

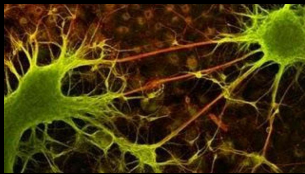
Active Learning

**Active Learning:
What You Can Do &
Why It Will Work**

Active Learning



What is active learning?







Does active learning influence the brain?



What can I do to encourage active learning?

Is lecturing still O.K.?

Active Learning

-  Takes 5 – 15 min. of your time
-  Probably takes 30 min. to set up and 10 min to run
-  Significant time investment. May require specific knowledge.
-  <http://backchannelchat.com/chat/a83xe>

What Is Active Learning?

➡ Students are actively or experientially involved in the learning process

Bonwell & Eison (1991)

What Is Active Learning?

- ➡ Students are actively or experientially involved in the learning process
- ➡ Students do things & think about the things they do
- ➡ Think it through & make associations

Kerrey (2017)

Maxim: Think It Through

Kerrey (2017)

- ➡ Promote deep processing (beyond face value of information) Craig et al. (2006)
- ➡ Require recall of relevant information Butler & Roediger (2007)
- ➡ Promote dual coding (verbal & visual presentation) Kosslyn (1994)
- ➡ Evoke emotion Erk et al. (2003)

Maxim: Make Associations Kerrey (2017)

- ➡ Promote “chunking” of information
Brown, Roediger & McDaniel (2014)
- ➡ Build on prior associations
Meyer (2001)
- ➡ Present organizational scheme...how is material related?
Bransford, Brown, & Cocking (2000)
- ➡ Sequence chunks into stories
Graesser, Olde & Kiettker (2002)

