**AEP 675, LEARNING AND THE BRAIN**
(Undergraduate Version)


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Prerequisites: none

DATES/TIMES: online

COURSE CREDIT: 3 undergraduate credits

COURSE DESCRIPTION: The Learning and the Brain course describes the roles, functions, processes, and physical makeup of the brain and how it can be leveraged for optimal learning. This course defines the structure of the brain, how it functions, and how to enhance student cognition and development of academic skills. The course will also provide the classroom instructor with tools to help the student understand short- and long-term memory, identify factors that influence students' ability to remember, and understand higher level thinking and effective problem solving. Finally, this course will also help explain how multiple intelligences and learning styles can affect curriculum development and learning.

COURSE OBJECTIVES: Students will . . .

1. Define and identify the parts of the brain and as a system
2. Identify the parts of a neuron and the role it plays in learning
3. Explain the relationship between executive functions and self-regulation
4. Describe the ways in which the brain receives information from its environment and suggest the implications for teaching
5. Identify and explain the modifications that occur in the brain with learning and memory
6. Define brain plasticity and determine the implications for teaching
7. Describe the role of simple story forms in how the brain processes information, and explain the implications of narrative for learning
8. Describe and list the impact of both positive and negative stress on the brain
9. Summarize the impact of environmental factors on learning, and plan ways to minimize environmental stressors in the classroom
10. Identify the components of long-term and working memory
11. Identify the factors that influence students' ability to remember (retrieve) information over the long run, and explain why students sometimes forget what they've previously learned
12. Define a "flow" state and identify the factors that contribute to flow
13. Describe the characteristics of the "nonconscious" learning climate and the implications for teaching
14. Describe the cognitive processes involved in effective problem solving

15. Identify the general characteristics that influence school readiness
16. Indicate the impact of nutrition on the brain
17. Explain the importance of goal setting, differentiating between mastery and performance goals, and provide concrete suggestions for helping students focus on goals
18. Compare and contrast a traditional curriculum with a brain-compatible curriculum
19. Explain how understanding multiple intelligences and learning styles effects curriculum development and instructional practices
20. Prepare lesson plans that incorporate teaching to multiple intelligences
21. Demonstrate an understanding of formal and informal assessment techniques
22. Define higher-level thinking and give several examples
23. Define authentic assessment and demonstrate how to apply it in the classroom

COURSE REQUIREMENTS: (2 PRODUCTS)

Welcome - The Welcome section provides instructions on how to use this course, materials needed for this course, and references used in developing this course.

Each lesson includes content sources, and in lieu of a textbook, material composed of narrative plus either links to articles, YouTube presentations, or graphics. You will find yourself being more of a researcher than simply referring to a depository of content as is sometimes common when reading a traditional textbook as a way to gain content knowledge. You will find some of the content redundant, but in education we like to call this repetition which can be an instructional strategy. You also will find that sometimes the sources are not in agreement. This is okay too. Some sources will require careful and thoughtful reading while others will invite you to a less formal perusal. You will probably find the YouTube presentations and the graphics particularly helpful for providing summaries of the content concepts. Feel free as a researcher to explore other websites to gather further information.

**Explanation of Points**

***Product One***: Evidence of completing the lessons is the submission of the certificate of completion. This score is strictly a pass option with scores of 70% or more required. Exam must be retaken for any score below 70%.

***Product Two***: Up to 1200 points will be awarded based on the quality and thoroughness of the responses to writing assignment prompts. Final grade will be determined as a percentage of points earned calculated on total possible points.

**Product One:**
As you proceed through this course, you will initially be required to access and complete the appropriate topic identified online lesson package, earning a mandatory completion certificate for the subject matter content. You can access your topic by logging on and registering yourself at this web page: https://www.leadershipcredit.info/dod-jrotc-certification/.

Once you complete the online effort with a successful score of 70% or better for this topic you will be provided a completion certificate; which in turn will be submitted along with ***Product Two,*** page 47 below, as a scanned attachment to your instructor.

**Lesson 1** Structure of the Brain - This lesson will enable you to understand the parts and function of the brain as well as recognize that by understanding the structure of the brain you will then begin to see the brain's role in learning.

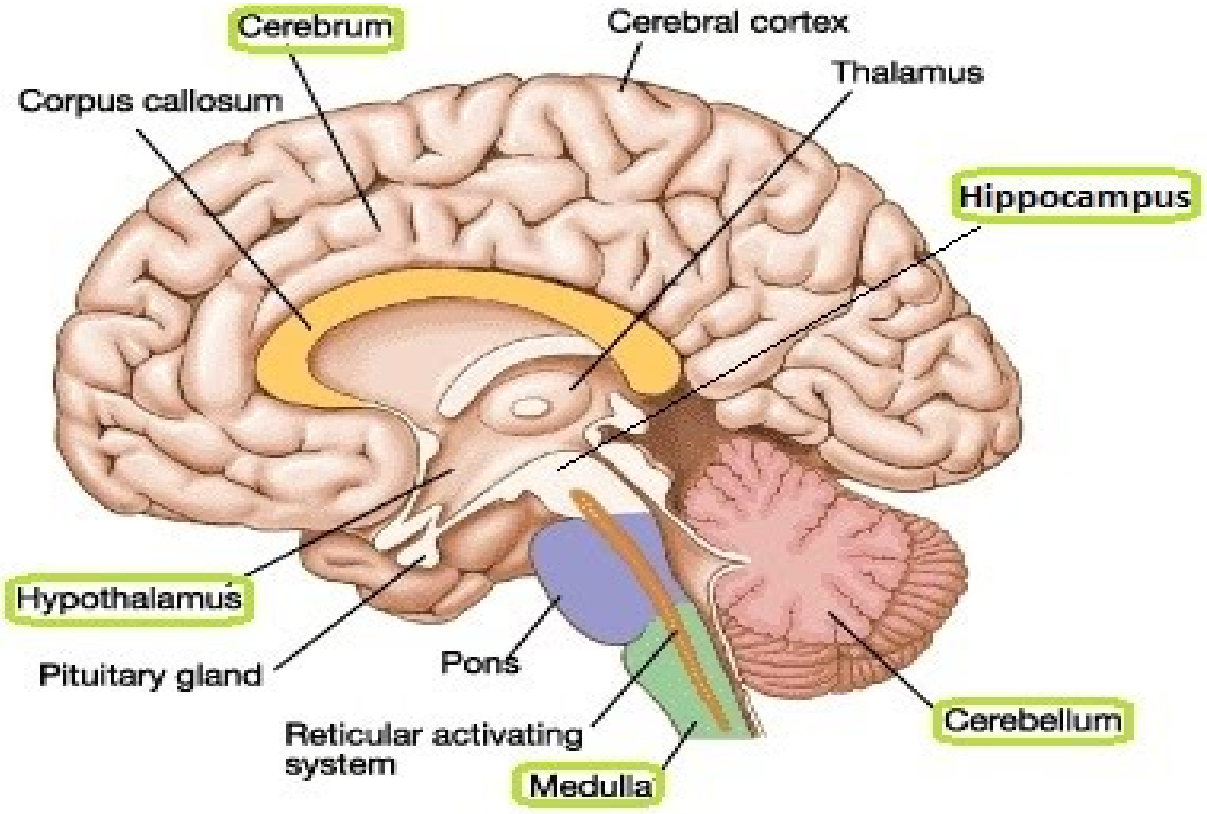
Objectives:
- Define the brain as a system.
- Identify the parts of a neuron.
- Explain the role of neurons in learning.
- Describe how experiences affect the wiring of the brain.
- Identify the parts of the brain.
- Explain the implications of hemisphericity for learning and teaching.
- Explain the relationship between executive functions and self-regulation.

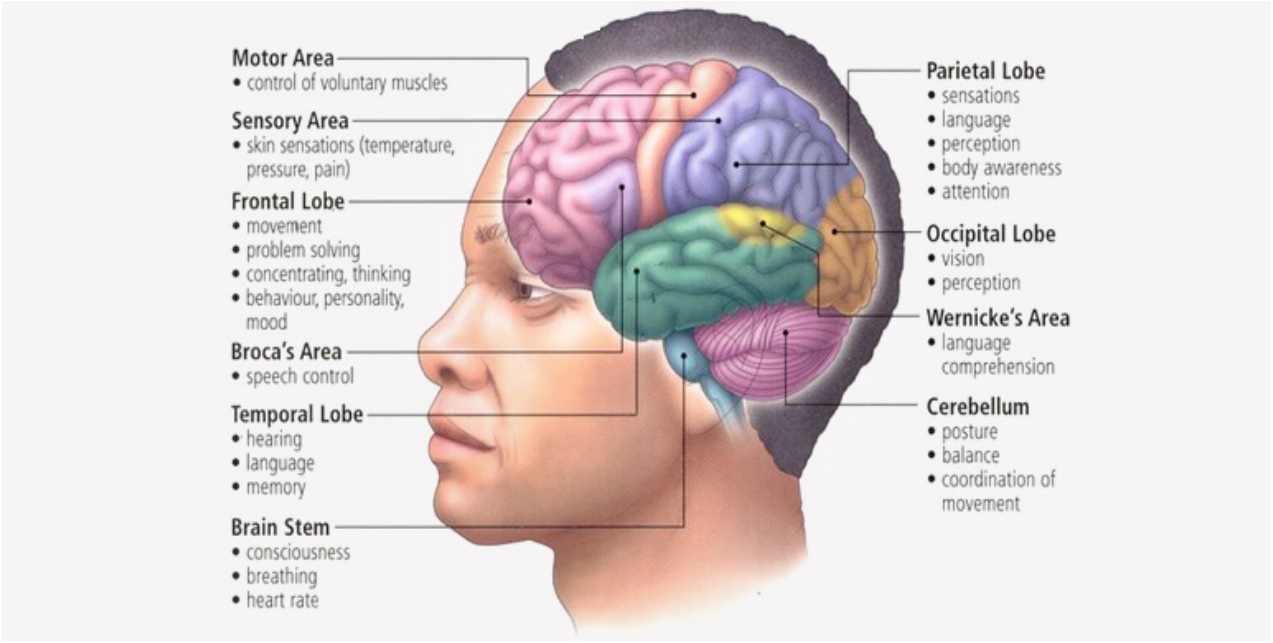
Reading Assignment:

Neurons play an important role in how information is processed in the brain.

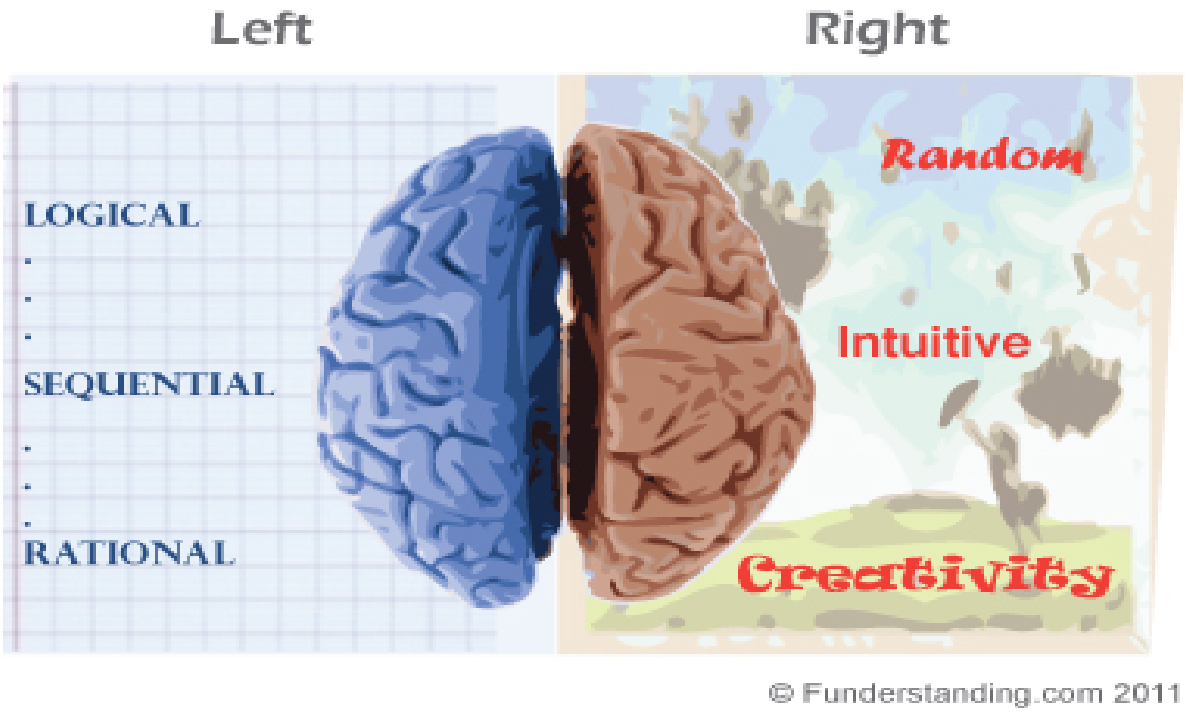
http://www.brainfacts.org/Brain-Anatomy-and-Function/Anatomy/2012/The-Neuron

https://sites.hampshire.edu/ctl/2017/09/14/the-importance-of-engaging-prior-knowledge/






There are indications that brain hemi sphericity influences learning and teaching.




Executive functions and self-regulation are critical to maximize learning.

https://developingchild.harvard.edu/science/key-concepts/executive-function/

https://www.noodle.com/articles/how-to-help-your-child-develop-executive-function-and-self-regulation-skills

https://www.youtube.com/watch?v=FZLXggsK6oA

https://www.youtube.com/watch?v=NetJgf7mwYM

# Executive Function and Self-Regulation

**1. Paying Attention or Focus**

**Focusing is obviously central to achieving our goals. If we are so distracted that we can't pay attention, we can't concentrate.**

**2. Working Memory**

**Working memory is holding information in our minds while mentally working with it or updating it, such as relating what you're reading now to what you just read or relating what you are learning now to what you learned earlier.**

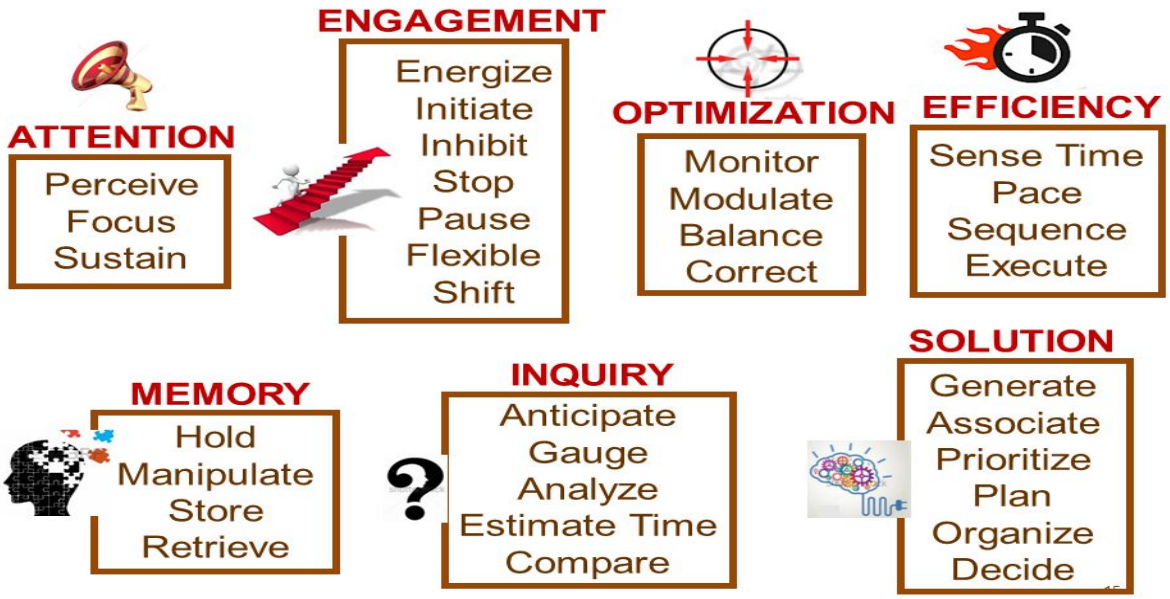
**3. Cognitive Flexibility**

**Cognitive flexibility is being able to flexibly switch perspectives or the focus of attention and flexibly adjust to changed demands or priorities.**

**4. Inhibitory Control**

**This is the ability to resist a strong inclination to do one thing and instead do what is most appropriate. It means sticking with something you are doing after you've had an initial failure -- inhibiting the strong inclination to give up or continuing to work on something even when you're bored.**

