UNIVERSITY *of* WASHINGTON

Catalyze Your Success

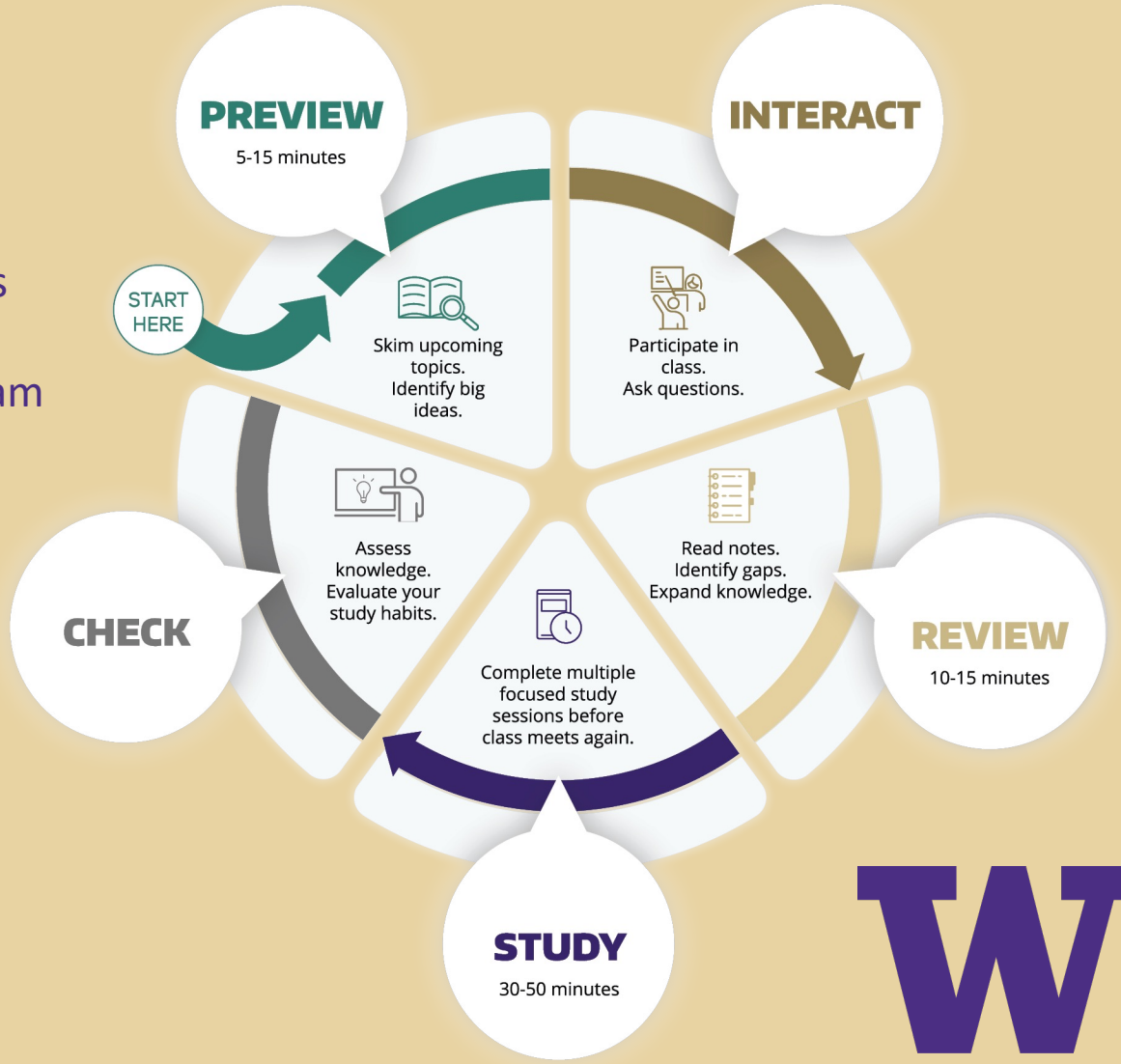
Solidify Knowledge and Improve Your Scores