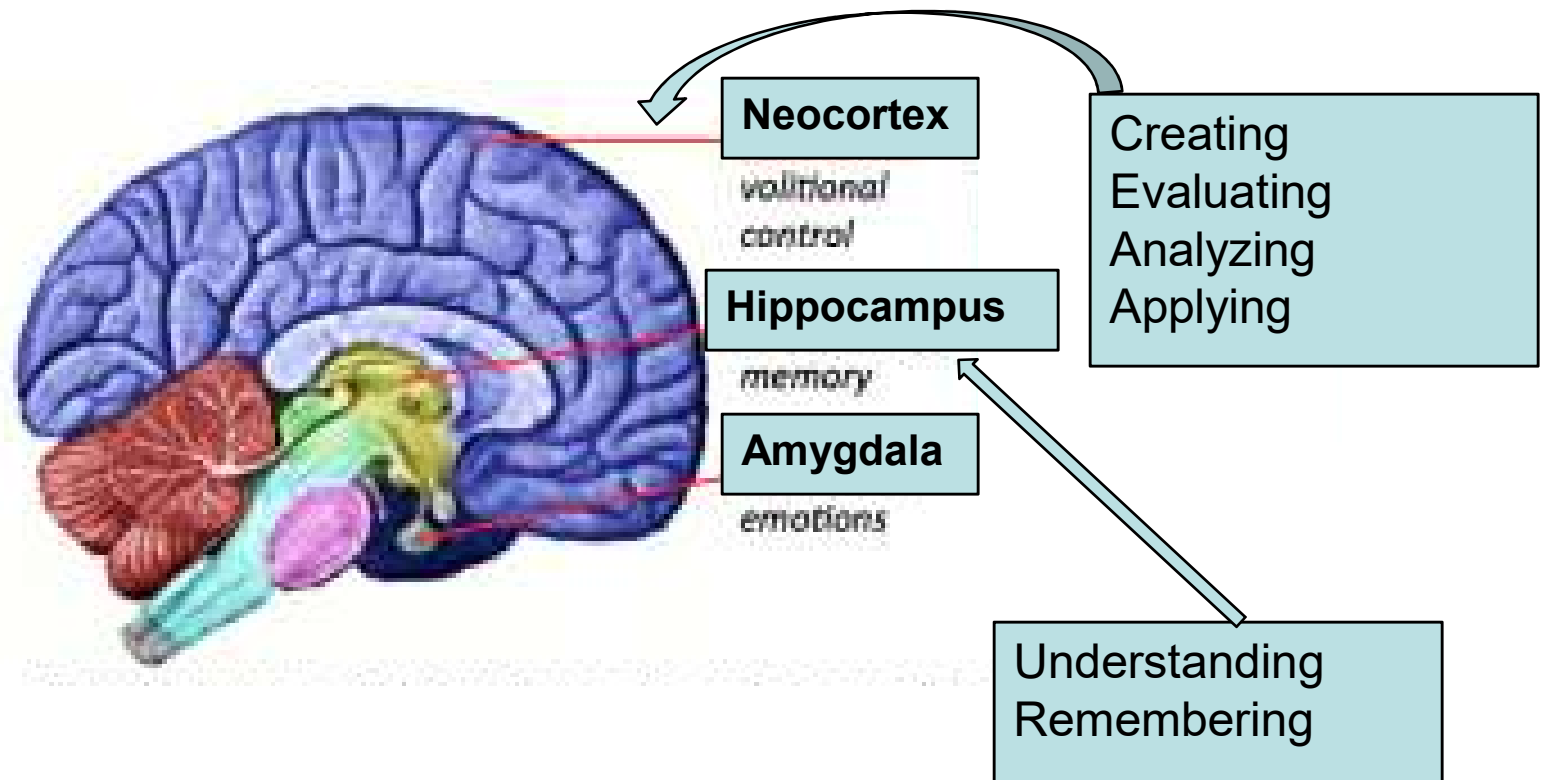
Active Learning

- ➡ How many of these principles do you use?
- ➡ Is there one that you have never used?
- ➡ Chat Post on Backchannel, or the vintage platform... treeware (a piece of paper)

Active Learning

- ➡ Does this stuff work?
- ➡ Meta-analysis... AL reduced failure rate from 32% to 21% in STEM courses
Freeman et al. (2013)
- ➡ Advantages seen in physics, physiology, PBL
Freeman et al. (2013); Prince (2004)

Active Learning

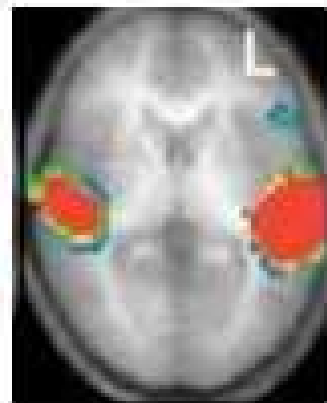


Kaufer (2011)

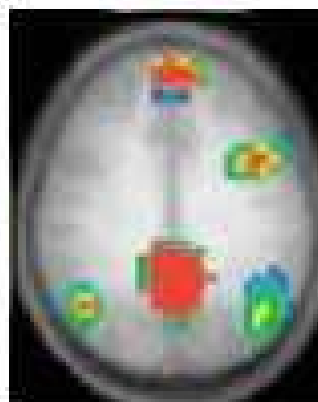
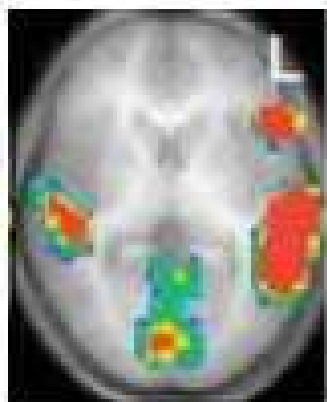
Active Learning

- ➡ Low levels of Bloom's activate "only" hippocampus.
- ➡ Higher levels activate cortex ... areas related to decision making, association, etc.
- ➡ Active learning takes advantage of neurological "cross-talk"