## Self Regulation Executive Function "Clusters"

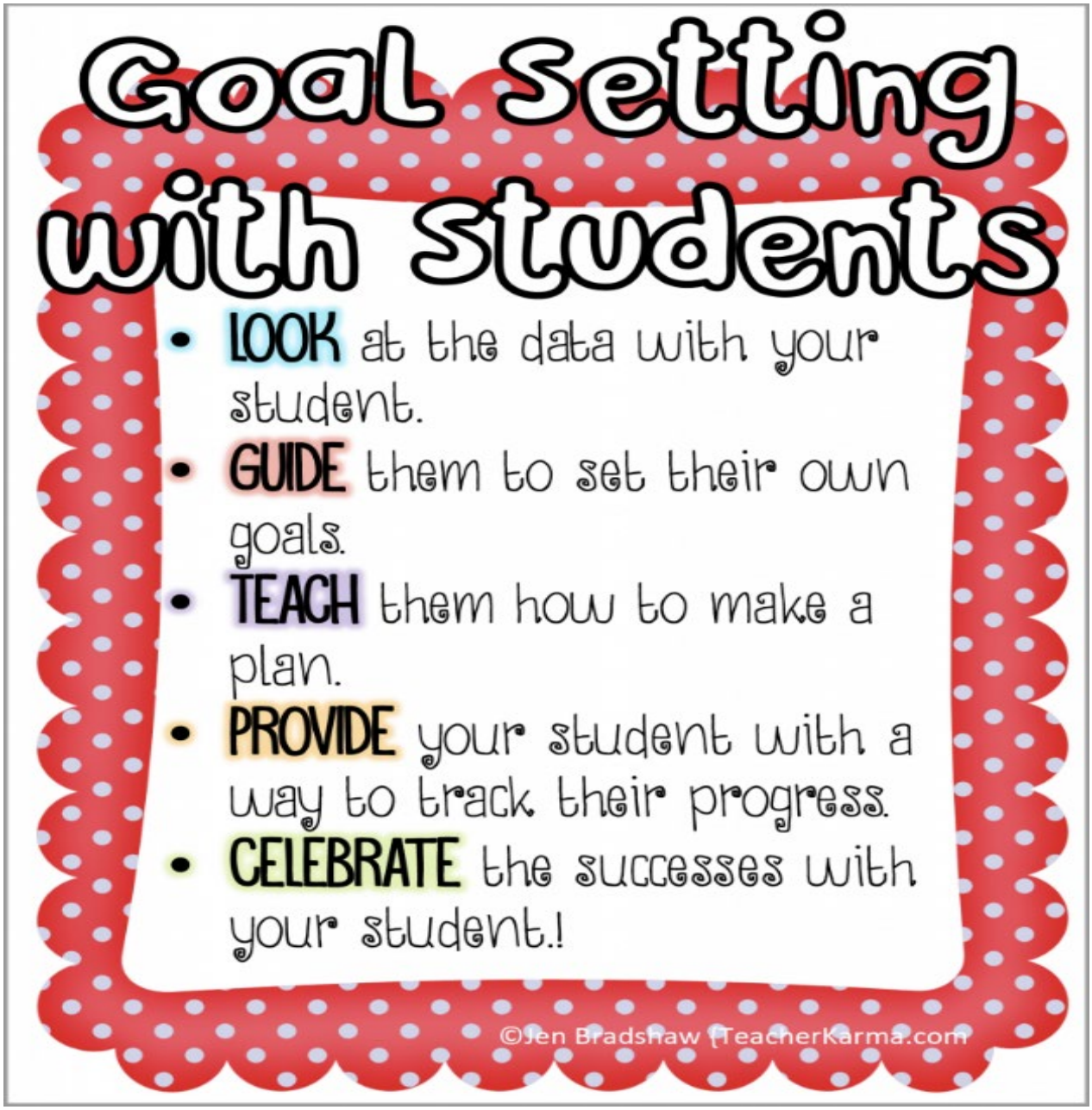


Skills for setting goals and time management can be taught.

https://www.weareteachers.com/goal-setting-for-students/

https://www.youtube.com/watch?v=yiFWPd1PJZc

https://www.youtube.com/watch?v=yA53yhiOe04




https://www.daniel-wong.com/2017/07/17/time-management-tips-for-students/

https://www.youtube.com/watch?v=0ARKQqTtnlQ

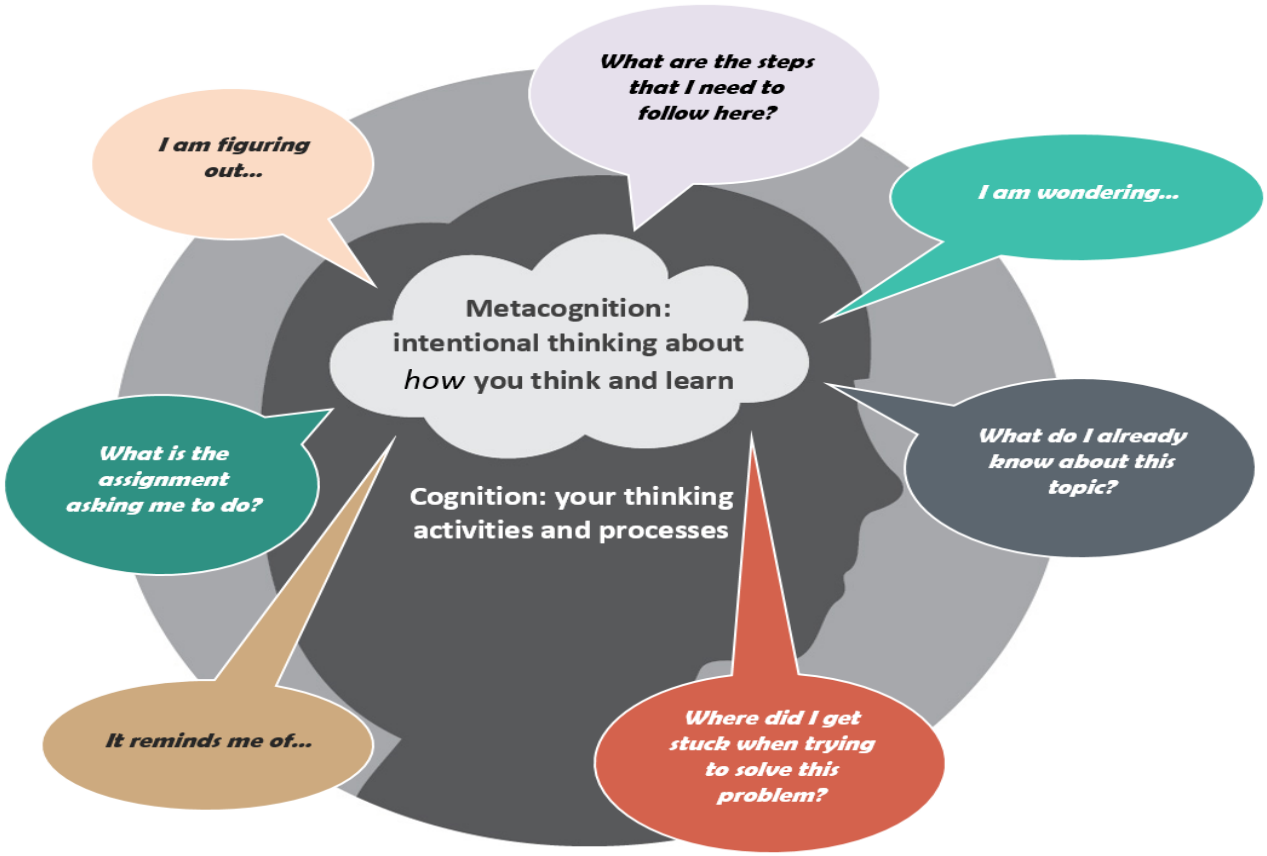
https://www.youtube.com/watch?v=4wkGw1z06dg

| | Urgent | Not urgent |
|---|---|---|
| Important | I<br>Looming assignment deadlines<br>Crises<br>Cramming for exams<br>Emergencies<br>Last minute preparations | II<br>Reading lecture notes<br>Personal development<br>Planned study<br>Exercise and health<br>Planning your time/setting goals |
| Not important | III<br>Some emails and phone calls<br>Many interruptions<br>Some popular activities<br>Some meetings | IV<br>Trivia<br>Some phone calls<br>Excessive TV or surfing the net<br>Time wasters |

Metacognition is thinking about thinking.

https://www.youtube.com/watch?v=mVE21QhY-lI

https://www.youtube.com/watch?v=IjwZReLB-Sc



**Lesson 2** - Functional Organization of the Brain - This lesson will enable you to understand how we interact with the world through our brains and describe ways in which the brain receives information from its environment and suggest implications for teaching. Additionally, this lesson will explain the holographic model of the brain, describe the triune brain, and identify the modifications that occur in the brain with learning and memory and define brain plasticity.

Objectives:
- Describe the ways in which the brain receives information from its environment and suggest the implications for teaching.
- Explain the holographic model of the brain and suggest the implications for teaching.
- Describe the triune brain and explain the importance of addressing emotion in teaching.
- Identify the modifications that occur in the brain with learning and memory and
- Define brain plasticity and suggest the implications for teaching.

Reading Assignment:

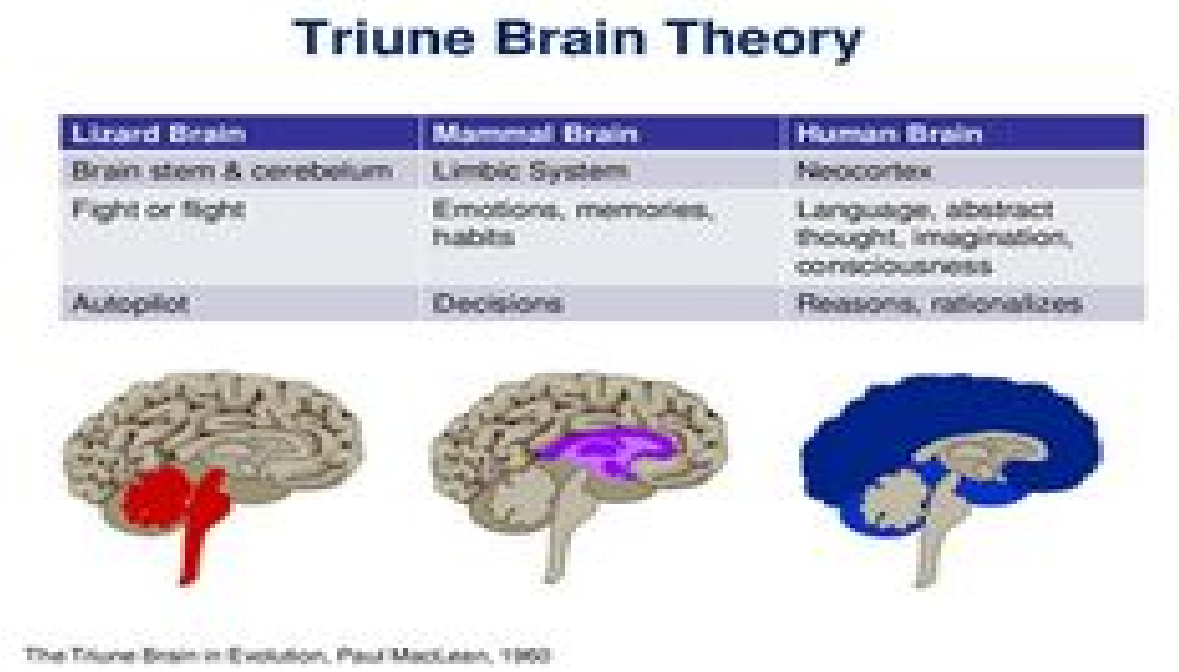
The emotional climate of your classroom helps students learn better. The theory of the triune brain provides a background for understanding the link to brain function.

https://www.youtube.com/watch?v=MikBRguJq0g

https://www.youtube.com/watch?v=pTtxtmRKDFo

http://www.thebrainbox.org.uk/triune_brain_theory/triune_brain_theory.html

https://www.youtube.com/watch?v=7uVSGbnEHOg



http://educatingthemindandheart.blogspot.com/2016/01/the-triune-brain-and-its-implications.html

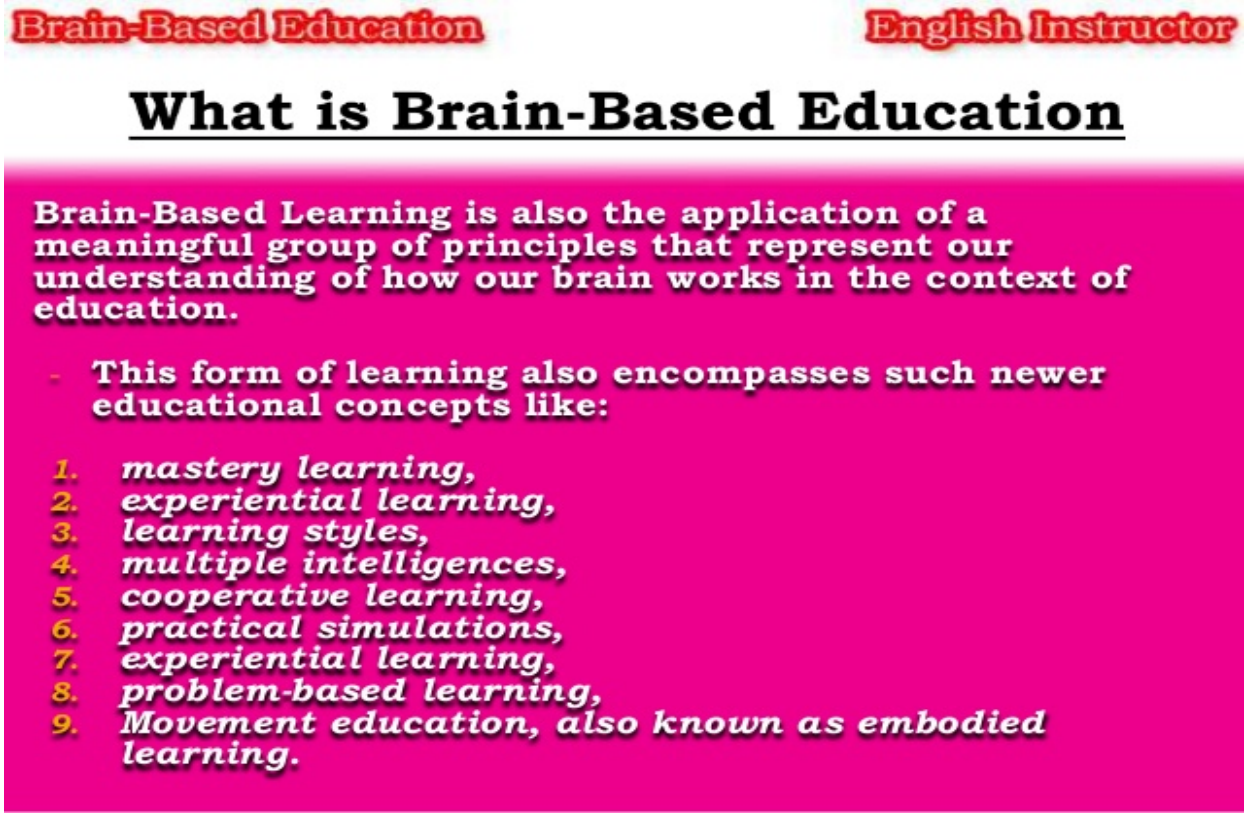
https://medium.com/@galynburke/child-development-post-3-of-3-when-your-kids-become-capable-of-certain-tasks-and-why-1c4e28be26c6

"Brain-compatible" teaching and learning is essential to link how the brain works and learning.

https://drmarciatate.com/20-brain-compatible-strategies-for-learning/

https://www.shiftelearning.com/blog/bid/354359/a-list-of-brain-based-strategies-to-create-effective-elearning

https://www.youtube.com/watch?v=HyYhoCqo58w




**Lesson 3** Brain Development - This lesson will enable you to understand that as there are stages of physical, emotional, and cognitive development in humans, there is also important milestones in underlying brain development. Additionally, this lesson will explain the educational implications of brain development.

