Time Management Skills, Note Taking Strategies, and Retrieval Techniques

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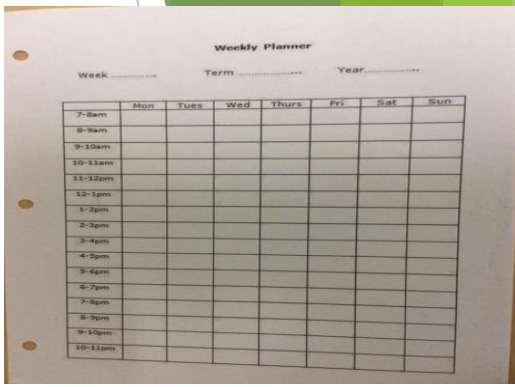
Student's Challenge(s)

- Attending classes, working part time, studying for exams, making friends, and taking time to relax and decompress can quickly fill up student's schedule.
- If students often find themselves wishing there were more hours in the day, the following strategies might offer techniques so that they can accomplish what they need to get done, have fun with their friends, and gain back some valuable time for themselves.

Course(s) in which I am focusing on during Fall 2023 Semester:

- Math 120 + Math 020 (Survey of College Math, MW Class)
- Math 150 (Applied Calculus, MWF Class

According to research, not all study techniques are equal…



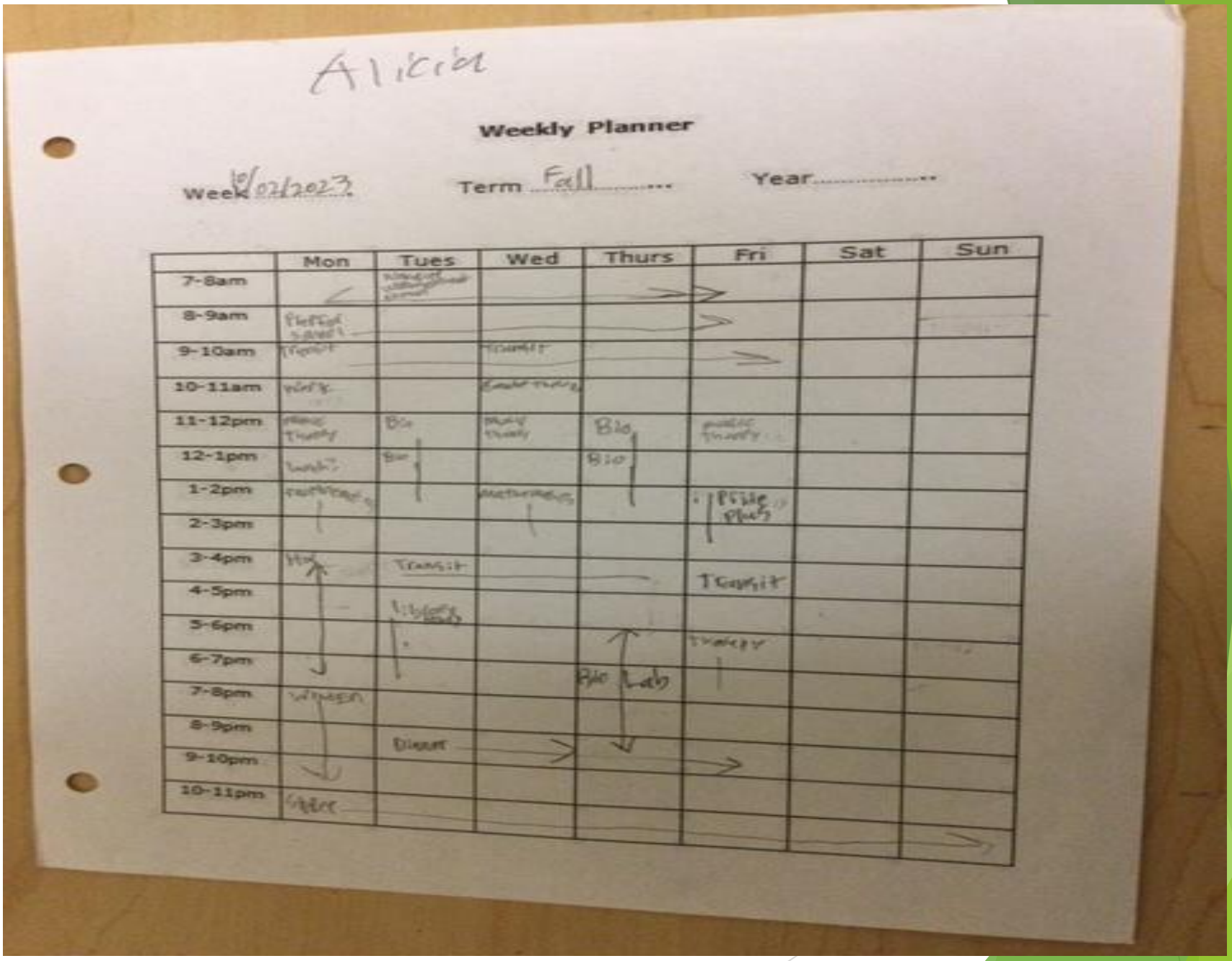
I designed the following to help my students:

- Guided my students to build a Detailed Comprehensive Weekly Schedule
- Have been encouraging my students to develop Better Note Taking Strategies.
- Have been helping my students to strengthen their Retrieval Techniques

Weekly Planner

Week ..... Term ..... Year .....