Anna Merkulova (she/her) – amerk@uw.edu

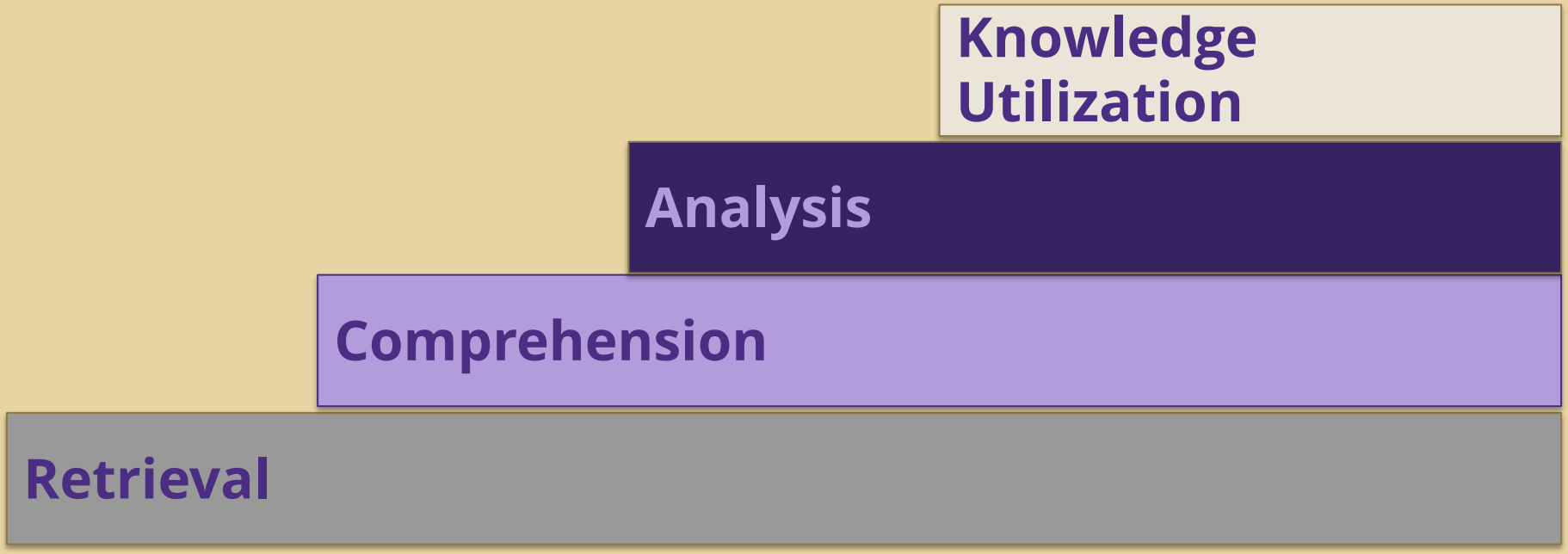
Learning strategies

Today's strategies:

- Teach the material
- Create effective study groups
- Create your own practice exam
- Tips and tricks: exam anxiety



Marzano's Taxonomy



Learning Strategy 8: Teach the material

Explain a concept to:

- Yourself
- Someone in your class
- Someone not in the class

This strategy will show you what you don’t know

Learning Strategy 9: Effective study group

Learning Strategy 9: Effective study group

• Be nice – do not make any derogatory comments about other students and their ideas

• Make sure that everyone participates and gets a chance to offer their thoughts

• Make sure everyone gets listened to (research shows that groups that perform badly almost always fail to listen to each other)

• Don’t interrupt when another student is talking

• Come to class prepared

• Post a welcoming picture in your Zoom profile, especially if you can’t have your video on

Learning Strategy 10: Create practice problems

- Requires deep knowledge of subject
- Can be a great tool to test yourself by exchanging problems with other students and then comparing answers
- You develop the confidence in your answer without the need of a solutions manual