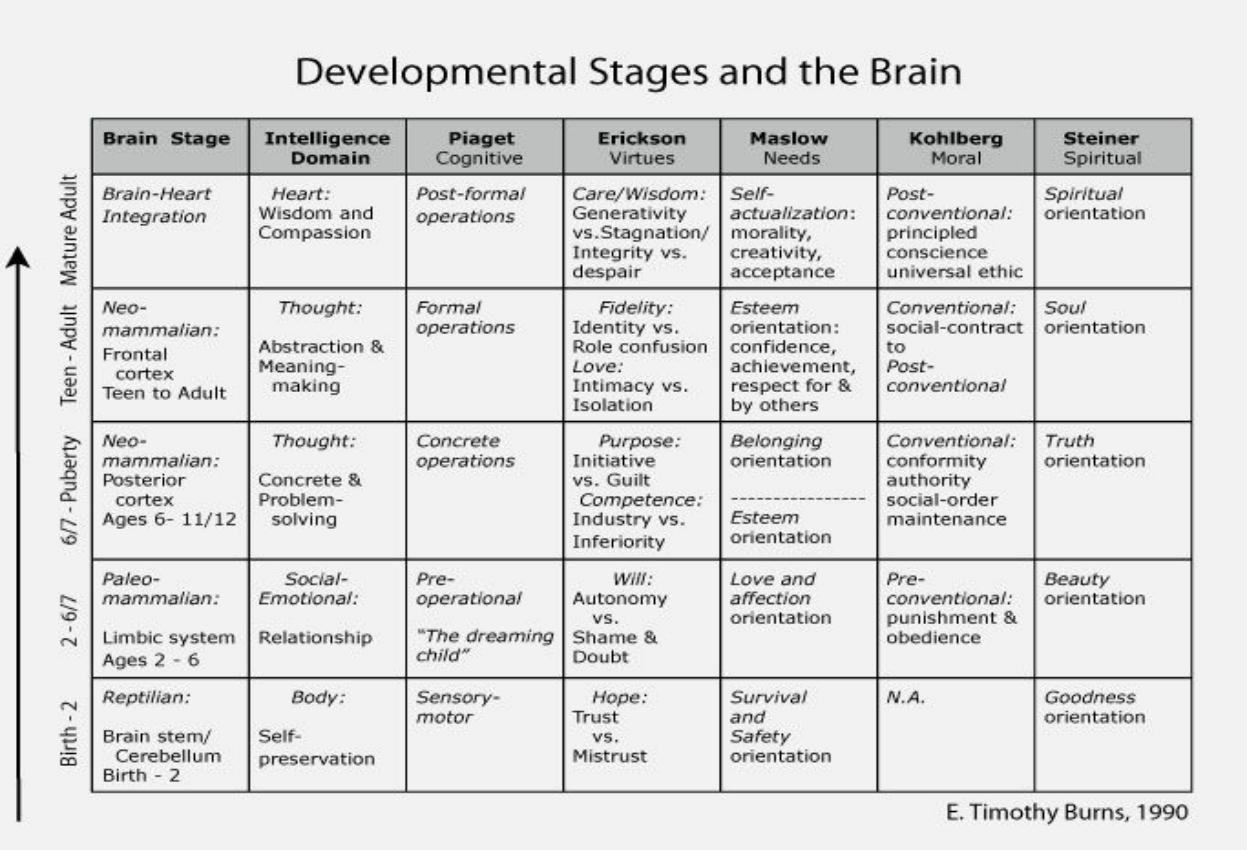
Objectives:
- Summarize critical periods of brain development and learning.
- Explain the educational implications of brain development.
- Describe the role of simple story forms in how the brain processes information, and explain the implications of narrative for learning.

Reading Assignment:
Understanding the developmental stages is useful for not only understand students better but is helpful for designing instructional strategies and lessons that are brain-compatible.

http://nancyguberti.com/5-stages-of-human-brain-development/

https://www.rd.com/health/wellness/brain-development/

https://www.youtube.com/watch?v=dISmdb5zfiQ




**Lesson 4** - Effects of Optimal and Aversive Stimuli - This lesson will enable you to understand the effects of both positive and negative stress on the brain and how other stimuli affects learning.

Objectives:
- Describe the impact of both positive and negative stress on the brain
- Define "hardiness" and the role teachers can play in helping students develop a stress-hardy personality and
- Summarize the impact of environmental factors on learning

Reading Assignment:
It is helpful as a teacher to know how threats can cause distress which shuts down learning and what is happening in the brain during distress. Also, knowing what some classroom stressors are

and way to alleviate them will improve instructional effectiveness. There are techniques that teachers can use to help students develop hardiness and resilience.

https://www.edutopia.org/blog/brains-in-pain-cannot-learn-lori-desautels

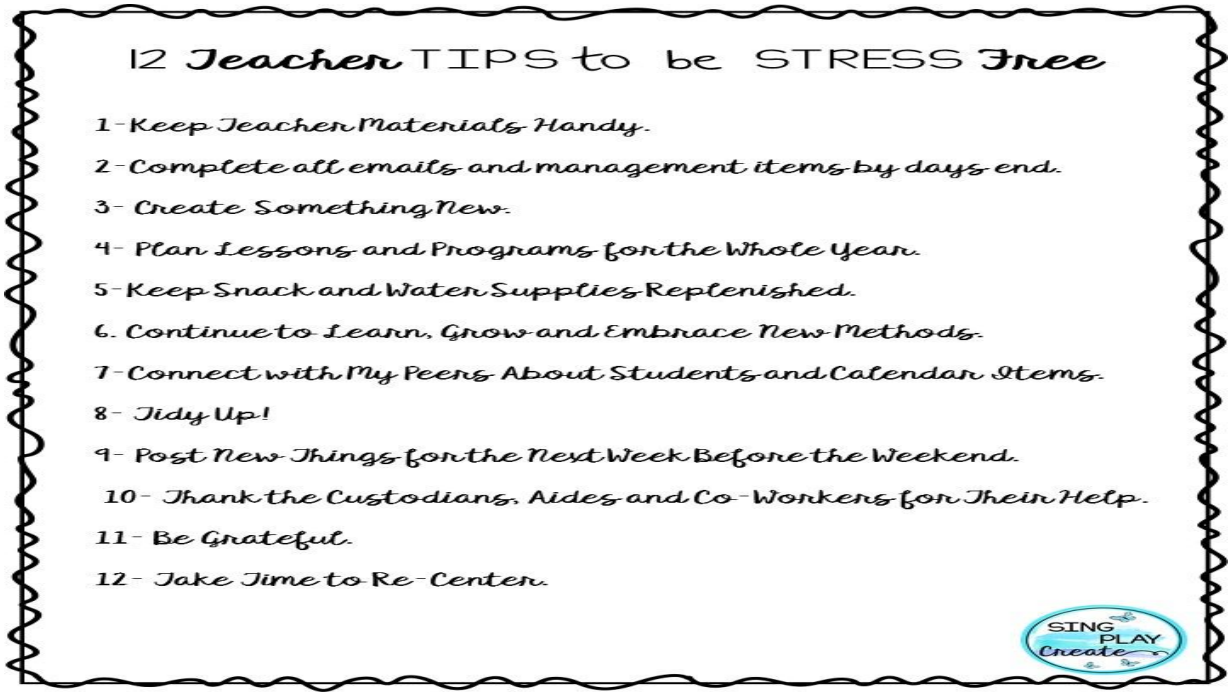
http://www.ascd.org/publications/educational-leadership/may13/vol70/num08/How-Poverty-Affects-Classroom-Engagement.aspx

https://www.youtube.com/watch?v=ZGDCAJxLbTo

https://oupeltglobalblog.com/2013/09/06/top-10-strategies-for-a-stress-free-classroom/

https://www.imaginelearning.com/blog/2010/11/reducing_stress_esl_classroom

https://www.youtube.com/watch?v=775zUGnTXW8




https://www.youtube.com/watch?v=1FDyiUEn8Vw

**Lesson 5** - Basic Components of Memory - This lesson will enable you to identify the basic components of memory and cognition as well as understanding the factors that influence a student's memory.

Objectives:
- Identify the components of long-term and working memory.
- Describe the cognitive processes involved in learning (storing) something new, and explain how can teachers best help students use these processes.
- Identify the factors that influence students' ability to remember (retrieve) information over the long run, and explain why students sometimes forget what they've previously learned.

- Explain the advantages of giving students time to process classroom material.

Reading Assignment:

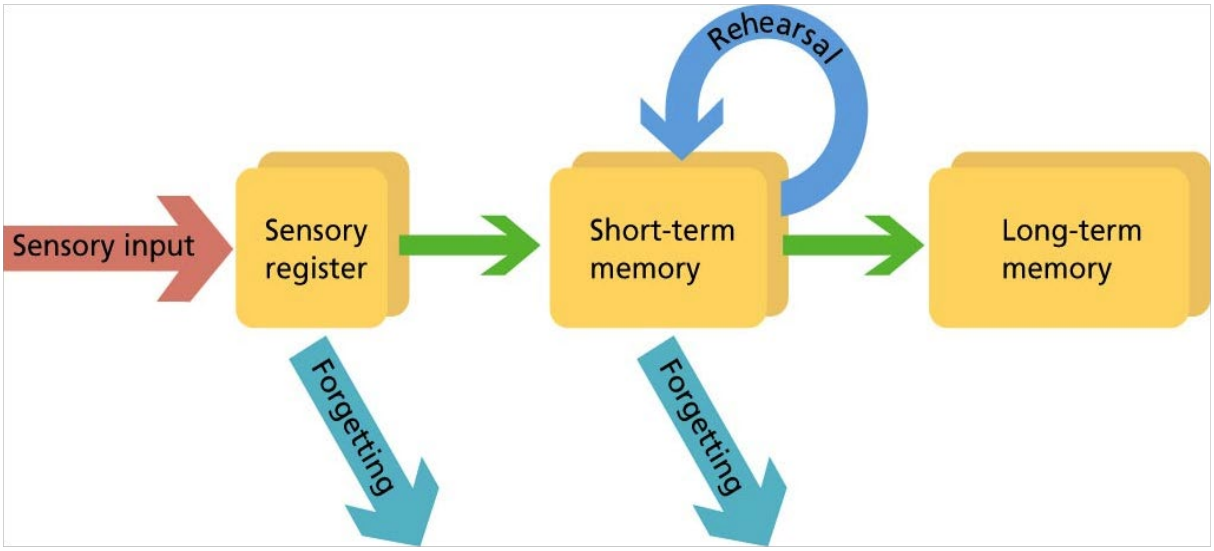
Memory is necessary for learning to occur. Understanding how memory works will influence instructional strategies.

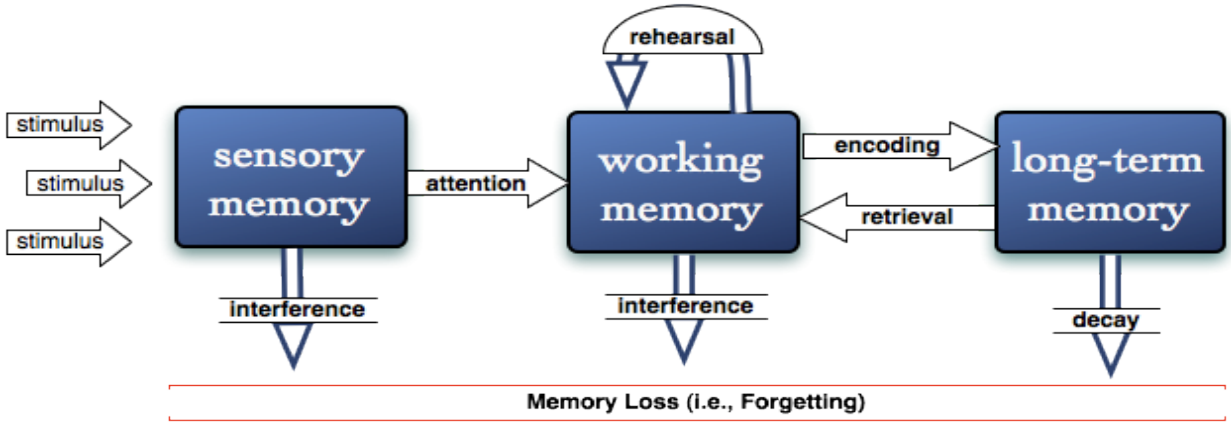
https://examinedexistence.com/difference-between-short-term-long-term-and-working-memory/

https://www.verywellmind.com/what-is-long-term-memory-2795347

https://www.youtube.com/watch?v=XB65VBuepfc

https://www.youtube.com/watch?v=Ep25ntXtClg

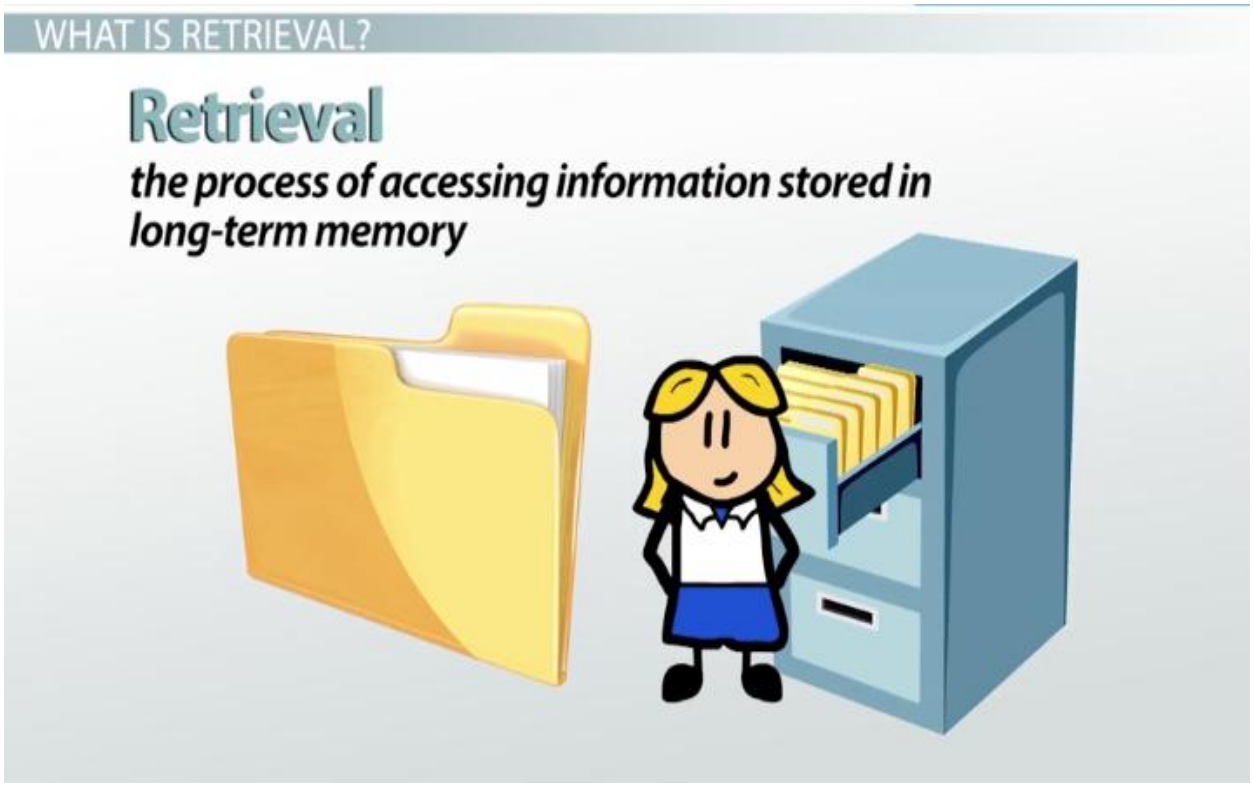



https://www.simplypsychology.org/memory.html

http://thepeakperformancecenter.com/educational-learning/learning/memory/classification-of-memory/memory-process/