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
7-8am							
8-9am							
9-10am							
10-11am							
11-12pm							
12-1pm							
1-2pm							
2-3pm							
3-4pm							
4-5pm							
5-6pm							
6-7pm							
7-8pm							
8-9pm							
9-10pm							
10-11pm							


Alicia

Weekly Planner

Week 10/02/2023 Term Fall Year

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
7-8am							
8-9am							
9-10am							
10-11am							
11-12pm		Bio		Bio			
12-1pm		Bio		Bio			
1-2pm					Pride Plus		
2-3pm							
3-4pm		Transit			Transit		
4-5pm							
5-6pm							
6-7pm				Bio Lab			
7-8pm							
8-9pm		Diner					
9-10pm							
10-11pm							

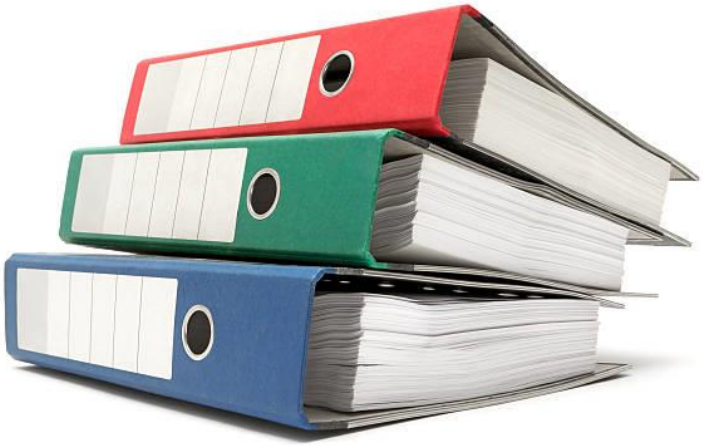
Noa Karasik

Weekly Planner

Week 12 Term Fall Year 2023

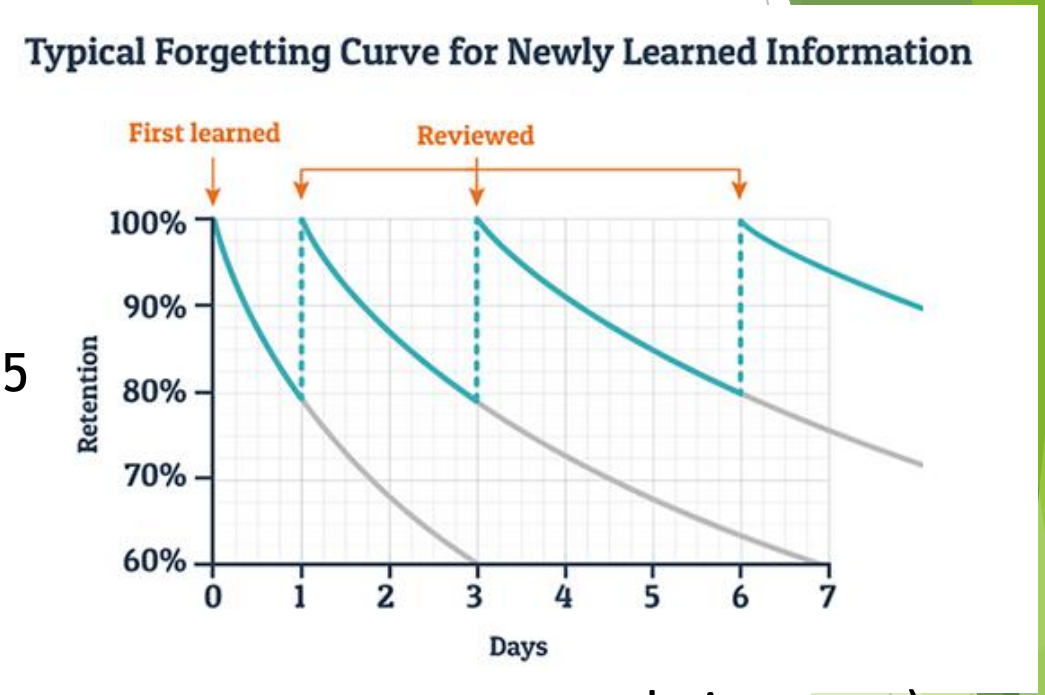
	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
7-8am	wake up	sleep	wake up	sleep	sleep	sleep	wake up
8-9am	breakfast	sleep	doctor appt.	sleep	wake up	sleep	breakfast, drive
9-10am	drive	sleep	breakfast	wake up	breakfast, drive	wake up	work
10-11am	film class	wake up	catch up on work	breakfast	work	breakfast	work
11-12pm	film class	breakfast	catch up on work	prepare food	work	get ready	work
12-1pm	film class	drive	have lunch	help with cleaning	work	have lunch	work
1-2pm	math class	work	math	prepare food	work	work	work
2-3pm	math class	work	math	finish all prep	work	work	tasks
3-4pm	review textbooks	work	~~math~~ review textbook	box all food	finish cleaning house	work	tasks
4-5pm	work on tasks	work	work on tasks	Thanksgiving	catch up on tasks	work	tasks
5-6pm	dinner	work	dinner	Thanksgiving	tasks	work	tasks
6-7pm	astronomy	work	astronomy	Thanksgiving	tasks	clean room	prepare food
7-8pm	astronomy	dinner	astronomy	Thanksgiving	dinner	dinner	dinner
8-9pm	astronomy	review notes	astronomy	clean up house	do some online shopping	tasks	grocery shopping
9-10pm	astronomy	watch movie	astronomy	watch a movie	online shopping	watch a movie	get bag ready
10-11pm	bed	bed	bed	bed	bed	bed	bed