Active Learning



Passive
Listening

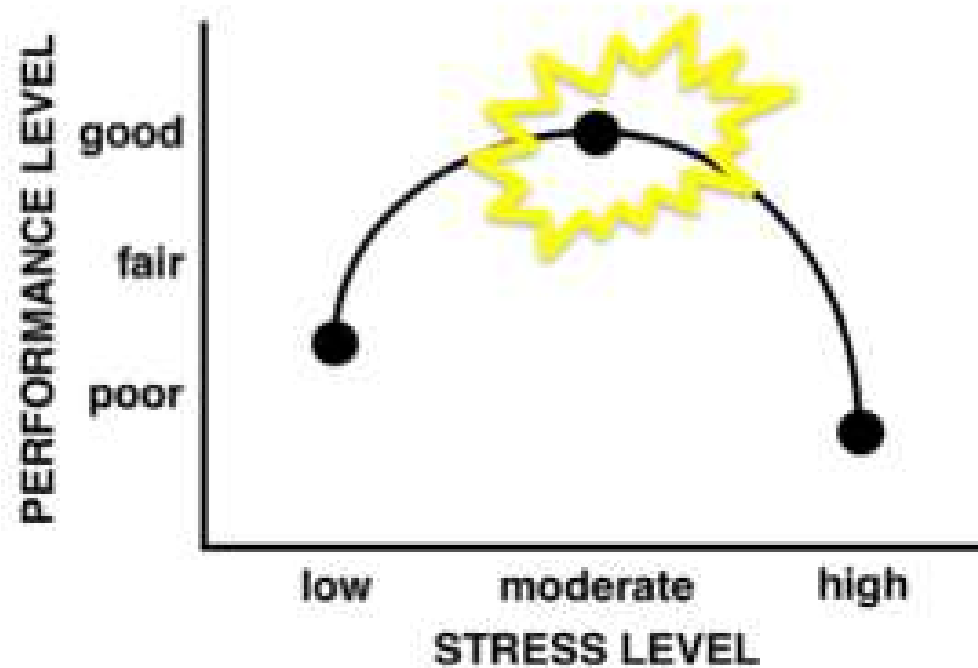


Active
Listening

Vannest et al. (2009)

Active Learning

Classic inverted-U curve



Inducing Moderate Activation



Play music before class

Music: Death Cab for Cutie

I Will Follow (Plans)
Tiny Vessels (Transatlanticism)
I Will Possess Your Heart (Narrow Stairs)
Soul Meets Teeth (Plans)
Crooked Teeth (Transatlanticism)
We Looked Like Giants (New Moon Soundtrack)
Meet Me at the Equinox (The Open Door)
Little Bribes (Plans)
Your Heart (Survivor)
Eye of the Tiger (Survivor)

Music: Alt Mix

Alphabetical (Phoenix)
Percolator (Stereolab)
House of Cards (Radiohead)
Emperor Tomato Ketchup (Stereolab)
Lisztomania (Phoenix)
Song 2 (Blur)
The Underdog (Spoon)
1901 (Phoenix)
You Got Yr. Cherry Bomb (Spoon)
Crying Shame (The Muse)
Riot Radio (The Dead 60's)
Jet Black Cadillac (Stereos)

Music: Dreams

Dreams be Dreams (Jack Johnson)
Dream of You (Michael Buble)
Sweet Dreams (Eurhythmics)
Don't Dream It's Over (Crowded House)
Must Be Dreaming (Frou Frou)
Dreams (Cranberries)
Lucid Dreams (Franz Ferdinand)
Dream On (Aerosmith)
Requiem for a Dream (DJ Tiesto)
Dream (Skysurfer)
Brothers in Arms (Dire Straits)