https://www.youtube.com/watch?v=ZIEDF7pFnDU

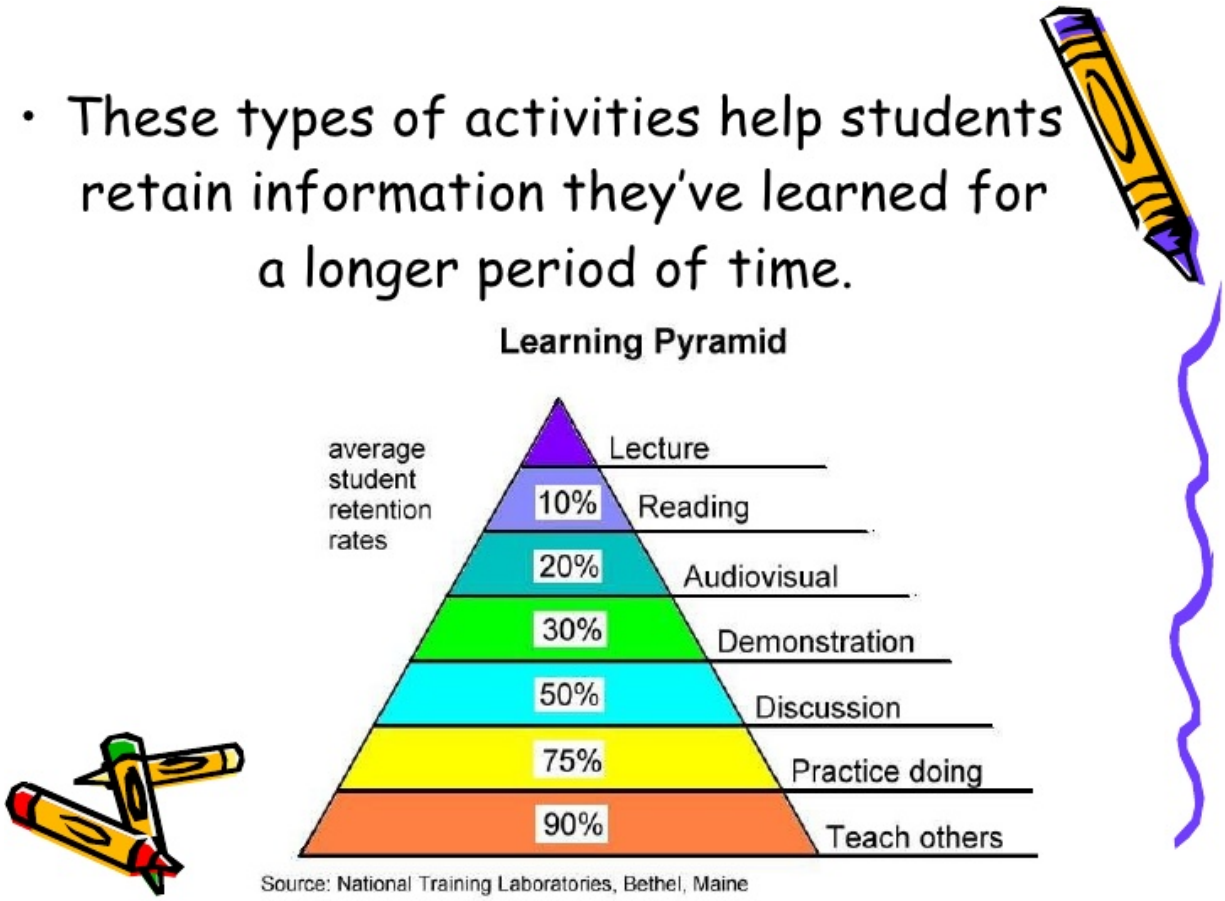



http://www.readingrockets.org/article/10-strategies-enhance-students-memory

https://www.learningliftoff.com/7-strategies-to-help-students-remember-what-they-learn/

https://www.youtube.com/watch?v=5Pu_7lgHjgw

https://www.youtube.com/watch?v=U2RfVTpRnn8




https://www.youtube.com/watch?v=QKs2O1MeNQE

https://www.youtube.com/watch?v=uCUERd837pg

**Lesson 6** - Keeping the Brain's Attention - This lesson will identify the factors that influence attention and provide an understanding of the unconscious learning climate that can affect teaching.

Objectives:
- Explain the factors that influence attention, positively and negatively in the classroom.
- Define a "flow" state and identify the factors that contribute to flow.
- Describe the characteristics of the "non-conscious" learning climate and the implications for teaching.

Reading Assignment:
Grasping the significance of flow in the learning process is a useful tool for instructors. There are classroom techniques that stimulate flow in students.

https://collegeinfogeek.com/flow/

https://www.edutopia.org/blog/student-engagement-elena-aguilar

https://www.youtube.com/watch?v=iUsOCR1KKms

| | Positive emotion | Negative emotion |
|---|---|---|
| Internally driven (self-determined) | **1: Flow**<br>- being immersed in a task<br>- interest, curiosity, fun<br>- learning a new skill | **3: Coping with failure**<br>- learning from failure<br>- perception of self-threat<br>- disengagement |
| Externally driven (incentive-based) | **2: Standards of excellence**<br>- inner standards<br>- being recognized for a good job<br>- being and feeling proud | **4: Pressure to achieve**<br>- social standards<br>- being the best<br>- meeting requirements |

## Where Did the Time Go? (2 of 2)

Learning Objective 10.3 : Describe the nature of flow states.

Some of the experiences that reflect the nature of flow states are:

- athletes describe being in the zone
- entertainers describe being lost in the music
- artists describe their medium as an extension of themselves as they produce their works



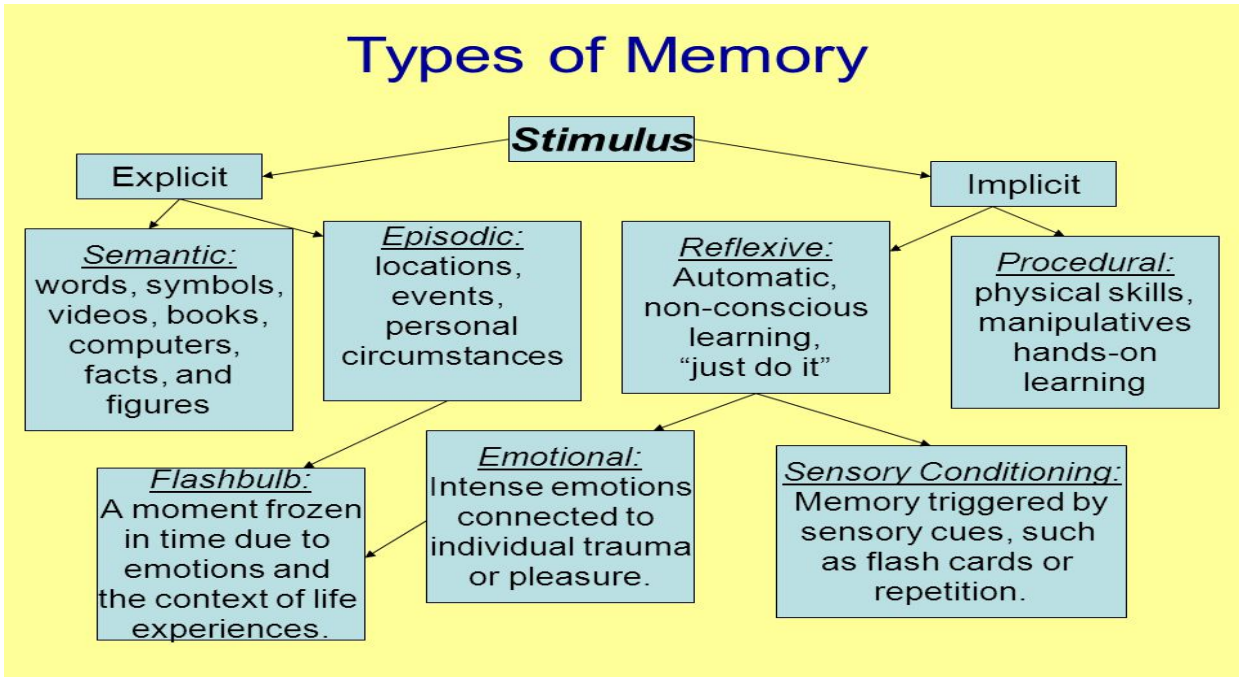
https://www.youtube.com/watch?v=H-DJEU9N1y4

https://www.youtube.com/watch?v=e0dKnzu8-D8

Nonconscious learning is a concept that will expand a teacher's understanding of how students learn. This awareness will influence instructional strategies to increase teacher effectiveness.

https://www.youtube.com/watch?v=3777oSDpdHI

- Impact on the learner 99% non-conscious and 1 % conscious
  - Visual cues
  - Sounds,
  - Experiences
  - Aromas
  - feelings
- Brain decides which side of the brain to use before we even respond to a stimuli… so, what are we learning?
  - Subliminal messages?→Below the threshold of awareness…it does not require conscious attention or analysis
  - Categories:
    - Altered light levels
    - High speed flash projections
    - Variable insertion



- The Value of Positive Climate
  - Enhance feelings of self esteem
  - Remember sarcasm→heart rate
  - Smile, use humor = higher performing learners
  - Endorphins are released which cause us to "feel good"
  - Remember there is a high relationship between attitude and communication of facts

- Learner Expectations
  - Why does learner learns and respond to some information and no to other?
    - He thinks the material is going to be useful
    - Usefulness is influenced
      - by what we are looking for
      - by the learner's attitude towards learning

## *Learning Always Involves Conscious And Unconscious Processes – Implications*

- Switch gears with a strong contrast from what you were just doing
- Provide students time to process and reflect on the material you just covered
  - Encourage "active processing" through reflection and metacognition to help students consciously review their learning.
  - Much understanding may not take place immediately and may occur later, some understanding coming much later.
- Processing time, reflection, and metacognition are vital to the learning environment.

**Lesson 7** - Enhancing Cognition - This lesson will enable you to understand higher level thinking, metacognition, and effects of motivation on learning as well as describe the cognitive processes involved in effective problem solving.

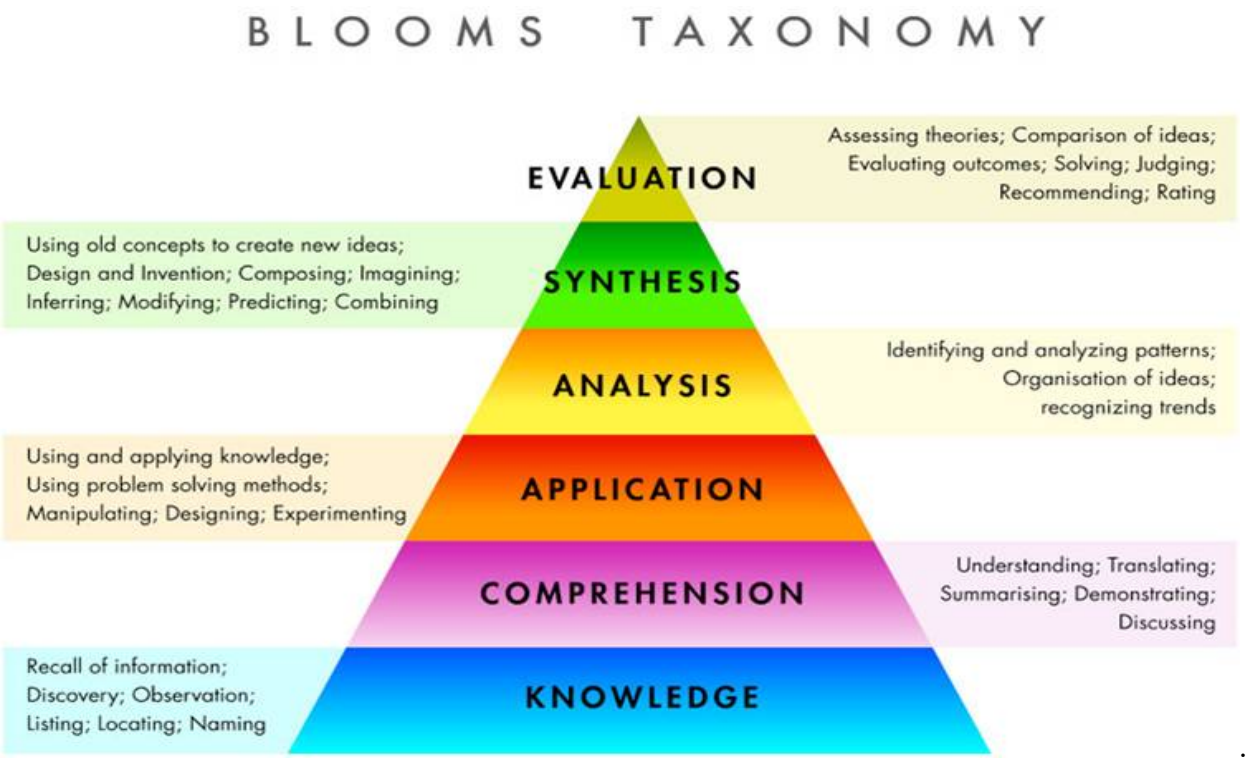
Objectives:
- Define higher-level thinking and give several examples.
- Explain metacognition and identify the components of the SQ4R Technique.
- Describe the type of circumstances in which learners are most like to apply (transfer) what they have learned to new situations.
- Describe the cognitive processes involved in effective problem solving.
- Explain the cognitive aspects of motivation and the relationship between self-perception and intrinsic motivation.

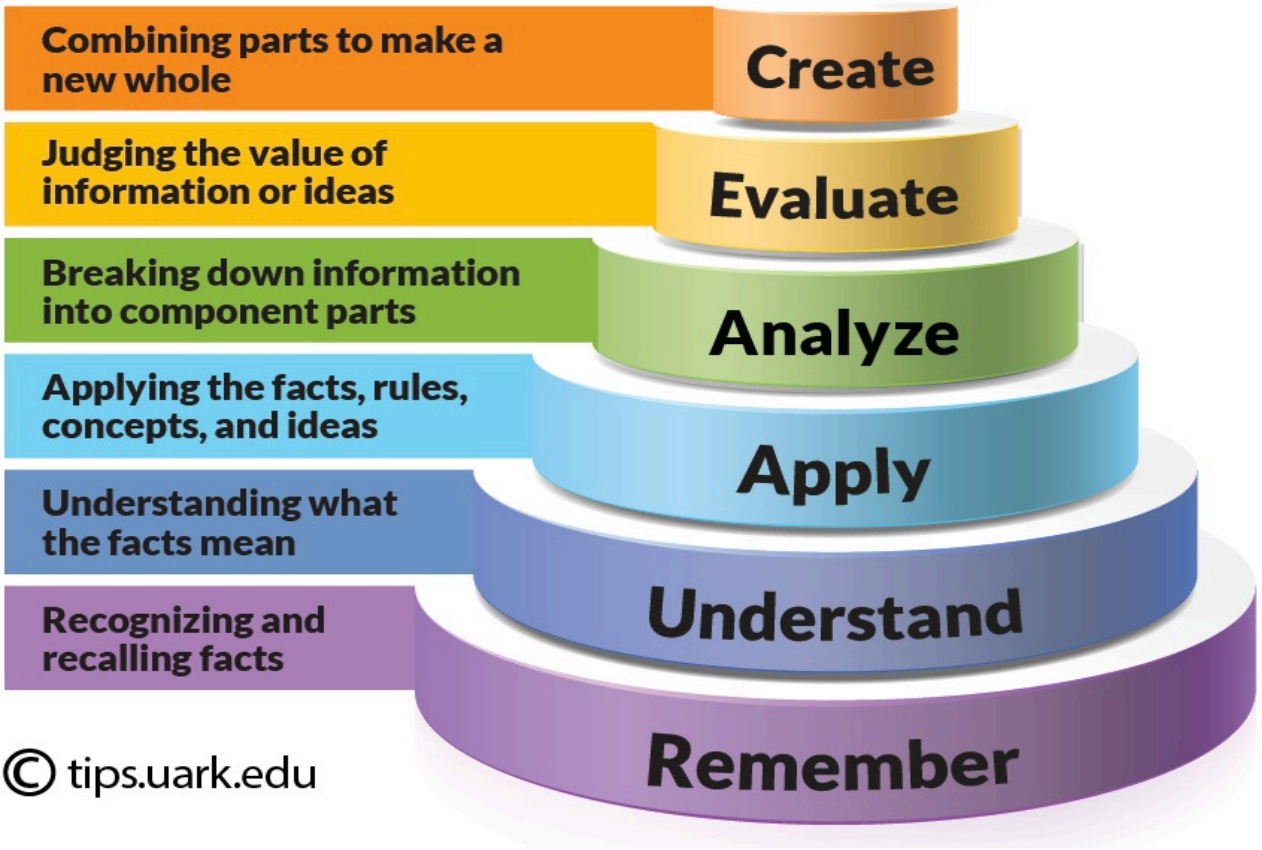
Reading Assignment:
Bloom's taxonomy is a foundational model for cognitive function. Becoming failure with this taxonomy is useful for developing instructional strategies and structuring student learning.

