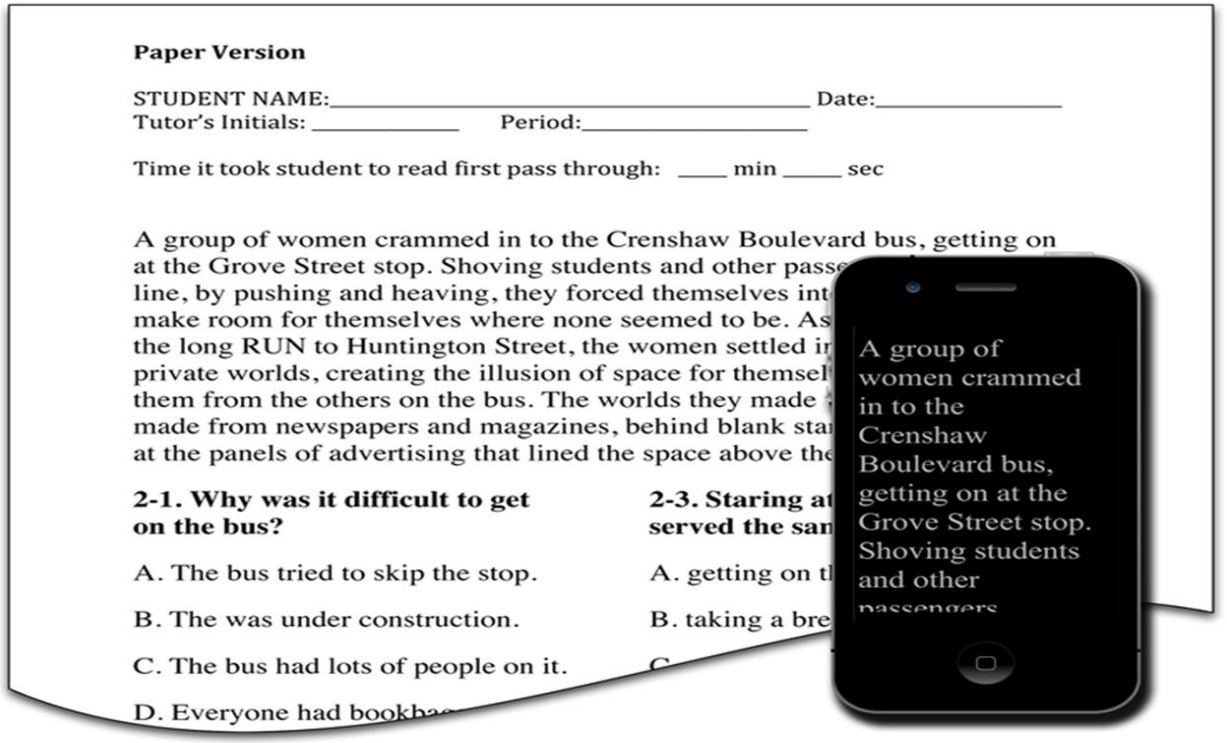
Our brains are uniquely organized



RESEARCH EXAMPLE (Reducing Extraneous Cognitive Load)

In a study with high school students with dyslexia, Schneps (2013) found that reading on the palm-sized screen of an iPod Touch reduced inefficiencies in the ways students' eyes flitted across the page. The shorter lines on the screen made reading faster, without diminishing





Our brains are uniquely organized

As a designer for 21st century study skills, your goal is to **reduce the extraneous load, maximize the germane load, and manage the intrinsic load (Clarke et al., 2006)**

Few examples for reducing Extraneous Load and increasing Germane Load

- *Maximize signal to noise ratio*
- *Embed generative strategies within studying: elaboration; self-querying*
- *Pattern and anomaly recognition*
- *Outsource cognitive overload*

Our brains are uniquely organized

- Ask your students to map their cognitive load challenges in each quadrant.

Then ask: **What can you outsource/offload/use technology for, within each quadrant?**

Academic	**Long-Term/ Big Picture**
Interpersonal Social	**Personal**

Our brains are uniquely organized

Group Activity

Break into 4 groups

- Two for Extraneous Cognitive Load Strategies
  (*Design information presentation/display to reduce load*)

- Two for Germane Cognitive Load Strategies
  (*How to automate information; encode into long-term memory*)

New Understanding of How We Learn

Strategies and study skills are most effective when anchored in brain-based processes of learning

Our brains are uniquely organized

Learning is a physiological process

Brain learns through pattern seeking and being alert of anomalies/novelty

Learning is a Physiological Process

Embodied Cognition – *How the Body Knows it Mind* (Beilock, 2015)

Learning involves ALL available resources

Body and movement are a resource, just as much as the mind

"Cognition is an extended system assembled from a broad array of resources" (Wilson & Golonka, 2013)

Learning is a Physiological Process

➢ Research

- **Greening the Brain** – Stephan Kaplan et al., at U Michigan (50 minutes of walking in Ann Arbor Arboretum compared to walking in down town Huron Street); Test performance was better for the green walkers

- **SMART initiative at Landmark College – All** first year students with LD (Bringing Theory to Practice Grant – AAC&U); based on the Mayo Clinic program by Amit Sood on Stress Management and Resiliency