Inducing Moderate Activation



Play music before class

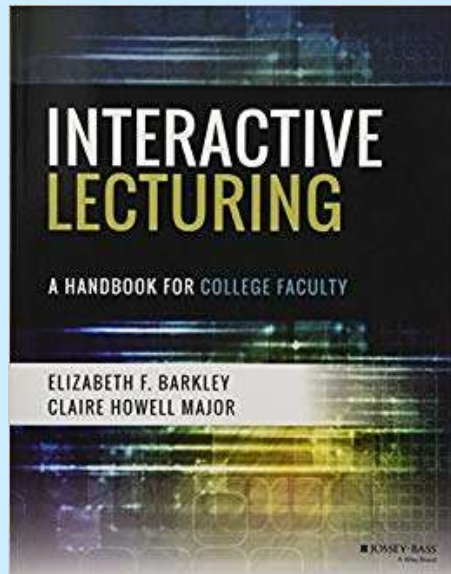
- Perhaps unfamiliar music or an entire set



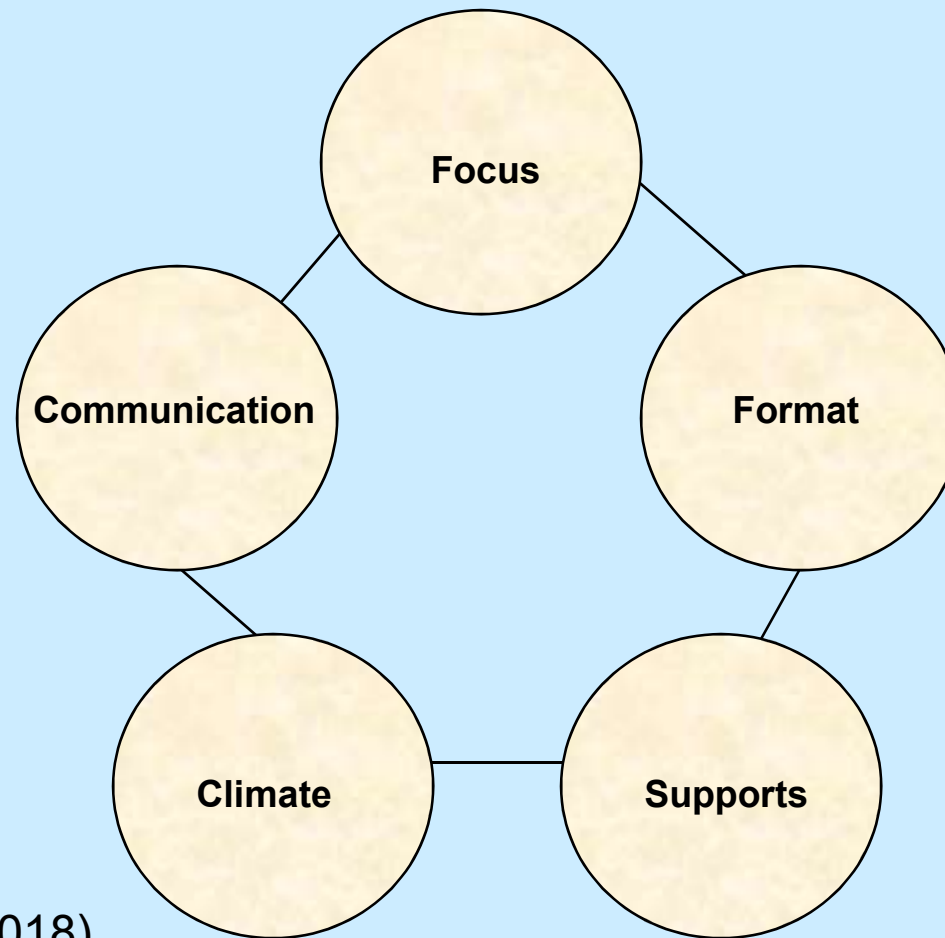
Open with quick discussion or learning activity

- Remember to debrief

Active Learning



Barkley & Major (2018)