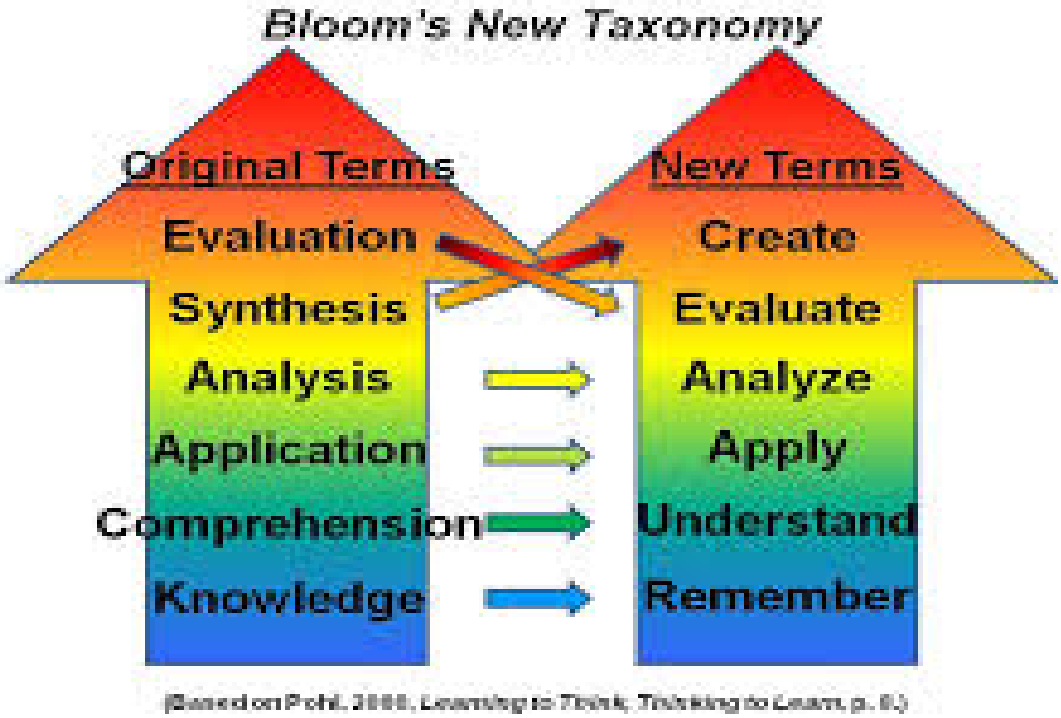
http://www.nwlink.com/~donclark/hrd/bloom.html

https://www.youtube.com/watch?v=7gpkK54LZ3Q

https://www.youtube.com/watch?v=zj6CrMthNG8




Combining parts to make a new whole
Create
Judging the value of information or ideas
Evaluate
Breaking down information into component parts
Analyze
Applying the facts, rules, concepts, and ideas
Apply
Understanding what the facts mean
Understand
Recognizing and recalling facts
Remember
© tips.uark.edu


Bloom's New Taxonomy
Original Terms
Evaluation
Synthesis
Analysis
Application
Comprehension
Knowledge
New Terms
Create
Evaluate
Analyze
Apply
Understand
Remember

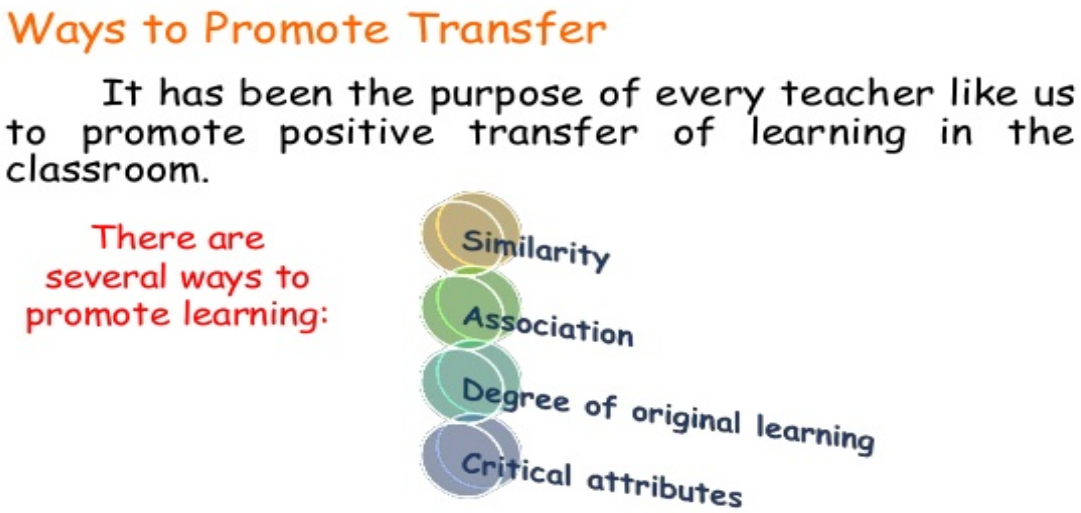
Metacognition is thinking about thinking. Refer back to lesson one to review metacognition.

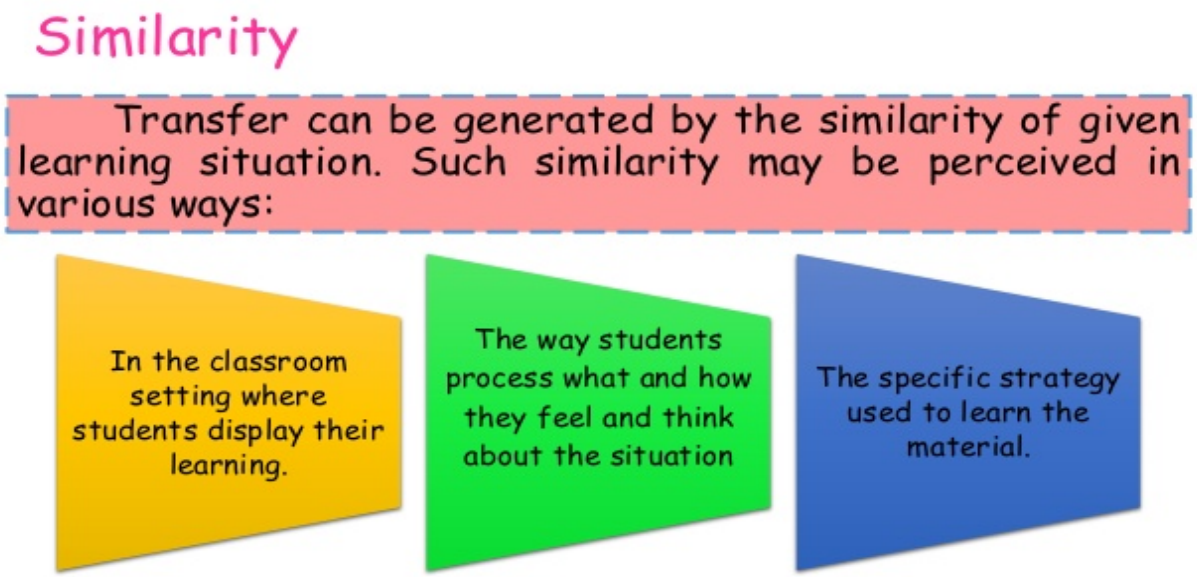
Transfer simply means being able to take learning in one setting and apply it to another setting. Real learning means the capacity to transfer.

https://www.slideshare.net/ajones1/transfer-of-learning-presentation

https://www.youtube.com/watch?v=N8QfkT8L9lo

https://www.youtube.com/watch?v=GAscBEDDiXg





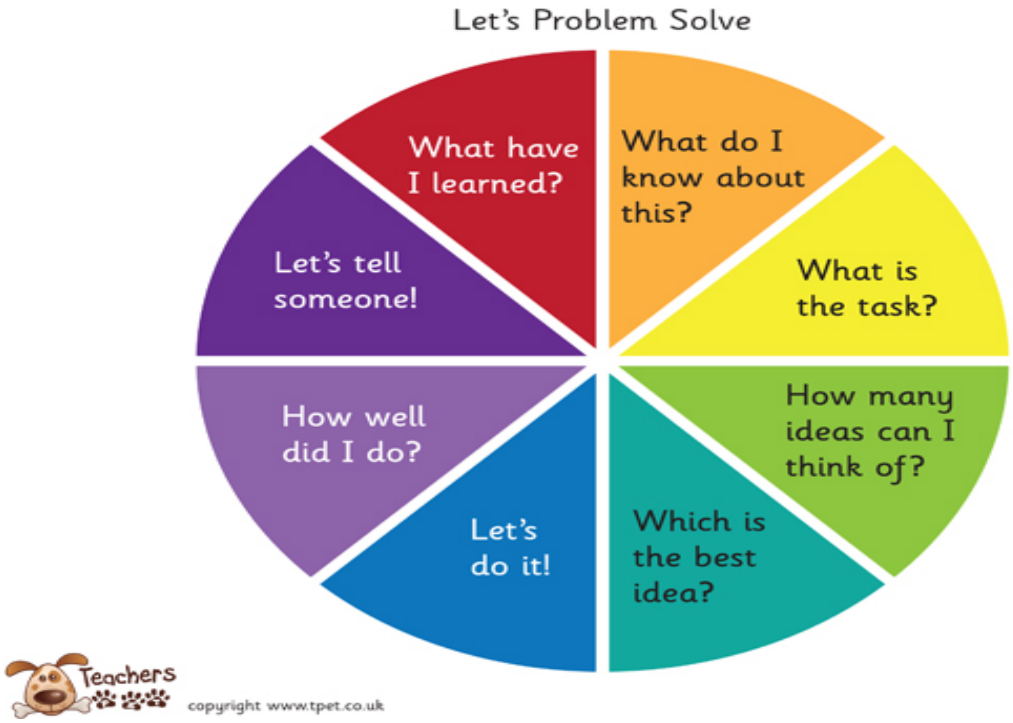

## Meaning of transfer of learning

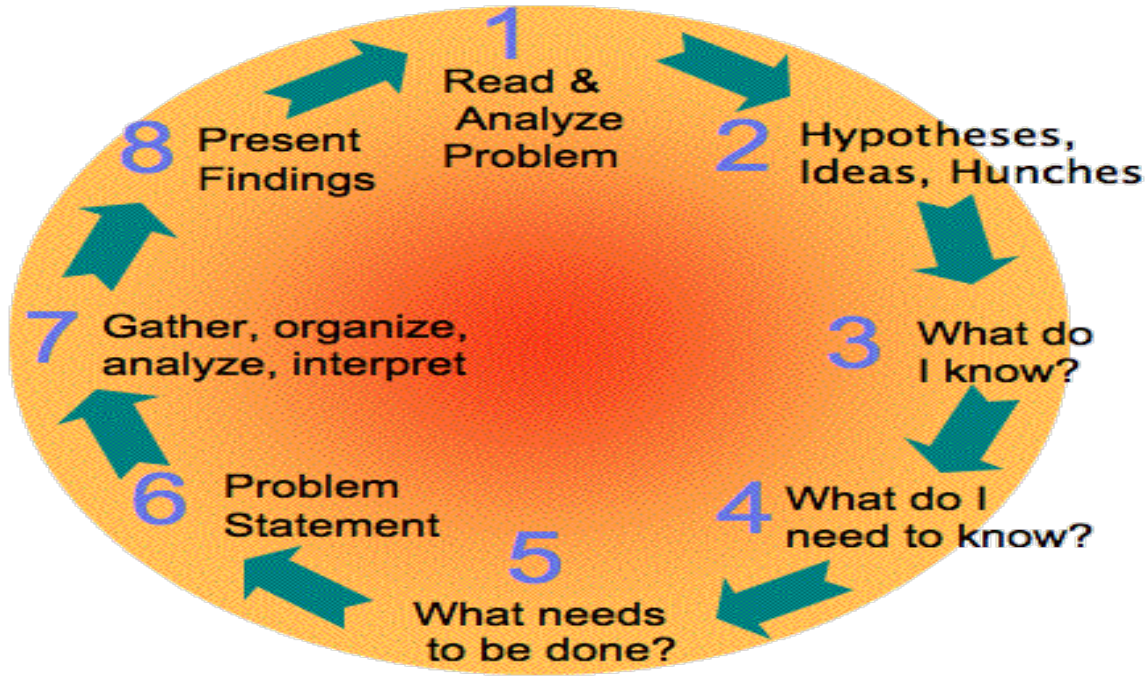
- Situation where the learned knowledge and skills are used either
  - in learning another information, knowledge, skills or attitudes in new situation,
  - at another time or
  - in real life situation.
- It includes knowledge and skills acquired through experience which helps the student to learn anything in classroom.

An important part of developing critical thinking is developing skill in problem solving.