  Based on principles that include Compassion and Gratitude

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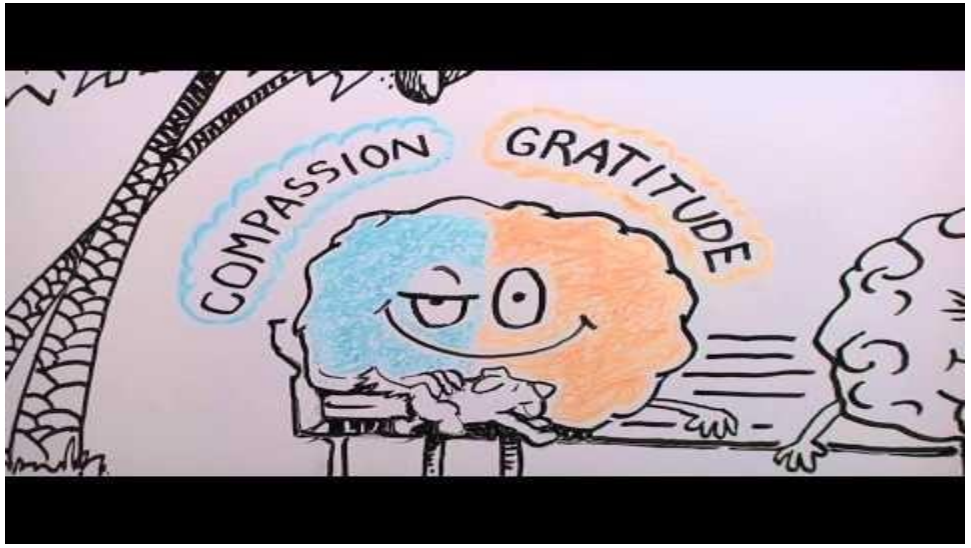
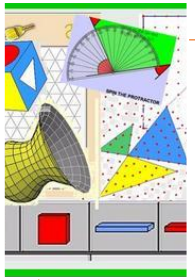


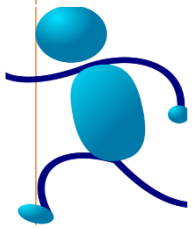
Learning is a Physiological Process

Strategies using movement engage students:



Manipulatives

Power Poses and Gestures



Pacing; Exercise

Learning is a Physiological Process

"High Power" body language (top row)

vs.

"Low Power" body language (bottom row)

(Images courtesy of Amy Cuddy, Harvard University)

Learning is a Physiological Process

- **Exercise is a 21st century study skill!**
- Improves concentration and memory
- Research has also shown that intense aerobic activity can actually grow new brain cells in a part of the brain responsible for memory, the hippocampus (Erickson et al. 2011)
- Exercise mimics some of the effects of anti-depression medication

Learning is a Physiological Process

- Research at Landmark College on Exercise

Study examines the implications of exercise training as a means of promoting student well-being, engagement, and cognition. The intervention involves an eight-week exercise program for students with LD.

Measurement of reported stress, self-esteem, and behavioral measures of executive function before and after training. *Spring 2018 completion*

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Brain learns through pattern seeking and being alert to anomalies/novelty

Leveraging Pattern Recognition

- **Our brains innately seek to recognize patterns and make meaning**
- **Reading is a pattern recognition exercise**

[e.g., *"hte littl lo@n wlof"*.]

"Courses, courses!" crater stop-murder. "Hoes debt ladle Manx wetter gloss slobbers? Any prance axe lackeys knots a barter! Lucks lackey garner dense wetter oil gnat, wile oil ware during aster set hair an kipper cheers worm! Courses!"

- **Highly attuned to be alert to anomalies/differences/novel**

Leveraging Pattern Recognition

There was, moreover, a boldness and rotundity of speech among these matrons, as most of them seemed to be, that would startle us at the present day, whether in respect to its purport or its volume of tone.

"Goodwives," said a hard-featured dame of fifty, "I'll tell ye a piece of my mind. It would be greatly for the public behoof, if we women, being of mature age and church-members in good repute, should have the handling of such malefactresses as this women. What think ye, gossips? If the hussy stood up for judgment before us five, that are now here in a knot together, would she come off with such a sentence as the worshipful magistrates have awarded? Marry, I trow not!"

"People say," said another, "that the Reverend Master Dimmesdale, her godly pastor, takes it very grievously to heart that such a scandal should have come upon his congregation.

Leveraging Pattern Recognition

- **Activating prior knowledge**

What strategies do you use to activate prior knowledge?

- Preview; Brainstorm; KWL; Others?

- **Recommendations**

- Activate relevant prior knowledge
- Minimize irrelevant prior knowledge
- Compensate for missing prior knowledge

Classroom Pedagogies at Landmark College

1. Advance organizers – *activating interest and prior knowledge; reviews*
2. Activators – *forming a personal connection to the lesson or topic*
3. Clear directions – *communicating expectations and task requirements*
4. Connectors – *explicit connection between prior and new content*
5. Multisensory techniques – ***visual,*** *auditory, kinesthetic*
6. Strategizers – *toolbox of strategies; metacognitive strategies*
7. Summarizers – incremental and frequent reviews
8. Routines – building effective study habits
9. Flexible assessment – multiple means of assessment; varying rubrics

Interesting Factoid on Learning

We learn:

- 1% through taste
- 1.5% through touch
- 3.5% through smell
- 11% through hearing
- 83% through sight

Source: National Safety Council
http://www.ode.state.or.us/services/nutrition/cacfp/tn/train_trainer/how_we_learn_key.pdf

End – Day 1

Question and Answers