Active Learning: Focus

- ➡ We know the material we want to talk about, but what is the best way to structure it?
- ➡ Can be difficult with diverse class & diverse methods
- ➡ Good structure leads to better learning

Barkley, Major, & Cross (2014)

Good Structure

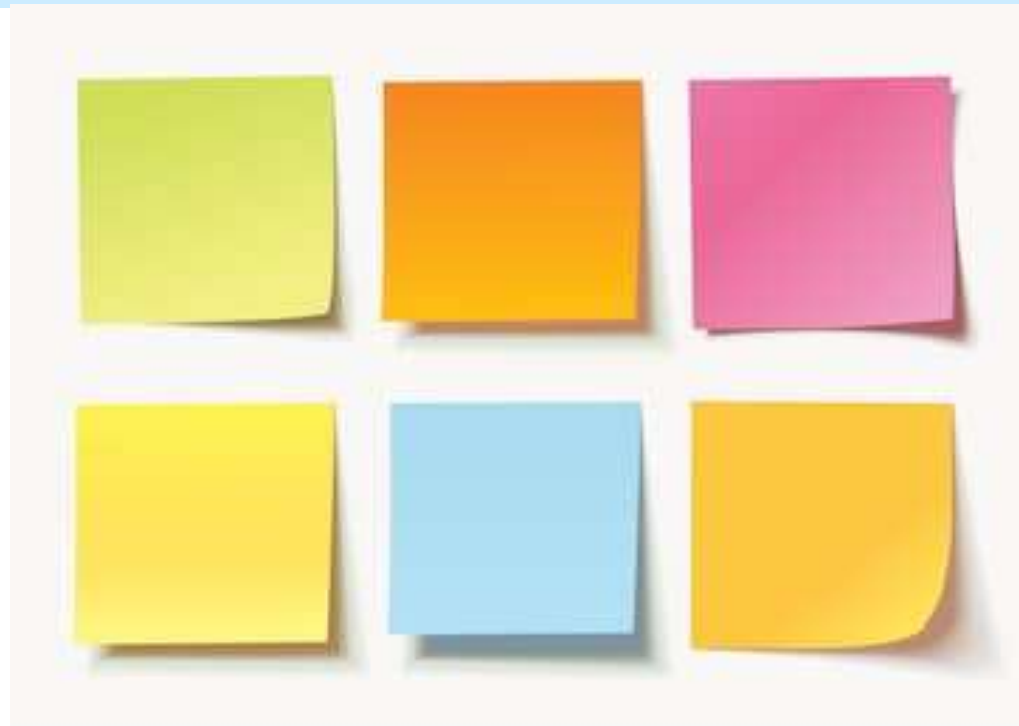


Sticky Note Diagrams

Good Structure



Sticky Note Diagrams



Good Structure

Sticky Note Diagrams



Good Structure



Sticky Note Diagrams



Good Structure

Brainstorming

- Produce as many ideas as possible
- Enhances structure & flow

Henningsen & Henningsen (2013)

W₅ (Who, What, Where, When, Why)

Role Storm

- What would someone else say

Good Structure

Brainstorming

- Produce as many ideas as possible
- Enhances structure & flow

Henningesen & Henningesen (2013)

What if ?

Attribute Change

- Different gender, orientation, race..

Active Learning: Climate



Active Learning



Active Learning: Climate

- ➡ What is your learning space like?
 - Welcoming? Pleasant?
 - Do students come early?
- ➡ Do you generate enthusiasm & interest?
- ➡ Increased motivation ➡ better learning

Bolkan et al. (2016)

Generating Interest



Lecture Preview

- Lets students know what the lecture is about and that you are excited about it
- More than an outline



Psychology 1000

Nov. 27

Learning

Schedules of Reinforcement
Cognitive Approach
Behaviour Therapy

Next Time: Memory

Scan: Finish Chapt. 7; 276 - 283

Generating Interest



Lecture Preview

- Can post on website
- At end of class, talk briefly about the next lecture

Generating Interest



Meet and Greet

- Introduce yourself to students
- Ask them who they are
- Engage in small talk

Makes you a real person, increases rapport & leads to higher motivation

Barkley & Major (2016)