Student's HW / Class Binders



Why retrieval practice (and spaced practice) works…

Ebbinghaus' (1885) forgetting curve (repeated Murre & Dros 2015

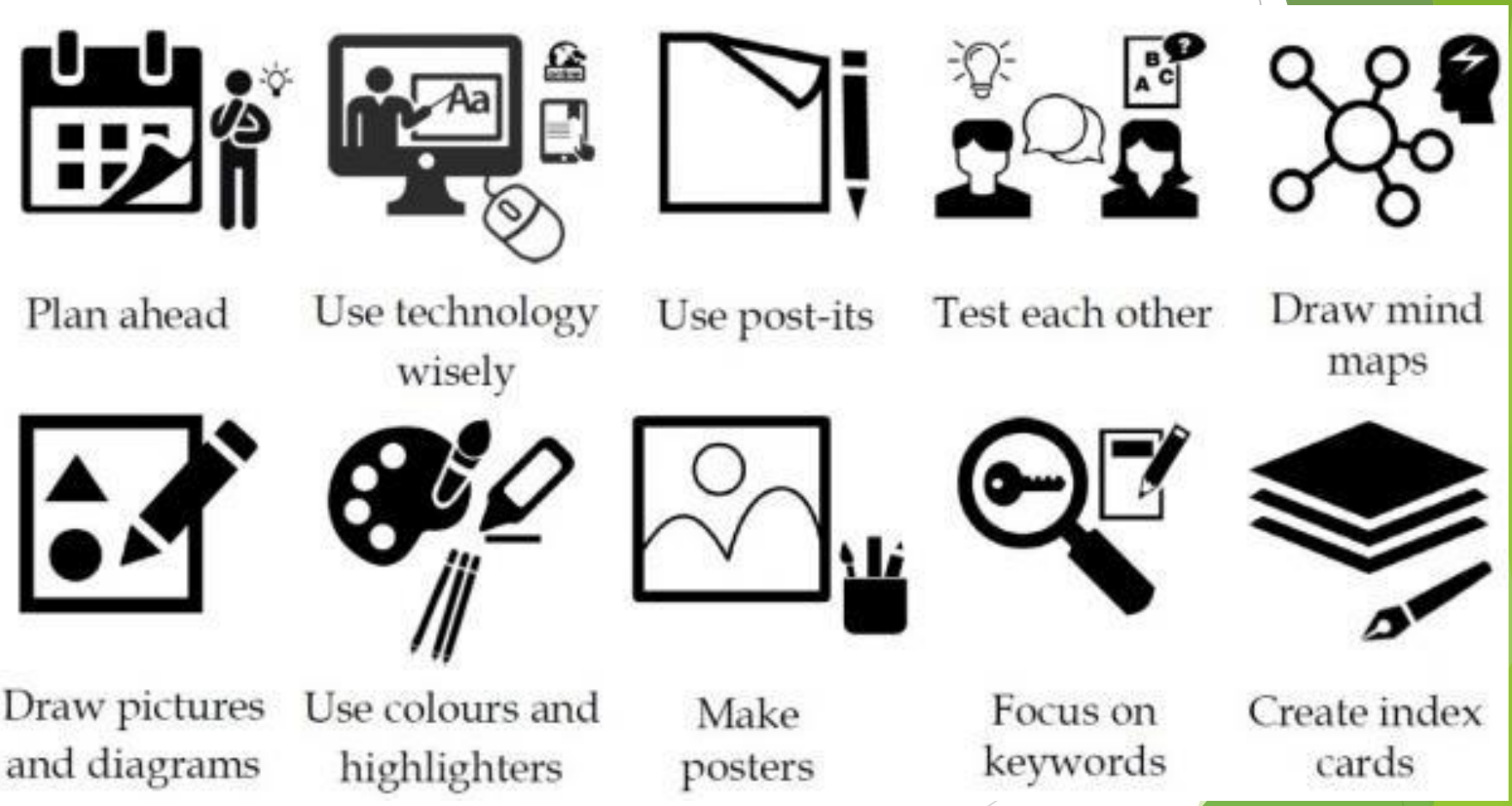


What can students do?

1. Practice questions (e.g. past papers, course websites, etc)
2. Make flashcards of anything you come across in your revision that you're unsure about
3. Mind maps from memory

https://en.wikipedia.org/wiki/Forgetting_curve

What retrieval strategies to use with students?