https://www.teachervision.com/problem-solving/problem-solving

https://www.youtube.com/watch?v=8htAOibYKSU



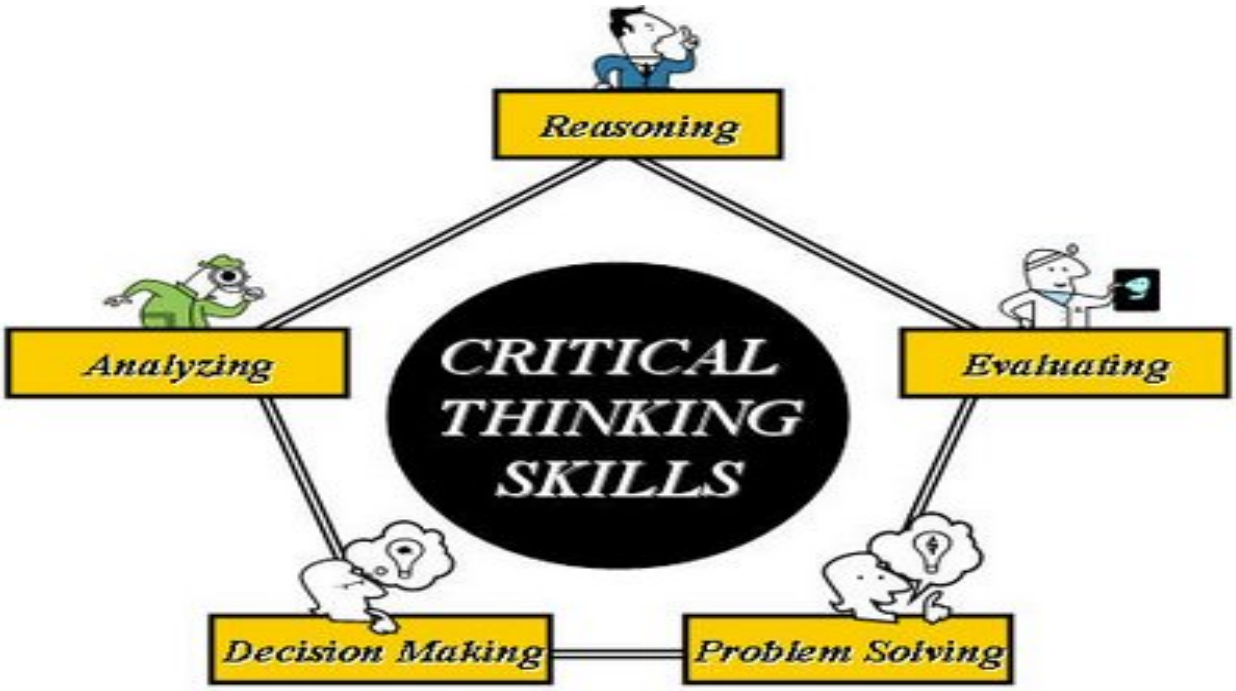



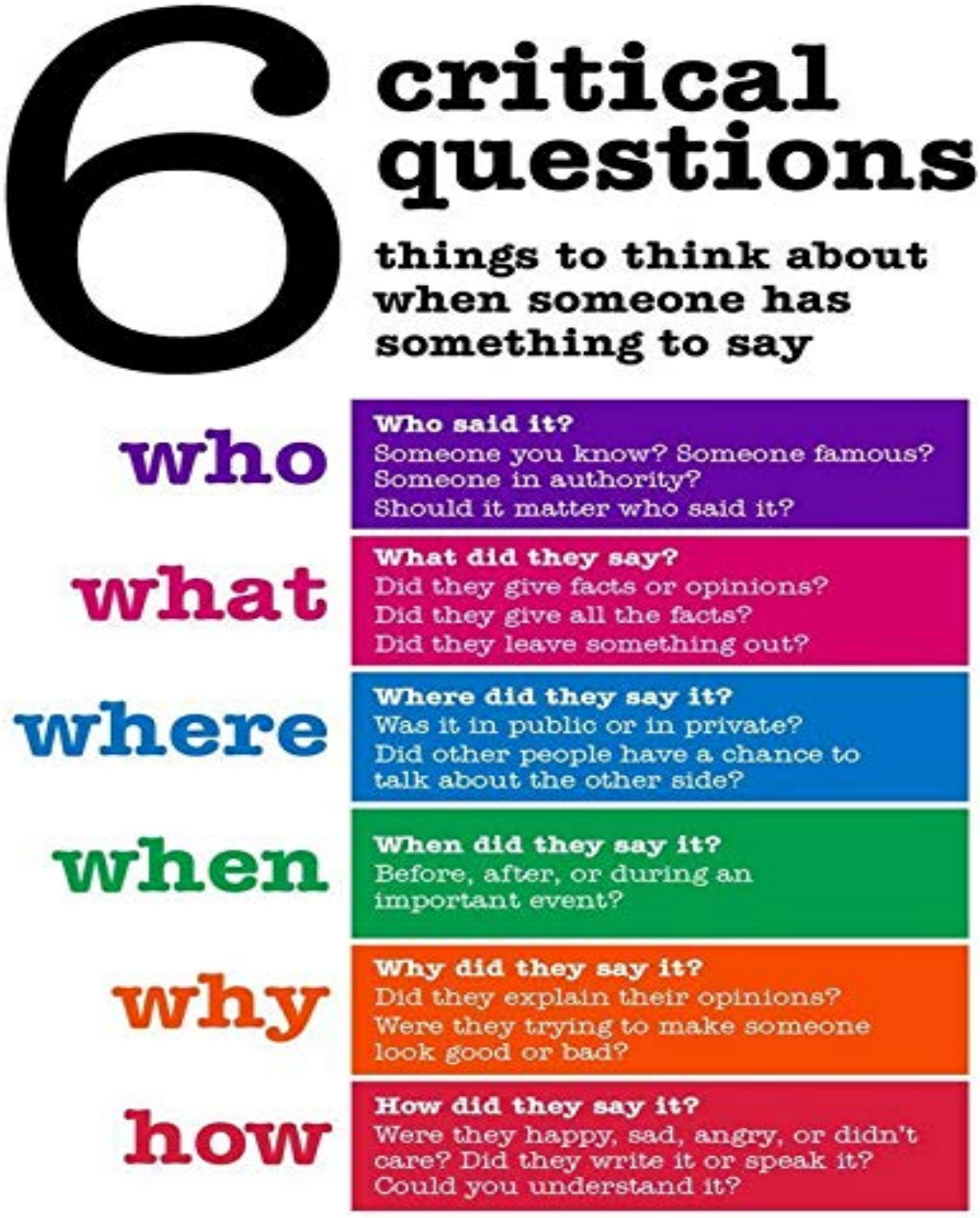

Most advanced learning requires critical thinking. This involves effort on the students' part and to develop critical thinking requires effort on the teachers' part.

https://globaldigitalcitizen.org/6-ways-critical-thinking-engaging-classroom-teaching

https://www.youtube.com/watch?v=nkqBDUyNbIc

https://www.youtube.com/watch?v=y7iMEH7jGFk






Scaffolding is way to help students move from the less hard concepts to the more complex ones.

http://www.edudemic.com/scaffolding-teaching-approach/

https://www.youtube.com/watch?v=CTR_snb-0nQ

# Scaffolding

Temporary support that helps students achieve proficiency with a skill or concept. Scaffolding is gradually removed as the student improves.

## What is a "scaffold"?

Think about how this term is used in the building industry...

- A "scaffold" is a **temporary** platform.
- "Scaffolding" means to "to **provide support**".

-- Scaffolds **get people to a higher level** that they cannot reach without support.

BIE

WWW.BIE.ORG

The SQ4R technique (survey, question, read, recite, relate, and review is another model for instructional design.

http://www.dearteacher.com/sq4r

http://www.rcsthinkfromthemiddle.com/sq4r.html

https://www.youtube.com/watch?v=L5l1QJWSfdQ

https://www.youtube.com/watch?v=eGEh7dQc4lk

# SQ4R

**S = SCAN**
each page quickly.

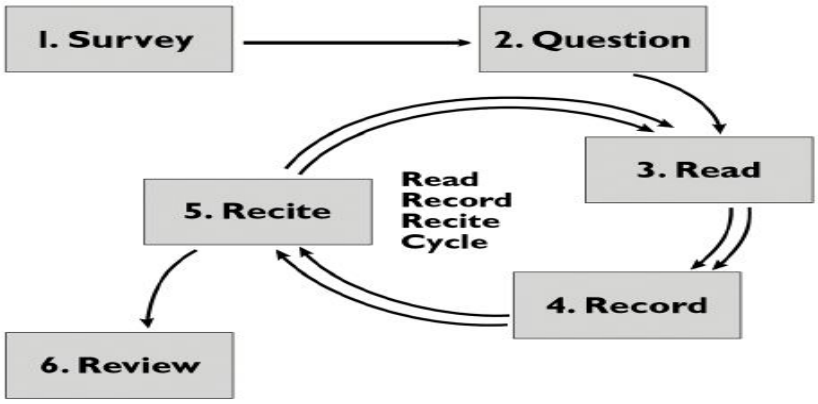
**Q = QUESTION**
as you scan.

**R = READ**
(does *not* mean reading every word.)

**R = REFLECT**
– think about what you've just read.

**R= RECITE**
aloud to yourself as you read;
talk to yourself.

**R = REVIEW**
what you've just read.




| THE STEPS OF SQ4R |
|---|
| 1. *Survey* the chapter. |
| 2. Write *Questions* for each heading and subheading. |
| 3. *Read* the information one paragraph at a time. |
| 4. Select a form of notetaking to *Record* information. |
| 5. *Recite* the important information from the paragraph. |
| 6. *Review* the information learned in the chapter. |

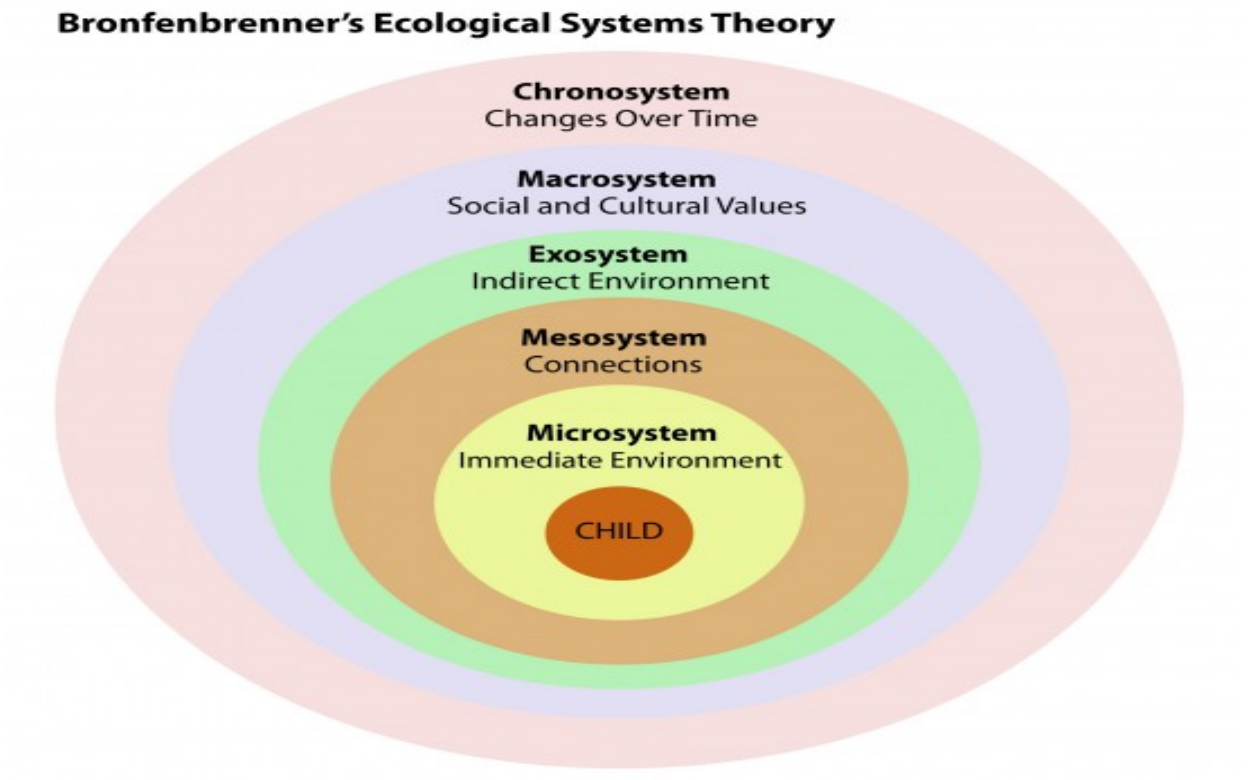
**Lesson 8** - Development of Academic Skills - This lesson will enable you to understand the internal beliefs that students have about themselves and their environment-beliefs that are influenced by emotional, biological, institutional, cultural, social, ethical, and spiritual factors. You will also learn about the impact of nutrition on the brain as well as understanding the importance of goal setting.

Objectives:
- Identify the general characteristics that influence school readiness.
- Describe Bronfenbrenner's ecological systems perspective.
- Explain the impact of nutrition on the brain.
- Describe additional metacognitive strategies for enhancing learner readiness.
- Explain the importance of goal setting, differentiating between mastery and performance goals, and provide concrete suggestions for helping students focus on goals.

Reading Assignment:
Review Bronfenrenner's Ecological Theory.

https://www.youtube.com/watch?v=J4OQQYyA--E

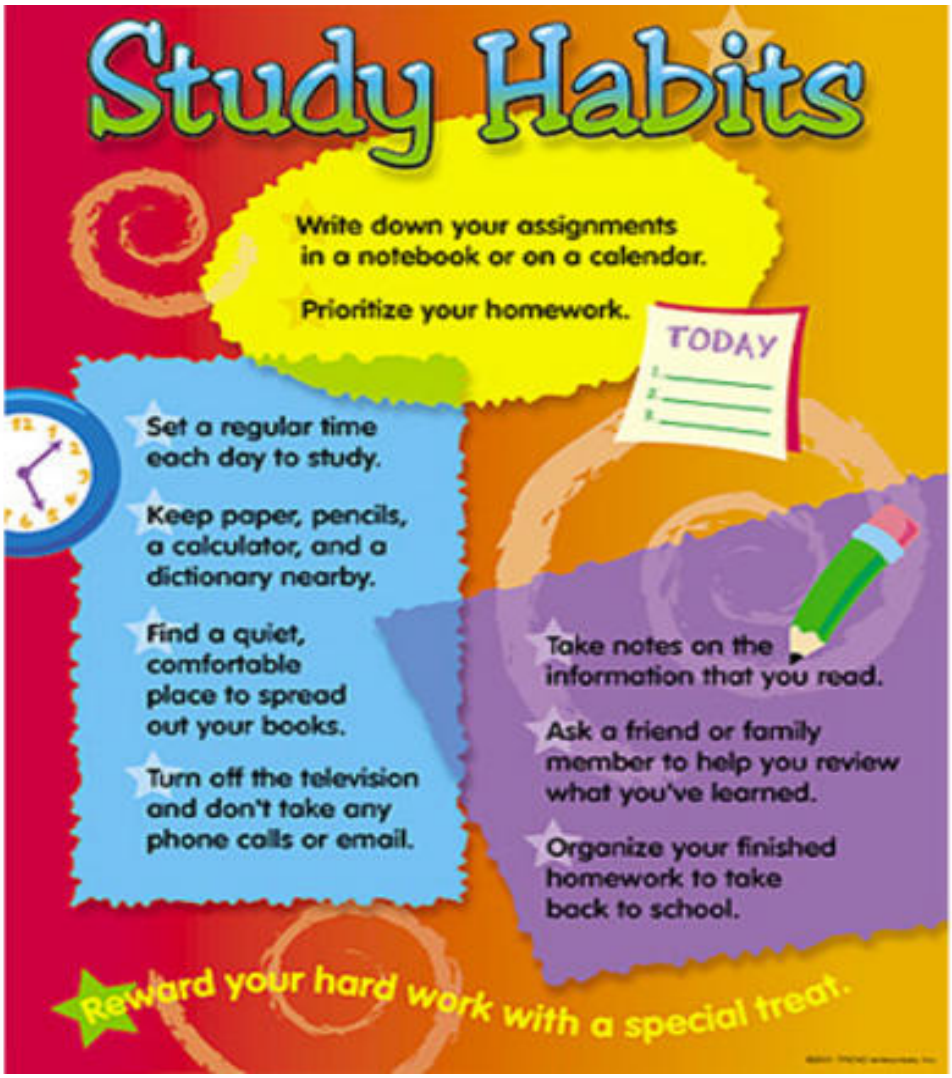
https://www.youtube.com/watch?v=5htRhvm4iyI




Helping students develop effective study habits is part of preparing them to become good learners.

https://www.educationcorner.com/habits-of-successful-students.html

https://www.youtube.com/watch?v=p60rN9JEapg

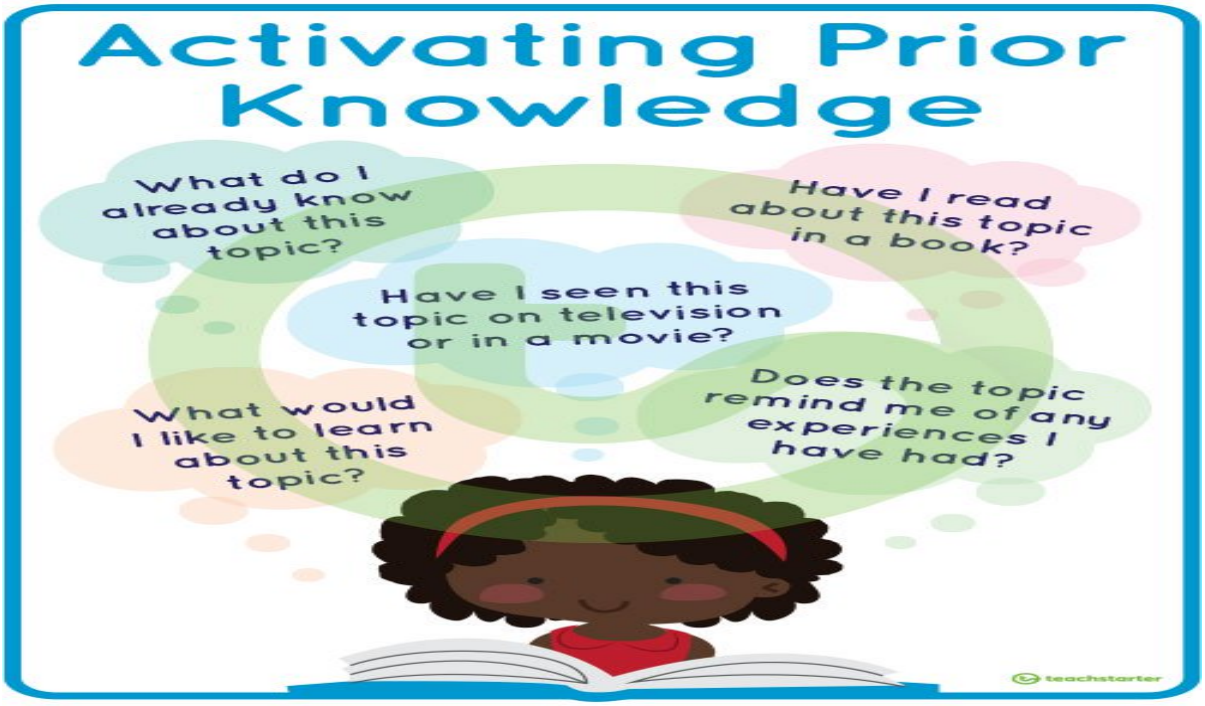



Activating the prior knowledge of a student enhances learning by making the content more meaningful and relevant. These increases learning.

https://www.edweek.org/tm/articles/2017/01/04/five-ways-to-help-students-build-prior.html

http://schoolnet.org.za/teach10/resources/dep/prior_knowledge/index.htm

https://www.youtube.com/watch?v=ESLICf11T_k




Helping students set personal learning goals gives purpose to learning. Students don't usually know how to wisely set goals so it must be taught.