Dimensional analysis problem

Iron helps the body to produce red blood cells. If the amount of iron from our diet is not enough, iron supplements, ferrous sulfate tablets for example, may be prescribed. Mary was taking iron supplement **for 60 days.** Pharmacist used **22g of $FeSO_4 \cdot 7H_2O$** to fill out the prescription. How many pills per day did the pharmacist prepare for Mary, if **1 pill contains 200 mg of $FeSO_4$**? Molar mass of **$FeSO_4$ is 152 g/mol**, molar mass of **$FeSO_4 \cdot 7H_2O$ is 278 g/mol**, melting point of $FeSO_4 \cdot 7H_2O$ is 147 F.

Dimensional analysis problem

Given

pills for 60 days

22g of $FeSO_4 \cdot 7H_2O$

1 pill contains 200 mg of $FeSO_4$

MM $FeSO_4$ (compound B) is 152 g/mol

$FeSO_4 \cdot 7H_2O$ (compound A) is 278 g/mol

Find

How many pills (A) per day?

1) mass (A)/day = 22g/60 days = 366.7 mg/day

2) **For 1 pill:** mol (B)/pill = mol (A)/pill
200mg/152(g/mol) = 0.001316 mol/pill

3) mass (A)/pill = mol/pill * MM (A)
mass (A)/pill = 0.001316 mol/day * 278 g/mol
mass (A)/pill = 0.366 g/pill = 366 mg/pill

Answer: compare 3) and 1) => **1 pill/day**

Your own practice problem

Iron helps the body to produce red blood cells. If the amount of iron from our diet is not enough, iron supplements, ferrous sulfate tablets for example, may be prescribed. Mary was taking iron supplement **for 60 days.** Pharmacist used **22g of $FeSO_4 \cdot 7H_2O$** to fill out the prescription. How many pills per day did the pharmacist prepare for Mary, if **1 pill contains 200 mg of $FeSO_4$**? Molar mass of **$FeSO_4$ is 152 g/mol**, molar mass of **$FeSO_4 \cdot 7H_2O$ is 278 g/mol**, melting point of $FeSO_4 \cdot 7H_2O$ is 147 F.

Iron helps the body to produce red blood cells. If the amount of iron from our diet is not enough, iron supplements, ferrous sulfate tablets for example, may be prescribed. Mary was taking **1 pill of iron supplement for 60 days**. **1 pill contains 200 mg of $FeSO_4$**. How many grams of $FeSO_4 \cdot 7H_2O$ did the pharmacist use to fill out the prescription. Molar mass of **$FeSO_4$ is 152 g/mol**, molar mass of **$FeSO_4 \cdot 7H_2O$ is 278 g/mol**, melting point of $FeSO_4 \cdot 7H_2O$ is 147 F.

Your own dimensional analysis problem

Given

1 pills per day
60 days

1 pill contains 200 mg of $FeSO_4$

MM $FeSO_4$ (compound B) is 152 g/mol

$FeSO_4 \cdot 7H_2O$ (compound A) is 278 g/mol

Find

How many grams of A did the pharmacist use to fill out the prescription?

Your own dimensional analysis problem

Given

1 pills per day
60 days

1 pill contains 200 mg of $FeSO_4$

MM $FeSO_4$ (compound B) is 152 g/mol

$FeSO_4 \cdot 7H_2O$ (compound A) is 278 g/mol

1) Total amount of pills = 1 pill/day * 60 days =
= 60 pills

2) **For 1 pill:** mol (B)/pill = mol (A)/pill
200mg/152(g/mol) = 0.001316 mol/pill

3) mass (A)/pill = mol/pill * MM (A)
mass (A)/pill = 0.001316 mol/day * 278 g/mol
mass (A)/pill = 0.366 g/pill = 366 mg/pill

Find

How many grams of A did the pharmacist use to fill out the prescription?