According to research, not all study techniques are equal…

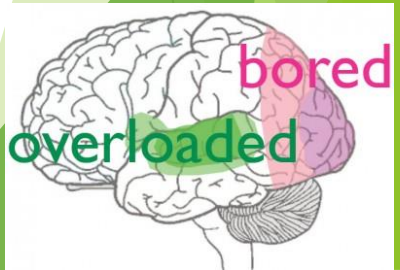
Bad: ☹

Cramming

Good: ☺

Retrieval practice, Spaced practice, Interleaving, Elaboration, Concrete examples

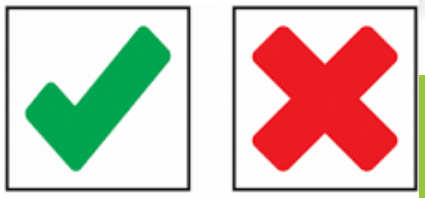
Teach Students How to Learn by Sandra Yancy McGuire and Stephanie McGuire



Retrieval practice – 3 phases

- **Retrieval practice** - e.g. low stakes quiz, fill in the gaps, spot the mistake, etc; best done regularly; include a mixture of topics (interleaving)

- **Immediate feedback** - to avoid misconceptions.



- **Metacognition** - Students should be encouraged to think about their thought processes and how easy it was to recall the information.

Retrieval Practice Challenge Grid:

Recall: P(A U B) = P(A) + P(B) - P(A∩B)		**P(A)** = Probability of event A **P(B)** = Probability of event B	**P(A and B) = P(A) x P(B)** Where: **P(A and B)** = Probability of both A and B events occurring
P(E) = n (E) /n (S)	**?**	P(A∩B) = P(A)P(B|A)	
?			

Example activity

Last lesson (1)	Last week (2)	2 weeks ago(3)	Further back! (4)