Generating Interest

The Hook

- Attention getting device
- Seeds engagement

Provides a guide to central message of lecture & increases interest

Anderson (2012)


Generating Interest


 Quote relevant to topic

 Story bringing together elements of the lecture

Generating Interest

 Quote relevant to topic

 Story bringing together elements of the lecture

 Video demonstrating important aspects of topic

- source the video
- may need to edit

Active Learning: Communication



Active Learning: Communication

- ➡ Communicating is about verbal and nonverbal behaviour
- ➡ Need to pay attention to both in order to “keep” the audience
- ➡ Good communication leads to better learning

Murray (1983)

Active Learning: Communication

- ➡ Face the audience (don't worry about the visual...it will be there)
- ➡ Modulate your voice.
 - lower pitch easier to follow
 - rate of about 150 words per min
- ➡ Try to avoid “dead air”

Dlugen (2012)

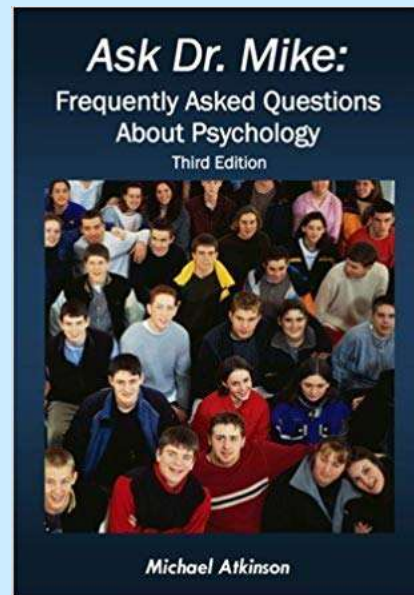
Active Learning: Communication

- ➡ Questions are an important part of learning
- ➡ Allows students to “test” & extend their knowledge
- ➡ If you ask... wait 7 seconds
- ➡ If student asks ... repeat

Active Learning: Communication



Question box



Active Learning: Communication



Question box



Daily question

Active Learning: Communication

Jon is very frustrated with his brother. Rather than hitting him, he decides to paint a picture of his brother falling from a building. According to Freud, this reflects the defense mechanism of

- a. reaction formation**
- b. sublimation**
- c. conversion**
- d. projection**
- e. alteration**

Active Learning: Communication

Jon is very frustrated with his brother. Rather than hitting him, he decides to paint a picture of his brother falling from a building. According to Freud, this reflects the defense mechanism of

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Active Learning: Communication



Question box



Daily question



Question writing on OWL forums



Learning cells

- Students write questions
- Pair off and ask then discuss question

Active Learning: Communication



Gallery tour

- Students rotate around workgroups asking and answering questions
- Can be done online

Active Learning: Communication



Gallery tour

- Students rotate around workgroups asking and answering questions
- Can be done online



Is it better to take notes by keyboarding or by using pen & paper? Why?

Active Learning

- ➡ Keyboarding results in shallow processing
- ➡ Students perform worse on conceptual items
- ➡ Keyboarding tends to result in transcription rather than reframing

Mueller & Oppenheimer (2014)

Is the Lecture Dead?

Is the Lecture Dead?