Answer: compare 3) and 1) =>
0.366 g/pill *** 60 pills = 22 grams**

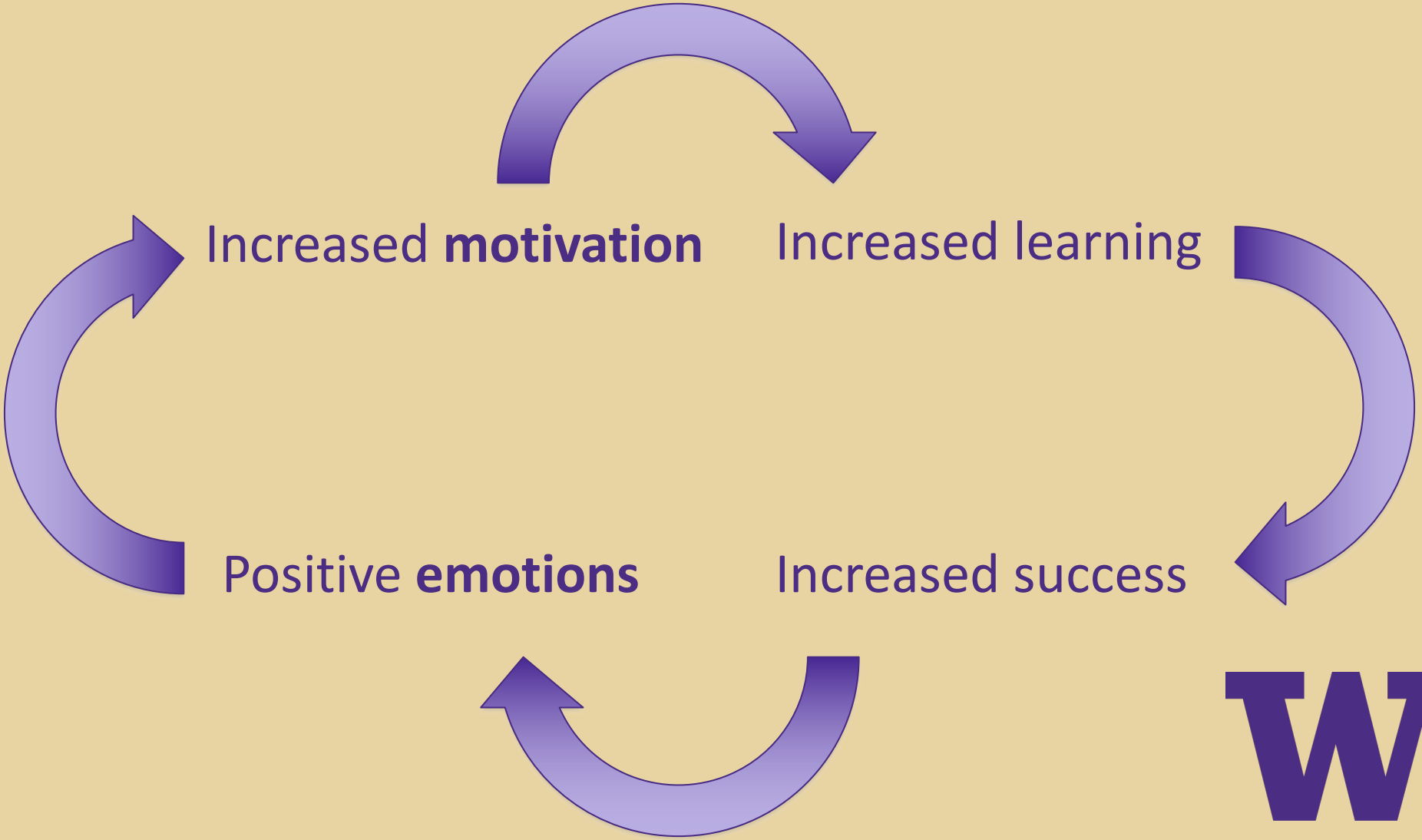
Test anxiety

- studies show that stress can lead to short-term memory loss and impede long-term memory retrieval (Frodl & O`Keane, 2013; Kim, Lee, Han, Packard 2001; Phelps 2004)

- how to reduce anxiety and build confidence?