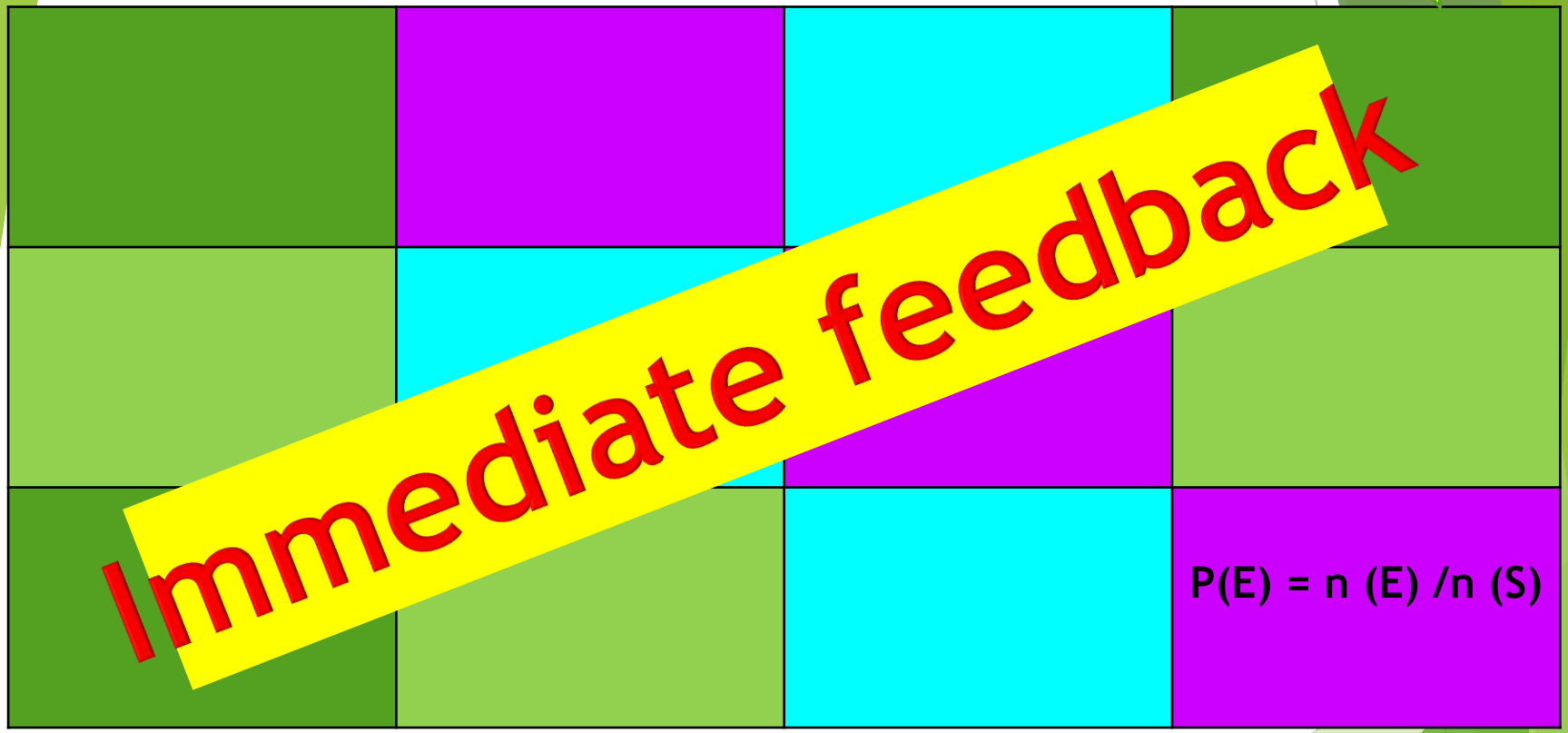
Business Calculus
Cheat Sheet

Algebra	
Exponents	
1. Multiplication	$a^n a^m = a^{n+m}$
2. Power to a Power	$(a^n)^m = a^{nm}$
3. Zero Power	$a^0 = 1 \quad if\ a \neq 0$
4. Power Sign Change	$a^{-n} = \frac{1}{a^n} \quad and \quad \frac{1}{a^{-n}} = a^n$
Radicals	
5. Convert to Power	$\sqrt[n]{a} = a^{\frac{1}{n}}$
Logarithms	
6. Definition	$x = b^y \quad \equiv \quad y = \log_b x$
7. Powers	$\log_b x^r = r \log_b x$ $ln\, x^r = r\, ln\, x$
8. Multiplication	$ln(xy) = ln\, x + ln\, y$
9. Division	$ln\left(\frac{x}{y}\right) = ln\, x - ln\, y$

Derivatives	(Map to Larson's 1-pager of common derivatives)
0. Chain Rule	$\frac{d}{dx}[f \circ g(x)] = \frac{d}{dx}[f(g(x))] = f'(g(x))g'(x)$
1. Constant Multiple Rule	$\frac{d}{dx}[cf(x)] = cf'(x)$
2. Sum and Difference Rule	$\frac{d}{dx}[f \pm g] = f' \pm g'$
3. Product Rule	$\frac{d}{dx}[fg] = f'g + fg'$
4. Quotient Rule	$\frac{d}{dx}\left[\frac{f}{g}\right] = \frac{f'g - fg'}{g^2}$ $(think\ \frac{f}{g} = fg^{-1}\ then\ apply\ rule\ \#3)$
5. Constant Rule	$\frac{d}{dx}[c] = 0$ $(think\ c = cx^0 \rightarrow c0x^{-1} = 0\ after\ applying\ rule\ \#6)$
6. Power Rule	$\frac{d}{dx}[cx^n] = cnx^{n-1}$
General Power Rule	$\frac{d}{dx}[f^n] = nf^{n-1}f'$
7. Power Rule for x	$\frac{d}{dx}[x] = 1$ $(think\ x = x^1 \rightarrow 1x^0 = 1\ after\ applying\ rule\ \#6)$

REFLECT – What was definition of probability?

Metacog

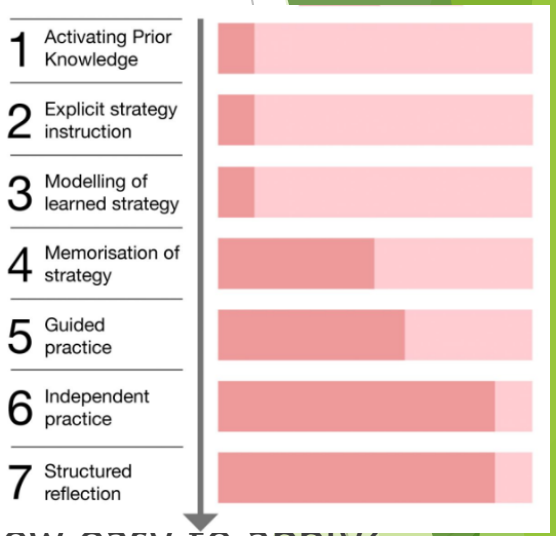


Last lesson (1)	Last week (2)	Last week (3)	Further back! (4)

Metacognitive strategies

Explicitly teach students metacognitive strategies:

1. Activating prior knowledge
2. Explicit strategy instruction
3. **Modelling of learned strategy**
4. Memorisation of learned strategy
5. Guided practice
6. Independent practice
7. **Structured reflection** – How successful was it? How easy to apply? What situations could it be used in? Why did/didn't it work?



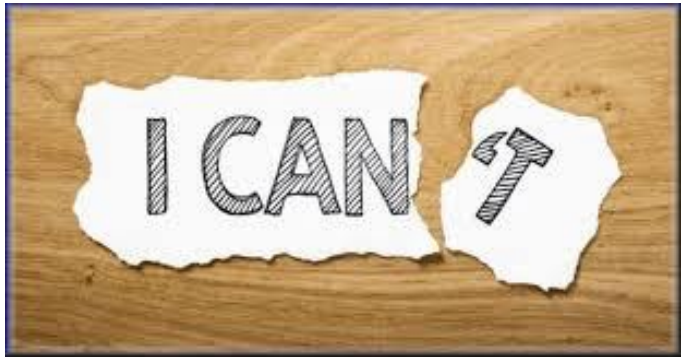
"Metacognition and self-regulated learning" EEF Guidance report (2018)

Surprising benefits of low stakes testing and retrieval practice:

- Students tested on content that they hadn't previously been tested on did better if they had been used to frequent low stakes tests.
- Improves metacognitive monitoring, i.e. students have a more accurate calibration of their knowledge (and any gaps).
- Frequency encourages students to study regularly, rather than cram, which improves long-term retention and retrieval

Additional effects observed -

The upshot of these low stakes retrieval quizzes is an increase in student confidence, a willingness to ‘have a go’, plus the ability to skip a question.



Teaching Change: How to Develop Independent Thinkers Using Relationships, Resilience, and Reflection by Bowen, José Antonio

Additional strategies employed-

- Elaboration (What does this link to? Desirable difficulty)
- Concrete examples (e.g. tell a story)
- Mind maps & flash cards

Desirable difficulty level:

"Learning requires an active process of interpretation— that is, mapping new things we are trying to learn onto what we already know….