- ➡ Lecture from the Latin “lectare”
 - to read aloud; “that which is read”
- ➡ Primary model of information transfer for centuries
- ➡ AL talked about since 1852, but not really popularized until 1991

Against the Lecture

Barkley & Major (2018)

- ➡ Students are passive learners
 - Banking model...we make deposits
- ➡ Students have no control over learning
- ➡ Research indicates that lecture is not best approach Freeman et al. (2014)
 - Eric Mazur...almost unethical to lecture
 - Wieman...about as effective as bloodletting

For the Lecture

Barkley & Major (2018)

- ➡ Students can be active learners
 - learn note-taking
 - paying attention
 - listening to deal with complex ideas
- ➡ Prof is expert and there is a “time for telling”
- ➡ Research on AL almost entirely STEM based

Interactive Lecturing

Barkley & Major (2018)

- ➡ Rarely are classes 100% lecture or 100% active
 - most profs who lecture include some AL
 - most AL profs do some lecturing
- ➡ We use both
- ➡ The real question is how to do each of these pedagogical activities well

What Can You Do?

Use some music in class

Use a lecture preview

Use dual coding

Imagine yourself in the lecture seats

Encourage your students to
think and reflect

Dr. Mike
ATKINSON

Image Credits

Bored Student

<https://www.smartsims.com/news/are-my-students-engaged/>

WALS

https://www.uwo.ca/wals/classroom_spaces/index.html

Dr Mike Macleans magazine

Clickers

<http://www.ethosconsultancynz.com/profiles/blogs/do-clickers-make-a-difference-in-the-college-classroom-guest?overrideMobileRedirect=1>

focus

<https://www.maxxitsystems.com/10-quick-tips-improving-focus/>

brain active learning

<https://eideneurolearningblog.blogspot.com/2011/01/from-passive-to-active-learners.html>

self reflection

<https://wentworthpeople.com.au/adaptive-change/feedback-self-reflection-creates-the-opportunity-to-change-for-the-better/attachment/self-reflection/>

Climate

<https://tltc.umd.edu/fearless-teaching-framework-climate>

chalkboard

<http://www.cpms.byu.edu/project/understanding-with-the-chalkboard/>

engaged class

<https://medium.com/classuite/3-easy-ways-to-create-a-more-engaged-classroom-c539e0c205b2>

interesting teachers

<https://sites.google.com/site/thefutureseducation/cmap/teaching-making-learning-interesting>

instagram

<https://www.wired.com/story/instagram-sponsored-posts/>

snapchat

<https://www.snapchat.com/>

facebook

<http://pluspng.com/png-facebook-logo-3538.html>

Mindset post its

<https://art4clip.com/explore/Post-it%20clipart%20reflection%20paper/>

laptop screen

<https://medium.com/@cshirky/why-i-just-asked-my-students-to-put-their-laptops-away-7f5f7c50f368>

pencil

<https://www.forbes.com/sites/rogerdooley/2014/05/02/pencil-paper/#4051947225fe>

muddiest point

<https://www.prodigygame.com/blog/active-learning-strategies-examples/>

motivation

<http://pd.truman.edu/motivation/>

active learning Holt

<https://www.pinterest.com/pin/528117493773301252/>

Einstein

<https://uniqueviral.com/education-quotes/>

Sagan

<https://uniqueviral.com/education-quotes/>

Skinner

<https://uniqueviral.com/education-quotes/>

Glass Brain

<https://www.spring.org.uk/2014/04/4-amazing-brain-animations.php>

Bike

<https://www.verywellfamily.com/riding-a-bike-2633839>

Bloom and the Brain

<https://gsi.berkeley.edu/gsi-guide-contents/learning-theory-research/neuroscience/>

Moderate Stress

<https://gsi.berkeley.edu/gsi-guide-contents/learning-theory-research/neuroscience/>

Communication

<https://www.biz417.com/blog/10-tips-for-workplace-communication-part-2/>

question mark

<https://giphy.com/gifs/mario-miguel-e-xUOxfjsW9fWPqEWoul>

Video

Ferris Bueller's Day Off

Paramount Pictures

Dead Poet's Society

Touchstone Pictures

This is Your Brain on Rock-n-Roll

ABC News

Music

**Love on a Real Train
Tangerine Dream**

**Eurodancer
DJ Mangou**

Thanks for your attention

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