https://www.coloradotech.edu/blog/2018/march/effective-goal-setting-tactics-how-students-can-set-smart-goals

https://www.youtube.com/watch?v=1zLtfzsaP58

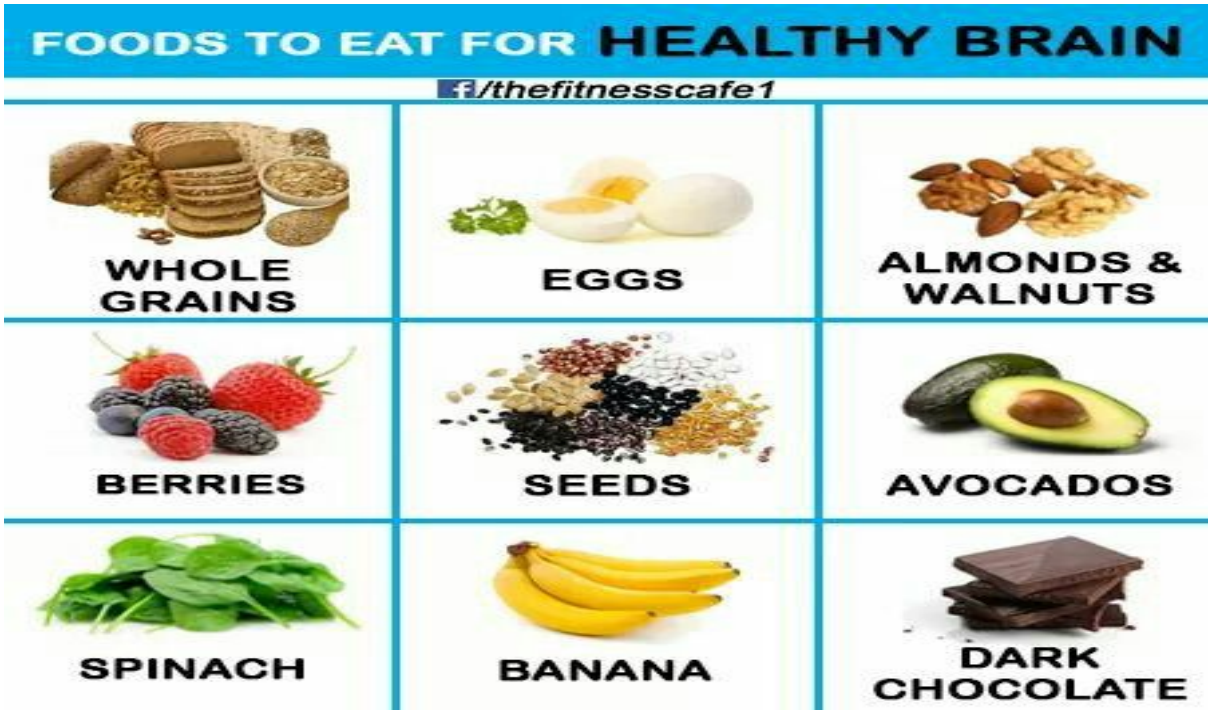
https://www.youtube.com/watch?v=iQAsUKBBnSM


Visualizing is a way to engage the brain's memory and imagination.

https://trans4mind.com/counterpoint/index-creativity-career/whiteley.shtml

The proper diet with brain healthy foods impacts brain function and hence learning.

https://healthybrains.org/pillar-nutrition/

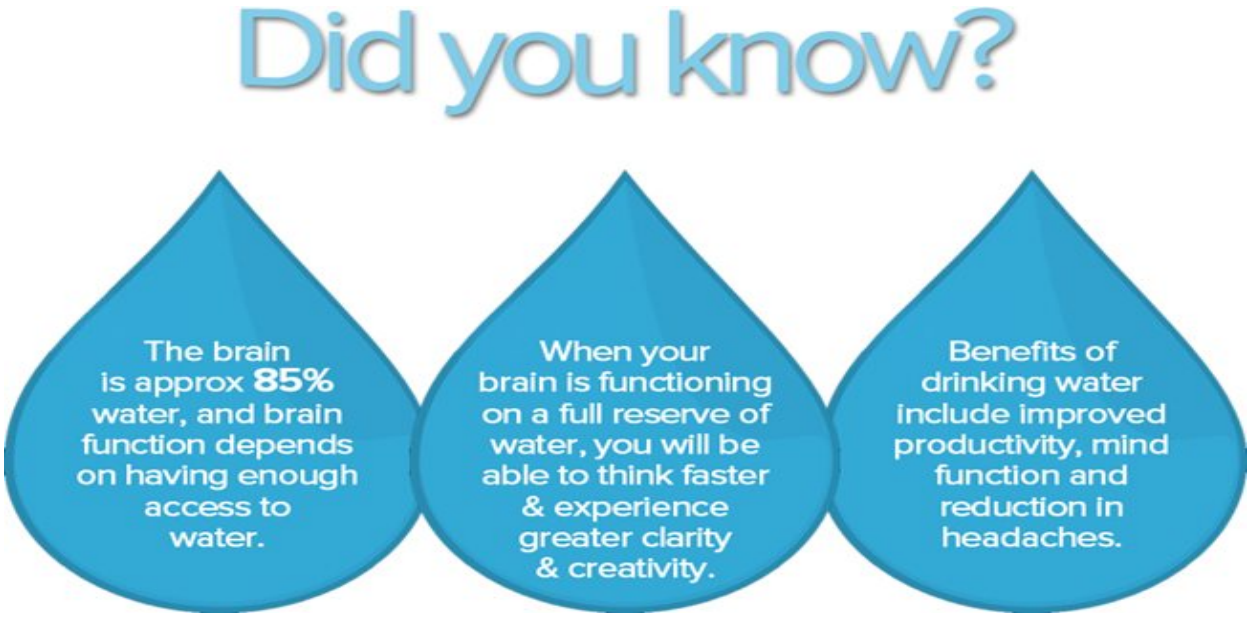



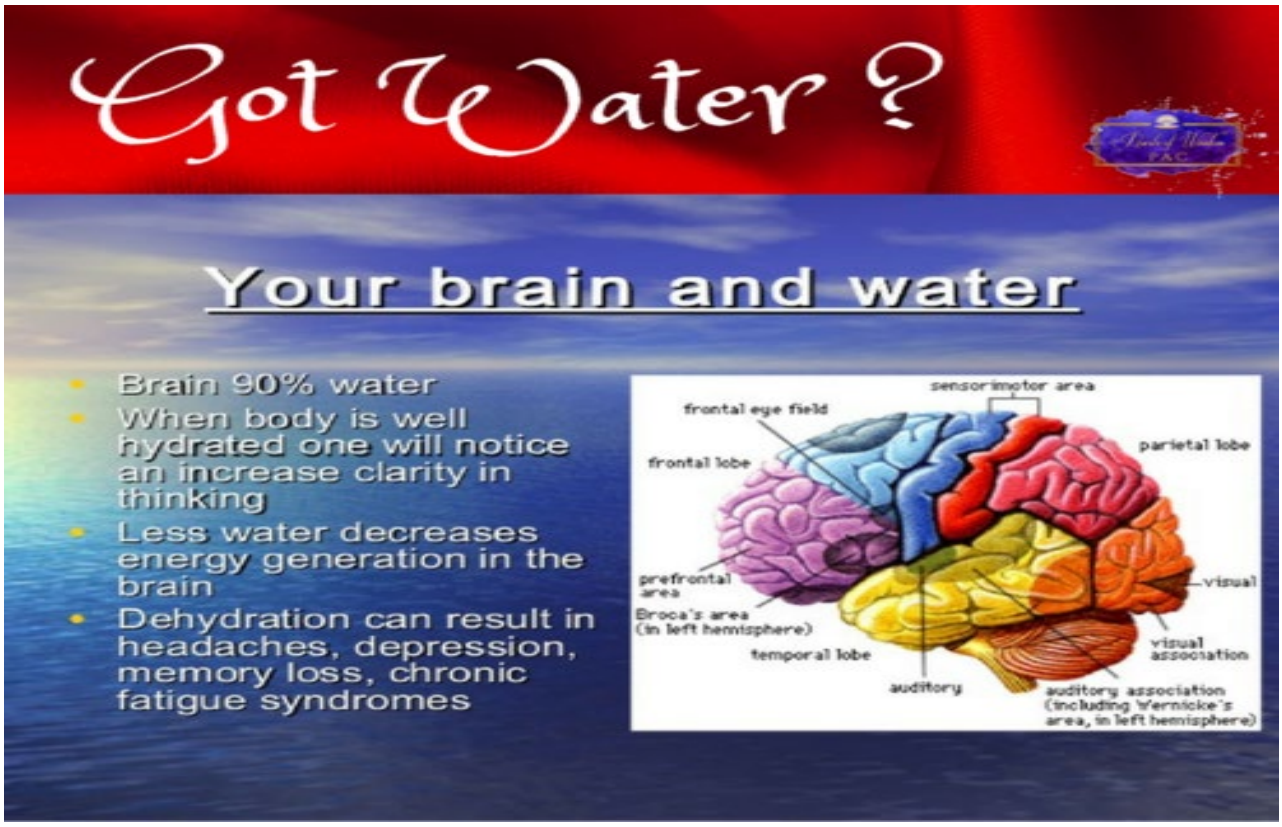
Hydration is also important for the brain.

https://medium.com/bsxtechnologies/4-ways-dehydration-affects-your-brain-e4042a6cb6b1

https://primowater.com/blog/well-hydrated-brain/

https://www.youtube.com/watch?v=FqTtWCy7kw8






**Lesson 9** - Curriculum Development Through the Multiple Intelligences - This lesson will enable you to understand the differences between a traditional and brain-compatible curriculum. Additionally, you will understand how curriculum development is affected by multiple intelligences and learning styles.

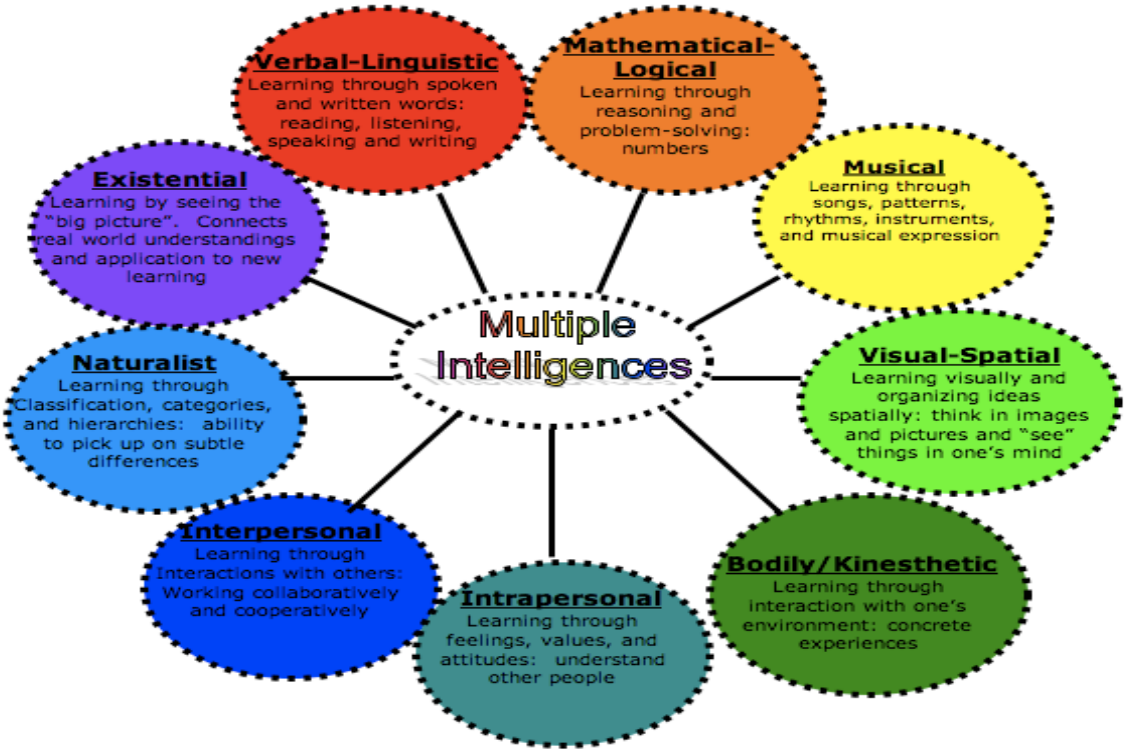
Objectives:
- Compare and contrast a traditional curriculum with a brain-compatible curriculum.
- Assess your own learning preferences as a teacher.
- Explain how understanding multiple intelligences and learning styles effects curriculum development.
- Develop lesson plans that incorporate teaching to multiple intelligences.

Reading Assignment:
Howard Gardner's Multiple Intelligence theory addresses the different ways people learning and illustrates different learning styles. To the degree instruction can be delivered to accommodate different learning styles individual students can learn more effectively and more efficiently.

https://personalitymax.com/multiple-intelligences/

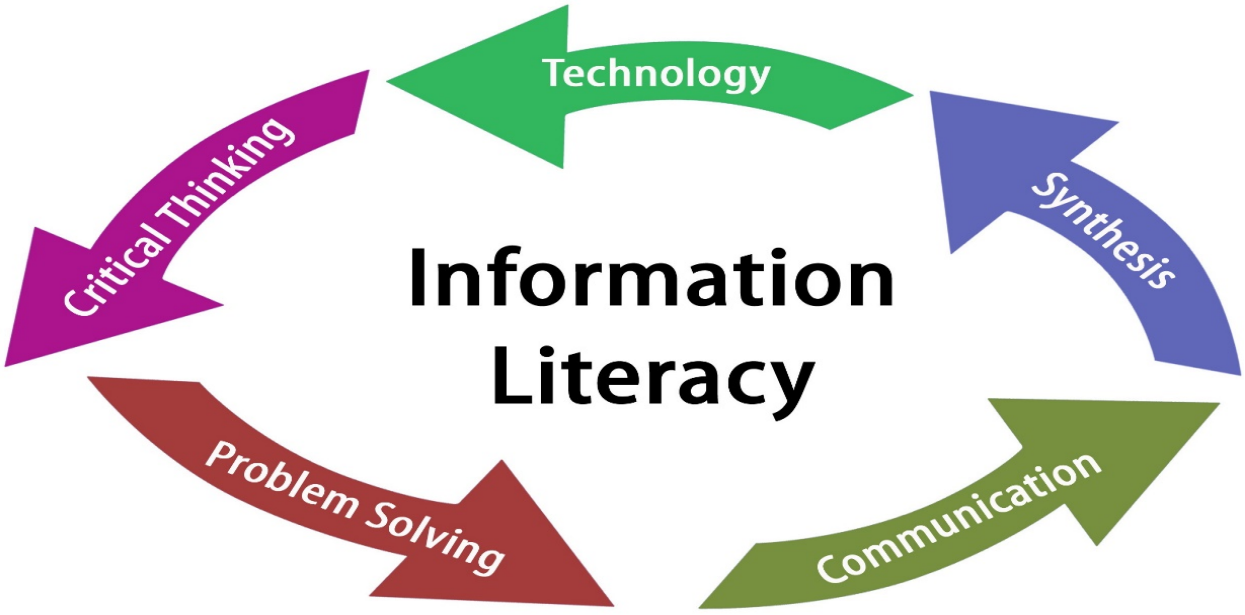
https://blog.adioma.com/9-types-of-intelligence-infographic/

https://www.youtube.com/watch?v=s2EdujrM0vA



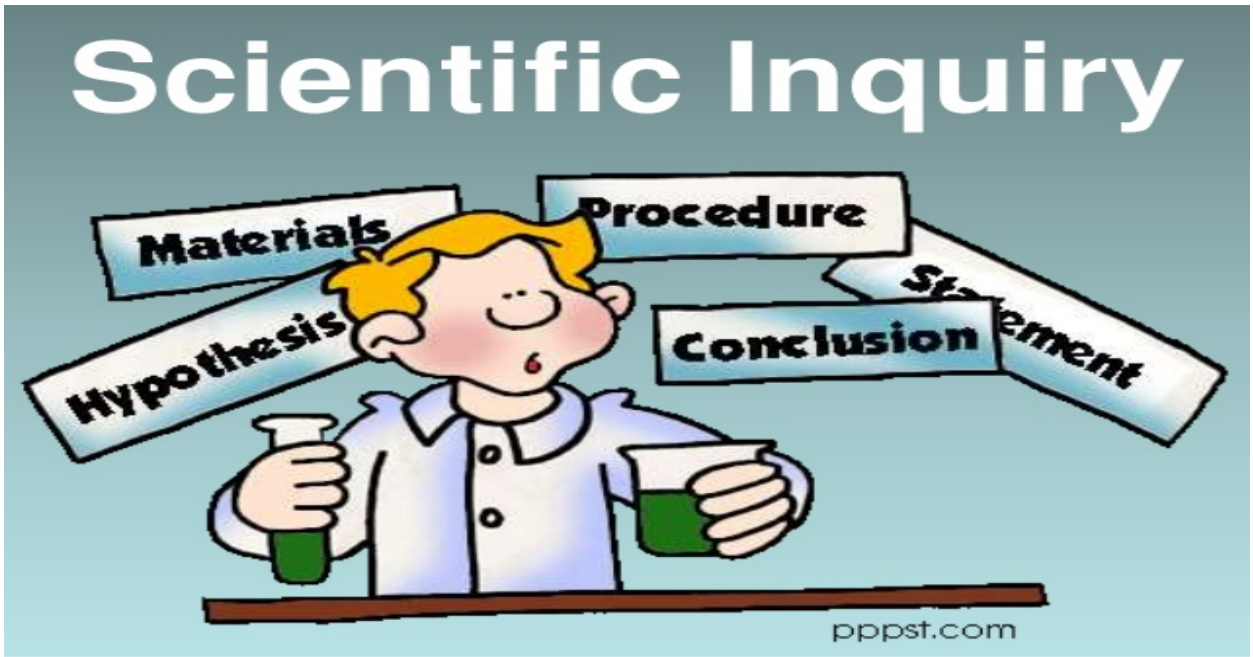

Here are some links to additional skills student need for the information age that were introduced in the tutorial for this lesson in the online course.

https://www.youtube.com/watch?v=1ronp6Iue9w




https://www.edutopia.org/blog/teaching-science-inquiry-based

https://www.youtube.com/watch?v=Fu2TS0DjBxE




https://www.edsys.in/creativity-in-classroom/

https://www.youtube.com/watch?v=nASvIgSOCxw


http://howtosavetheworld.ca/2008/02/28/social-fluency/

https://www.youtube.com/watch?v=kGgBzV8q75I

https://www.skillsyouneed.com/ps/personal-development.html

https://www.youtube.com/watch?v=JbdkSVI2poo

https://www.youtube.com/watch?v=ni6zNDFK8a4


Education & Personal Development
GROW
LEARN
EXPLORE


spiritual
emotional
PERSONAL
DEVELOPMENT
social
mental
physical


**Lesson 10** - Assessment that Enhances Learning - This lesson will enable you to understand formal and informal assessment techniques and how those assessments can be applied in the classroom.