In short, try to spend less time on the input side and more time on the output side,….

Any activities that…. require you to retrieve or generate information, rather than just representing information to yourself—will make your learning both more durable and flexible."

- Explicitly modelling and teaching revision strategies and allowing for metacognitive reflection (questioning)
- Incorporating Retrieval activities
- Focus on exam technique to increase student resilience

Name: _____ Class: _____

Post-Exam Reflection Activity

This activity has been designed to give you a chance to reflect on your performance on the most recent exam and on the effectiveness of your preparation activities for the exam. Please answer the questions honestly, as both you and I will find this to be valuable. Your responses are being collected to improve your learning in the course, not on whether or not your answers make you look good. There is a lot to be gained by both of us if you take this activity seriously.

Reflection on Exam

1	After studying for this exam, what percentage did you expect to earn (out of 100%)?	
2	After taking the exam, what percentage did you think you had earned (out of 100%)?	
3	How many points did you receive?	
4	How satisfied were you with the your score on the exam?	
5	**very satisfied satisfied unsatisfied very unsatisfied**	
6	When did you start studying for the exam?	
7	Approximately how many hours did you spend studying for the exam?	
8	Did you study enough?	
9	Could you have studied "smarter"?	
10	Did you bring everything you needed with you to the exam?	

Which concepts and topics were you the most/least confident answering?

Of the following activities, what percentage of your study time was spent on: (total should be 100%)

1. Doing practice problems (from homework/practice exam, etc.)	
2. Reading ebook sections for the first time	
3. Re-reading ebook sections	
4. Reviewing your notes from class	
5. Reviewing information/notes posted on Blackboard by your instructor	
6. Reading solutions to practice problems	
7. Discussing course material/topics/questions with classmates	
8. Seeking help from tutors, such as in the Ackerman Learning Center and Weekly Review Sessions?	
9. Other (Please Specify):	

Review your graded exam. Estimate the percentage (again, total of 100%) of points lost for:

1. Not being clear on what the problem was asking	
2. From careless mistakes	
3. From not being familiar with the terms or basic principles	
4. Having difficulty remembering formulas	
5. Not understanding concepts/difficulty working with formulas	
6. Not being able to put multiple cooncepts together	
7. Ran out of time	
8. Other (Please Specify):	

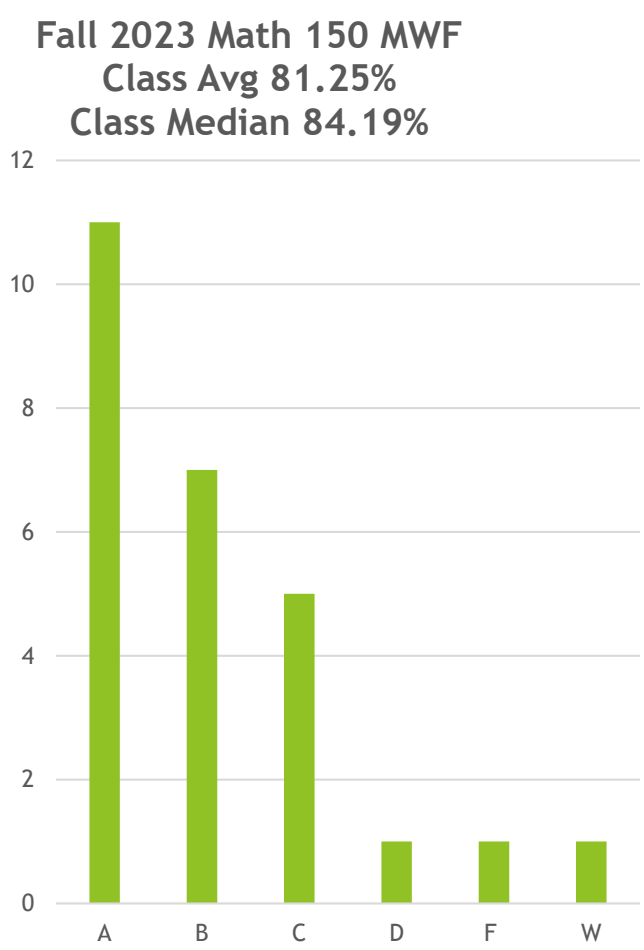
Which study activities/strategies did you find most helpful? Which will you continue to use?