- let`s see what the connection between emotions and motivation is

Connection between emotions and motivation



What affects motivation?

- **Value.** How important do I find this goal?
- **Nature of the environment.** Do I feel supported?
- **Belief in the ability to succeed.** Do I feel I can design and follow a course of action to meet this goal?

How to improve motivation?

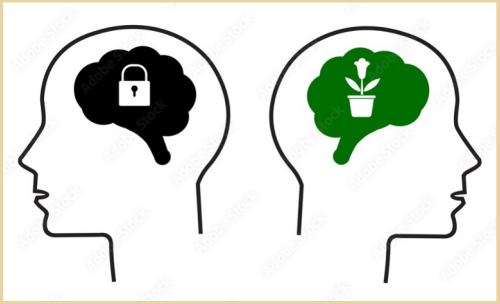
> use learning strategies to build academic success

How to improve motivation?

> use learning strategies to build academic success
> cultivate a mindset that your intelligence can grow

How to improve motivation?

> cultivate a mindset that your intelligence can grow

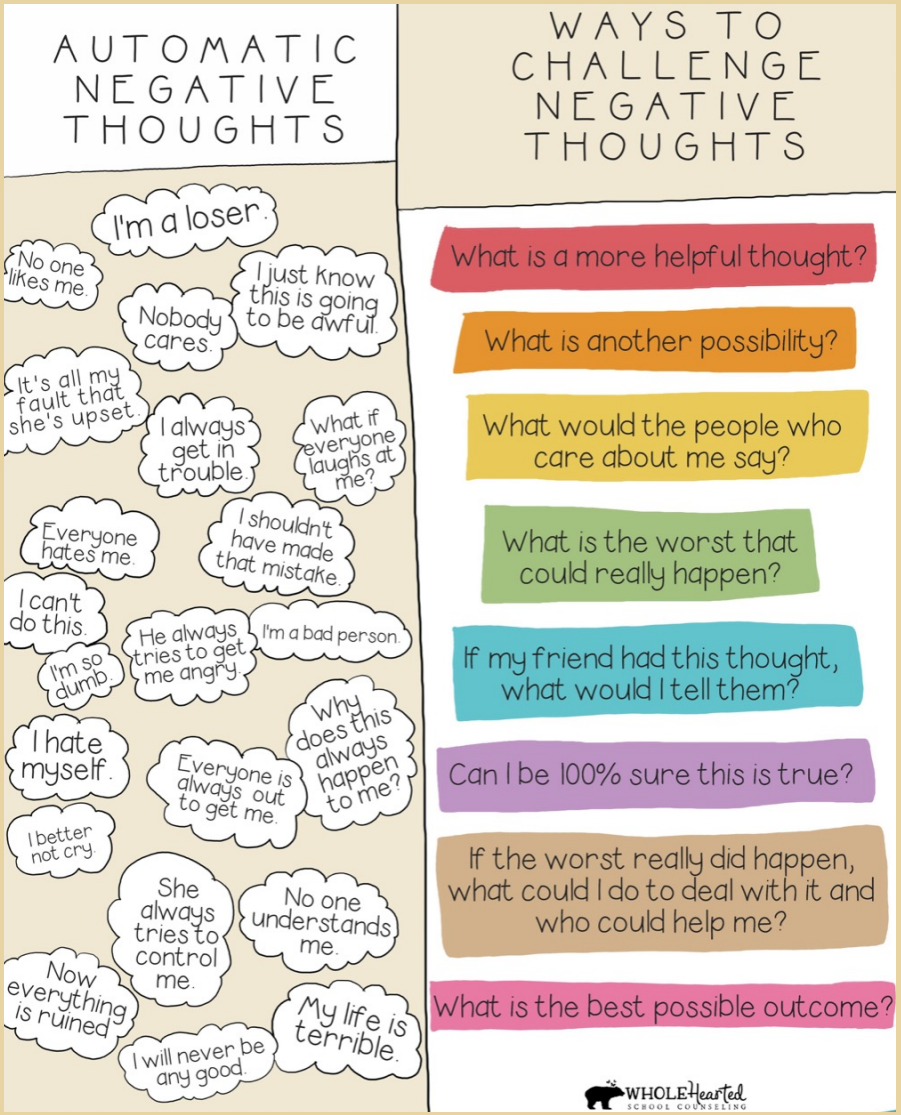


“Fixed” Mindset	“Growth” Mindset
I'm not good at this.	What am I missing?
I give up.	I'll use a different strategy.
It's just good enough.	Is this my best work?
This is too hard.	This may take some time.