Objectives:
- Demonstrate an understanding of formal and informal assessment techniques.
- Compare and contrast the different forms assessment can take in classroom settings, including multimodal assessment.
- Design assessment for the multiple intelligences.
- Define authentic assessment and demonstrate how to apply it in the classroom.

Reading Assignment:
Assessment is simply measuring what the students know and are able to do as a reflection of what they were taught. There are a number of assessment tools that can be used effectively to measure student knowledge and performance and can also reflect on the effectiveness of the teacher's instruction. We will explore several aspects of assessment and assessment tools.

https://www.youtube.com/watch?v=zTkQjH-_97c

https://www.illuminateed.com/blog/2018/02/9-informal-assessments-help-pinpoint-learners-need/

https://www.thoughtco.com/informal-classroom-assessments-4160915

https://www.theclassroom.com/types-formal-assessments-education-4208.html

https://www.youtube.com/watch?v=_WDfT46nijA

# Informal Assessment Procedures

As teachers we use informal assessment every day in our classrooms when we

- Observe student behavior
- Find an error pattern in a student paper
- Interview a student
- Grade student homework
- Give a teacher-made test
- Use checklists to measure progress

## INFORMAL AND FORMAL ASSESSMENT

### Informal Assessment

- **Unplanned observations and general feedback**
  - Good job!
  - Did you say "can" or "can't"?
  - ☺
- **Planned classroom activities in which students perform tasks but do not receive final grades on performance**
  - Think-Pair-Share
  - Dialogues
  - Essay or Journal Writing
  - Note-taking
  - Group or Partner Work

### Formal Assessment

- Activities in class that you give to students for which they receive ***graded*** feedback
  - Tests
  - Rubric-Scored Assignments
    - Writing portfolio
    - Presentations
    - Journal Entries
    - Notes
    - Performances
    - Projects
    - Posters

(Brown, 2004)

| Informal vs. Formal Assessments | |
|---|---|
| **INFORMAL ASSESSMENTS** | **FORMAL ASSESSMENTS** |
| 1. NON-STANDARDIZED | 1. STANDARDIZED TESTING |
| 2. NO SCORES | 2. SCORES ARE CONSIDERED |
| 3. NO COMPARING TO OTHE STUDENTS | 3. SCORES ARE COMPARED |
| 4. OBSERVING AND INTERVIEWING | 4. SUMMATIVE TESTS |
| 5. NORMAL CLASSROOM ENVIRONMENT | 5. COULD GO BEYOND NORMAL CLASSROOM ENVIRONMENT LIKE TESTING FACILITIES |

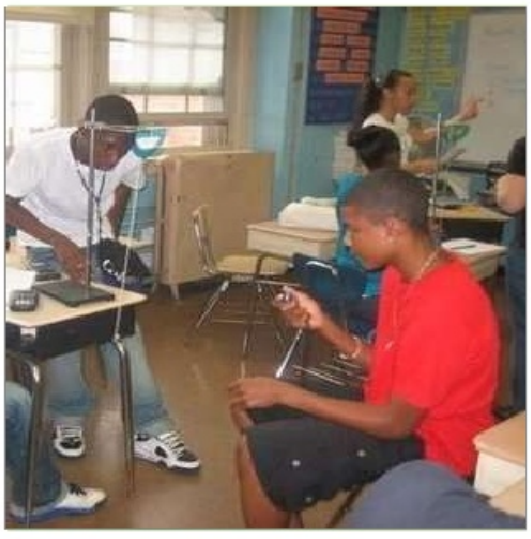
http://jfmueller.faculty.noctrl.edu/toolbox/whatisit.htm

https://www.youtube.com/watch?v=rQPCk27tM4U

## What is Authentic Assessment?

Performance assessments call upon the examinee to **demonstrate** specific skills and competencies, that is, to **apply** the skills and knowledge they have mastered.

Richard J. Stiggins



# Why Use Authentic Assessment

**Authentic Assessments Integrate Teaching, Learning and Assessment**

When presented with a real-world problem to solve, students are learning in the process of developing a solution, teachers are facilitating the process, and the students' solutions to the problem becomes an assessment of how well the students can meaningfully apply the concepts.

# Traditional Assessment vs. Authentic Assessment


## Traditional (**TA**)

- To develop productive
- citizens
- Must possess a body of knowledge and skills
- Schools must teach this body of knowledge and skills
- Test the students if they acquired the knowledge and skills

## Authentic (**AA**)

- To develop productive citizens
- Must be capable of performing real tasks
- Schools must help students become proficient at performing tasks
- Have the students perform meaningful tasks

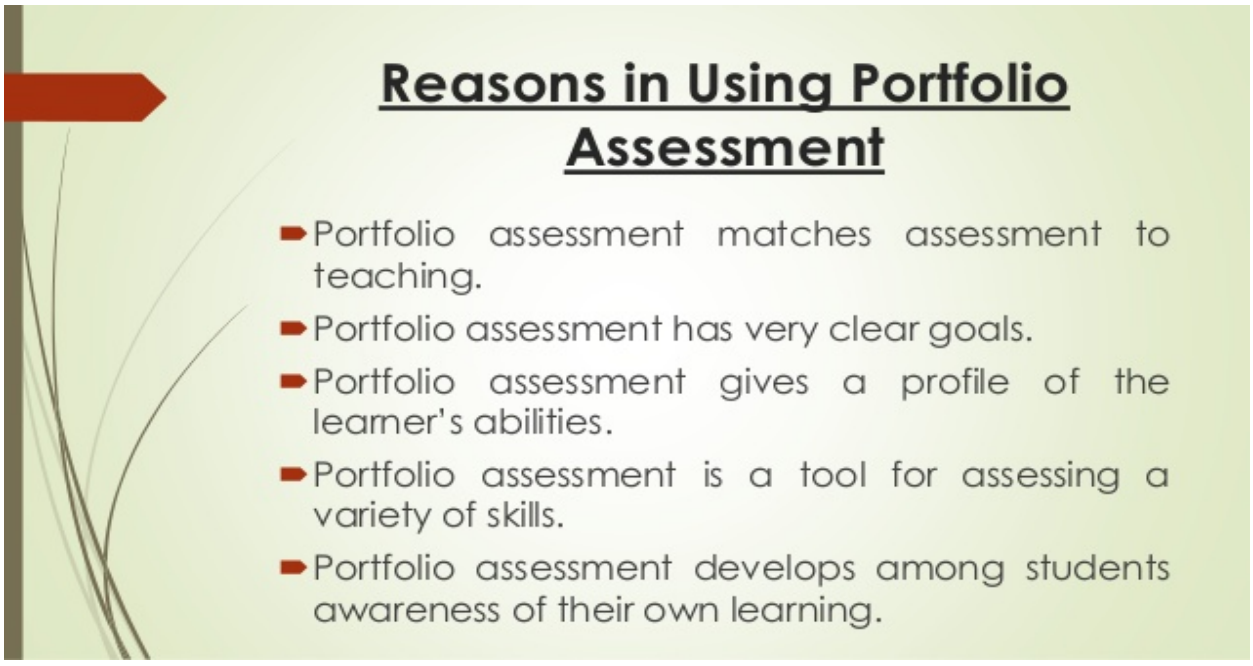
https://education.seattlepi.com/describe-advantages-portfolio-assessment-students-1470.html

https://www.youtube.com/watch?v=x1G7WYmrjFI

## Portfolio assessment

- Portfolio assessment is important because it measures the progress of a student and examines the instructional process, not just the final product.
- Portfolios assessments can provide multiple levels of learning evidence and demonstrate what a student knows and how he uses this knowledge.
- The contents of portfolios (artifacts /evidence) can include drawings, photos, video or audio tapes, writing or other work samples, computer disks, and copies of standardized or program-specific tests.
- Data sources can include parents, staff, and other community members who know the participants or program, as well as the self-reflections of participants themselves.
- Therefore a solid portfolio can truly assess a student's development.

5



# Characteristics of Portfolio Assessments

- Portfolio assessments: purposeful, organized collection of student work that can be used to describe efforts, progress, or achievement.
  - The idea of the academic portfolio is derived from an artist's or writer's portfolio.
  - Provide a means for students to show what they can really do; they are considered to be based on the "real world."
  - Student performances or products are compiled in an effort to show accomplishments or improvement over time.

**Product Two:**
**Culminating Activity** – Writing assignment to provide a comprehensive summary of the course.

Objectives:
- Reflect knowledge from course lessons
- Demonstrate implementation and application to classroom and program
- Demonstrate writing skills and use of APA format

Submit Paper: To Dr. Elden Daniel, Instructor of Record

**Student Writing Assignment:**

Please respond to the following questions/statements in one paper. Please be thorough in your discussion. Each part should contain an introduction, main body and a conclusion/summary. Be sure to include a title page, number pages and include course title. Writing tip: Be sure to use spell check and grammar check, and have someone proofread your paper before you submit it. (Your paper's combined responses should be between a minimum of six to eleven pages in length.) *Many students find that they need to write more pages to thoroughly cover the content of the writing assignment. That is okay!*

The content source links for the information required to answer the assignments is listed in each part. Feel free to research for additional sources on the topics.

Part 1. Write a short description of the physiology and function of the brain as if you were presenting the information to a class of high school students. (1-2 pages) (300 points)

https://www.humanbrainfacts.org/human-brain-functions.php
https://www.mayfieldclinic.com/PE-AnatBrain.htm
https://www.youtube.com/watch?v=esPRsT-lmw8
https://www.youtube.com/watch?v=0-8PvNOdByc

Part 2. Discuss one of the following: (1-2 pages) (150 points) a. The distressed brain b. Elements in ergonomics c. Diet and brain function

a. (distressed brain) https://www.youtube.com/watch?v=WuyPuH9ojCE&vl=en
b. (ergonomics) https://www.lehigh.edu/~inehs/science.html
   https://www.thoughtco.com/what-is-ergonomics-1206379
   https://www.youtube.com/watch?v=oVt1BJnBxwk
c. (diet and brain) https://www.psychologytoday.com/us/blog/your-brain-food/201010/how-does-food-affect-our-brain
   https://www.quora.com/What-is-the-ideal-diet-for-optimal-brain-function
   https://www.youtube.com/watch?v=OAB0jU0KiEE
   https://www.youtube.com/watch?v=xyQY8a-ng6g

Part 3. Discuss the relationship between (1) sensory register, (2) short-term/working memory, and (3) long-term memory as it applies to learning. Describe the implications of this information for instruction processes and student learning. Notice the role of attention. (1-2 pages) (300 points)

https://courses.lumenlearning.com/boundless-psychology/chapter/introduction-to-memory/
https://www.youtube.com/watch?v=WnasLfm36mM

Part 4. Discuss one of the following (1-2 pages) (150 points) d. Keeping the brain's attention e. Non-conscious learning f. Higher leveling thinking g. Factors to enhance learning

d. (keeping brain's attention) https://www.edutopia.org/blog/strategies-getting-keeping-brains-attention-donna-wilson-marcus-conyers
https://www.wikihow.com/Pay-Attention-in-Class
https://www.youtube.com/watch?v=ZJdlirakW3M
https://www.youtube.com/watch?v=qKJv4S5peJQ

e. (Non-conscious learning) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3612179/
https://www.youtube.com/watch?v=ghPX9NhPqpg&t=0s&index=5&list=PLoznzH0AhPAZbjCS7RrIy6RU3WdoQVxON

f. (Higher leveling thinking) http://www.cdl.org/articles/how-to-increase-high-order-thinking/
https://www.youtube.com/watch?v=XZ4LFxGi0mI

g. (Factors to enhance learning) http://www.crlt.umich.edu/gsis/p4_6
http://www.effectiveteachingpd.com/blog/2015/9/22/environmental-factors-that-influence-learning
https://www.bizmanualz.com/improve-your-training/what-are-factors-that-influence-
https://www.youtube.com/watch?v=TA4xR9sB1Mo

Part 5. Describe the theory of multiple intelligences and explore the implications for instructing your students. (2-3 pages) (300 points)
http://infed.org/mobi/howard-gardner-multiple-intelligences-and-education/
https://www.verywellmind.com/gardners-theory-of-multiple-intelligences-2795161
https://www.youtube.com/watch?v=cf6lqfNTmaM

Return your student assignment and a copy of your online completion certificate by email to:

Email submission: drdaniel@gojade.org
Dr. Elden Daniel Telephone: 719-480-2089

Students have one full semester to complete the written assignment. All papers should be in APA format. You may learn more about APA style online at apastyle.org or in any grammar handbook, such as: Diana Hacker's "Rules for Writers." A helpful guide to the APA 6th Edition manual can be found at http://utsa.edu/trcss/docs/APA%206th%20Edition.pdf.

**COURSE GRADING:**

Grading will be on an A – F scale based on the thoroughness and quality of the writing assignments.

Online **EXAM** Completion Certificate a must!

Grade Distribution:

**EVALUATION PROCEDURES AND CRITERIA**

**Grading Scale**

| Grade | Percentage | Points |
|---|---|---|
| **A** | **100-93** | **1200-1116** |
| **B** | **92-85** | **1115-1020** |
| **C** | **84-76** | **1019-931** |
| **D** | **75-67** | **930-804** |
| **U** | **66 or below** | **803 or below** |
| **I** | | |

**Explanation of Points**

Product One: Evidence of completing the lessons is the submission certificate of completion. This score is strictly a pass option with scores of 70% or more required. Exam must be retaken for any score below 70%.

Product Two: Up to 1200 Points will be awarded based on the quality and thoroughness of the responses to writing assignment prompts. Final grade will be determined as a percentage of points earned calculated on total possible points.

***EVALUATION CRITERIA:***
**A** **100 - 93** = Demonstrates a thorough understanding of course concepts and principles and provides insight into the inter-relatedness of the information. There is clear, convincing, and consistent evidence that the candidate demonstrates achievement. The evidence is comprehensive, thoughtful, and integrated.
**B** **85 – 92** = Displays a complete and accurate understanding of course concepts and principles. There is clear evidence that the candidate knows what to do, and does it. The evidence is specific and reasonable. However, at times the evidence may be somewhat uneven, with specific features addressed more effectively than others.
**C** **76 – 84** = Displays an incomplete understanding of course concepts and principles and have some notable misconceptions. There is limited evidence that the candidate knows what to do, how to do it, or when to do it.
**D** **67 – 75** = Demonstrates severe misconceptions about course concepts and principles. Candidate does not have a grasp of information; student cannot answer questions about the subject matter presented. There is little or no evidence that the candidate has demonstrated achievement.