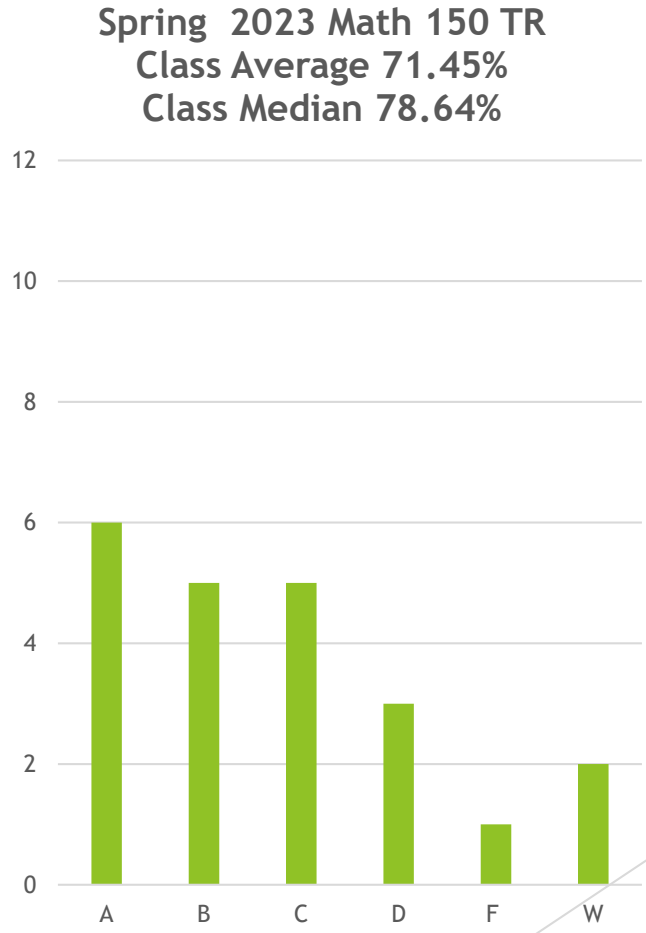
Which kind of study activities and habits will you need to change? Why?

How realistic was your study plan / schedule? Were you able to complete tasks in the time you allocated?

Results:

Student's Attendance & Participation is Improving.





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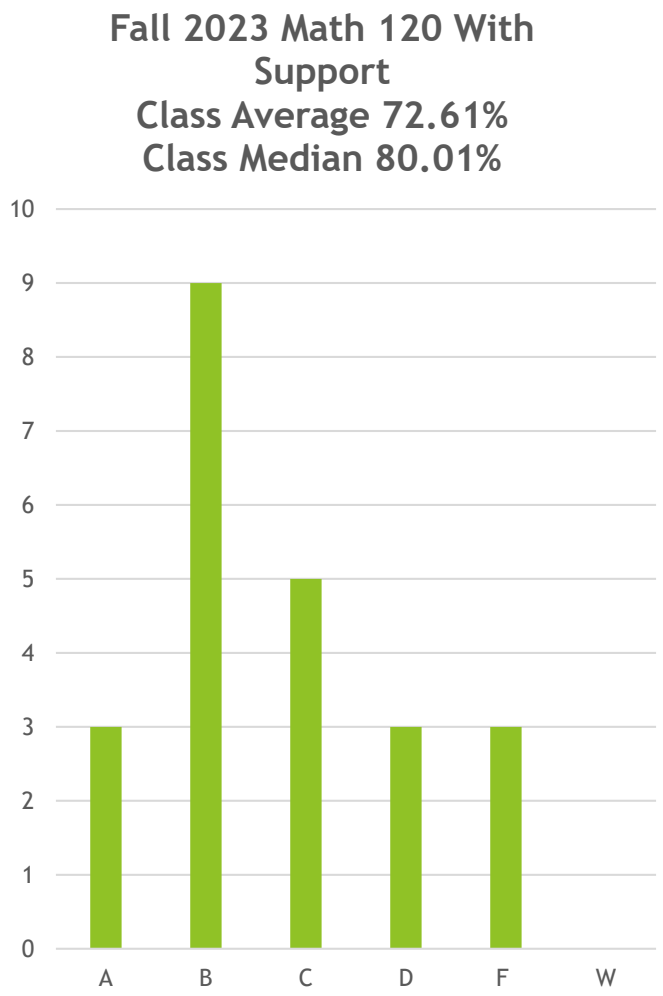
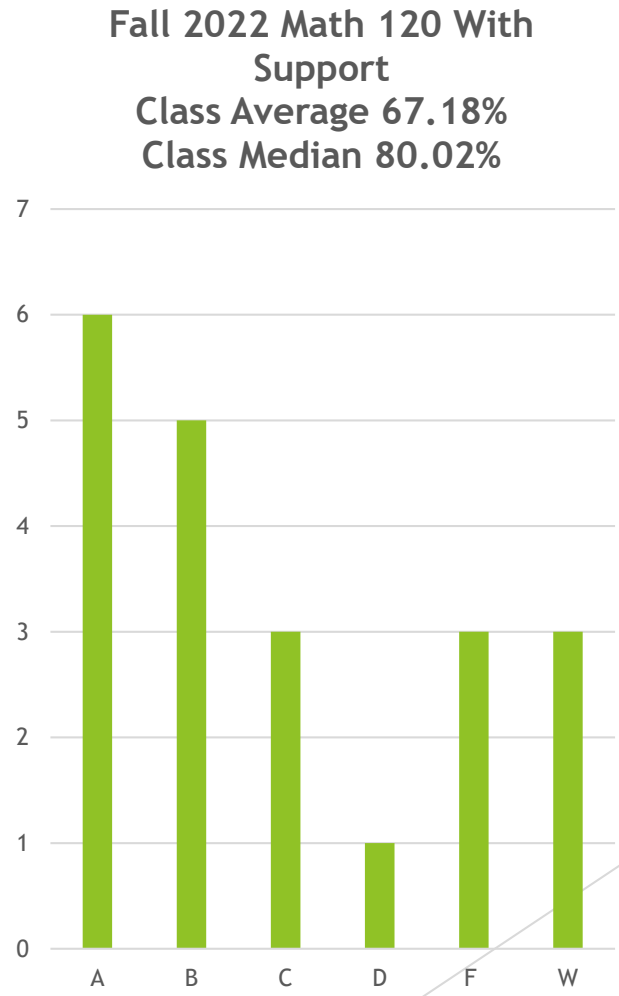