Who am I to be smart, talented ... ?	Who am I not to be?
My plan failed. It's over.	There's always a Plan B.
Why can't I do it like [someone else you admire]?	What do they know that I don't know? I will learn from them.

How to improve motivation?

> use learning strategies to build academic success
> cultivate a mindset that your intelligence can grow
> engage in positive, healthy self-talk

How to improve motivation?



https://www.teacherspayteachers.com/Product/Challenge-Automatic-Negative-Thoughts-Cognitive-Behavioral-Therapy-Free-Poster-5219624

How to improve motivation?

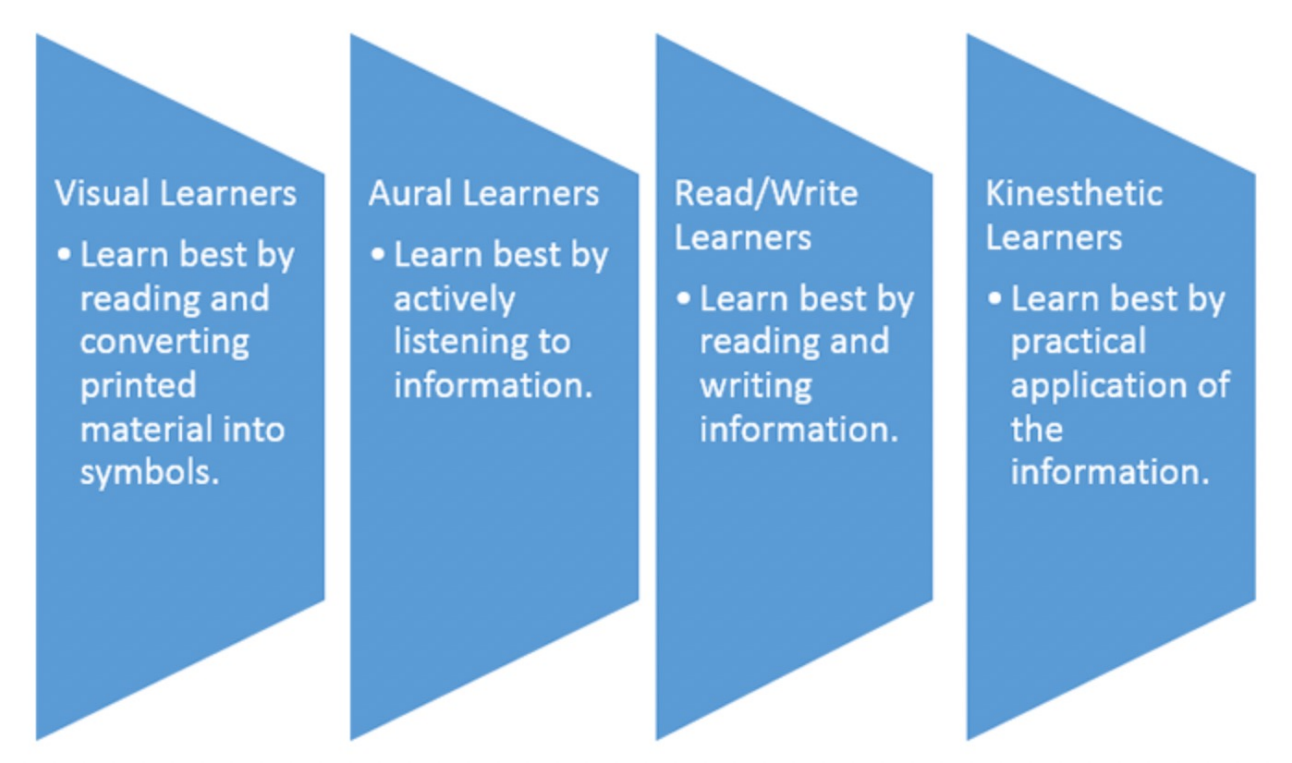
- use learning strategies to build academic success
- cultivate a mindset that your intelligence can grow
- engage in positive, healthy self-talk
- hard to improve external circumstances – easier to work on things that you can control. Attribute positive and negative results to your behavior