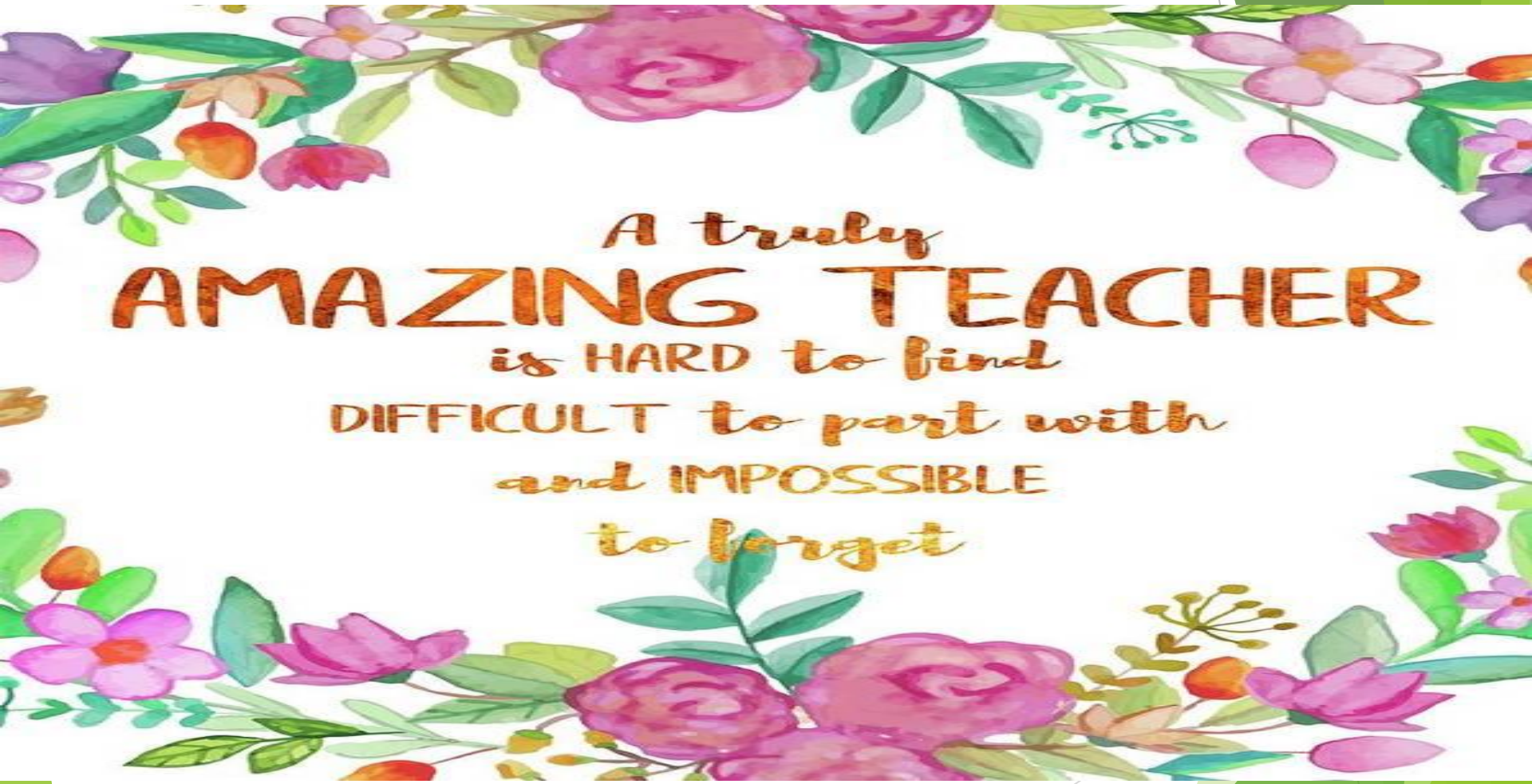
Further info & resources

- Teaching Change: How to Develop Independent Thinkers Using Relationships, Resilience, and Reflection by Bowen, José Antonio
- Teach Students How to Learn by Sandra Yancy McGuire and Stephanie McGuire
- Powerful Teaching: Unleash the Science of Learning by Pooja K Agarwal and Patrice M. Bain
- The Craft of College Teaching by Robert DiYanni and Anton Borst
- Creating Wicked Students, Designing Courses for a Complex World by Paul Hanstedt
- Grit The Power of Passion and Perseverance by Angela Duckworth
- Outsmart Your Brain, Why Learning is Hard and How You Can Make it Easy by Daniel T. Willingham, PhD.
- “Metacognition and Self-Regulated learning”, Guidance report – Education Endowment Foundation (2018)
- https://www.retrievalpractice.org/

“Why was 6 afraid of 7?“
Because 7, 8, 9

Teaching
IS A
WORK
OF
HEART

To my SET colleagues:
Thank you for a great year. I am so blessed to have had this opportunity to interact with you.



I am forever grateful to Joan for your energy, guidance, support, insightful thoughts and ideas ☺