How to improve motivation?

- use learning strategies to build academic success
- cultivate a mindset that your intelligence can grow
- engage in positive, healthy self-talk
- hard to improve external circumstances – easier to work on things that you can control. Attribute positive and negative results to your behavior
- know your learning style preferences (visual, auditory, read/write, kinesthetic)

How to improve motivation?

> know your learning style preferences (visual, auditory, read/write, kinesthetic)



https://nursing.lsuhsc.edu/AcademicSuccessProgram/LearningStyles.aspx

Study strategies for different learning style preferences

Visual Learner (prefers pictures, charts, diagrams, graphs, etc.)		
In Class	While Studying	During Exams
• Underline important points • Highlight with different colors • Use symbols, charts, graphs	• Underline notes and text • Highlight notes and text (in color) • Summarize with images and concept maps	• Recall pictures • Draw concept map of essay • “Dump” formulas/diagrams

How to improve motivation?

- use learning strategies to build academic success
- cultivate a mindset that your intelligence can grow
- engage in positive, healthy self-talk
- hard to improve external circumstances – easier to work on things that you can control. Attribute positive and negative results to your behavior
- know your learning style preferences (visual, auditory, read/write, kinesthetic)
- get adequate rest, nutrition, and exercise

Study strategies for different learning style preferences

EXAMPLE:

Visual Learner (prefers pictures, charts, diagrams, graphs, etc.)		
In Class	While Studying	During Exams
• Underline important points • Highlight with different colors • Use symbols, charts, graphs	• Underline notes and text • Highlight notes and text (in color) • Summarize with images and concept maps	• Recall pictures • Draw concept map of essay • "Dump" formulas/diagrams

Study strategies for different learning style preferences

Aural or Auditory Learner (prefers hearing information)		
In Class	While Studying	During Exams
• Attend lectures, discussions, and tutorials • Tape lecture for later	• Discuss material in study group • Summarize notes, then read out loud • Read onto tape, then listen back	• Listen to inner voice to recall information • Talk out question under breath

Study strategies for different learning style preferences

Reading/Writing Learner (prefers reading or writing about information)		
In Class	While Studying	During Exams
• Create lists and headings • Take complete lecture notes	• Identify key words and associate them with details • Reread notes and text and summarize them in writing • Reread and summarize old tests • Answer (in writing) the review questions	• Use key words to trigger more complete answers • At the beginning of the exam, write out important lists • Essay – write thesis, then outline

Study strategies for different learning style preferences

Kinesthetic Learner (prefers moving, touching, visualizing movement, or hands-on activities to learn information)		
In Class	While Studying	During Exams
• Use all senses • Participate in labs and field trips	• Trial and error is important – can learn from mistakes • Create personal examples • Use pictures to illustrate notes • Stand, move, walk • Study in an exam-like environment	• Remember examples • Stretch or move to jog memory