YOU Are Your Only Limit!
Strategies To Motivate Students Based On The Science of Learning

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Group Attention Signal

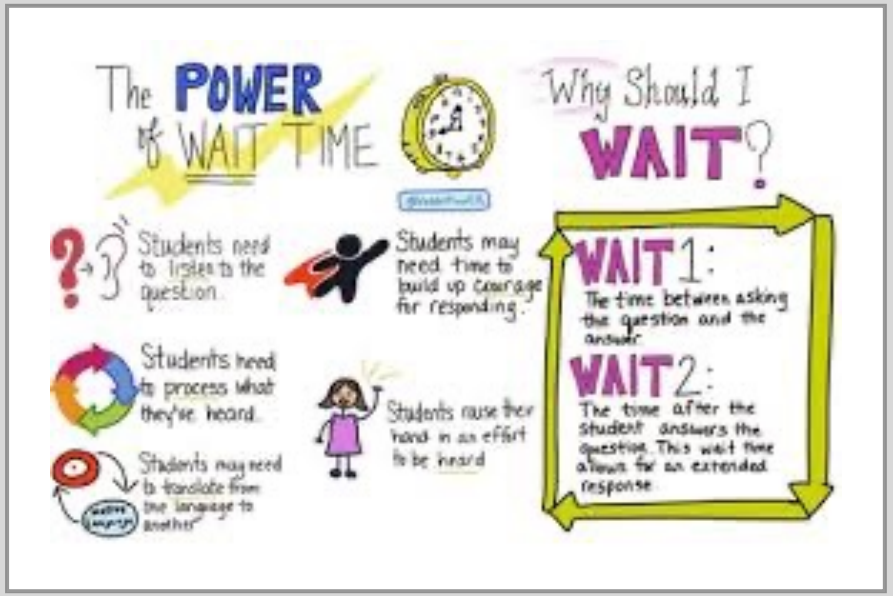
(“MOTIVATE”)

Find A Shoulder Partner Please

- Who is A?
- Who is B?

What's a piece of advice you've received that's always stuck with you?

(First A then B)


The POWER of WAIT TIME
Why Should I WAIT?
Students need to listen to the question.
Students may need time to build up courage for responding.
Students need to process what they've heard.
Students raise their hand in an effort to be heard
Students may need to translate from one language to another
WAIT 1:
The time between asking the question and the answer.
WAIT 2:
The time after the student answers the question. This wait time allows for an extended response.


Wait Time

What's a piece of advice you've received that's always stuck with you?

(First A then B)


RAFFLE

- Today we will identify key factors that influence student motivation and their impact on academic achievement and engagement.
- Today we will explore evidence-based strategies and tools designed to foster intrinsic motivation and enhance student ownership of learning.
- Today we will develop actionable plans to implement motivation-boosting practices tailored to classroom environments.

What is the Science of Learning? (Basic Definition)

- Over the last 20 years the field of **Cognitive Science** (a.k.a The Science of Learning) has made enormous gains in understanding how students learn.
- An interdisciplinary field that explores how people learn and how to improve learning outcomes.
- It combines research from **cognitive psychology, neuroscience, education, and other related disciplines** to understand the mental processes involved in acquiring, storing, and applying knowledge.
- Key insights from the science of learning include:
  - **Active engagement** helps learners retain and understand information better than passive learning.
  - **Spaced practice** (reviewing information over time) improves long-term memory.
  - **Retrieval practice** (recalling information) strengthens memory and understanding.
  - **Feedback** enhances learning when it is timely and specific.
  - **Metacognition** (thinking about one's thinking) supports self-regulated learning.
- **It concerns itself on the journey, not the beginning or the destination itself.**
- **Cognitive psychology is what happens between initial thought and action taken. It is the process of learning, especially what makes that process most effective.**
- These findings help educators design more effective instruction and support student learning across all age groups and content areas.

Research on Memory and Learning "The Forgetting Curve"

- Memories are like spiderwebs, strands of recollection distributed across millions of connected neurons.
- When a student learns something new, the material is encoded across those neural networks, converting the experience into a memory.
- Hermann Ebbinghaus discovered through his landmark research in the field of retention and learning **The Forgetting Curve.**
- A measure of how much we forget over time.
- He discovered **without reinforcement or connections to prior knowledge**, information is quickly forgotten – 56% in 1 hour, 66% after a day, & 75% after 6 days

Science of Learning's Impact on Student Motivation

- The **Science of Learning** significantly impacts **student motivation** by identifying strategies that not only improve learning outcomes but also **enhance students' desire to learn**.
- **Clear Progress Boosts Motivation**
  - Research shows that when students can **track their progress** and experience small wins (through retrieval practice, goal setting, or feedback), they feel more capable—boosting their **intrinsic motivation**.

Science of Learning's Impact on Student Motivation

- **Relevance and Meaning Matter**
  - The science highlights that students are more motivated when they see learning as **relevant to their lives** and connected to prior knowledge.
  - This supports **engagement and sustained effort**.
- **Growth Mindset and Self-Efficacy**
  - Learning strategies that emphasize **effort over innate ability** help build a growth mindset.
  - When students believe their abilities can improve with practice, they are **more resilient and motivated** to take on challenges.

Science of Learning's Impact on Student Motivation

- **Autonomy and Choice**
  - Providing opportunities for **student choice and control**—even in small ways—can increase motivation, as supported by findings in cognitive and educational psychology.

- **Reducing Cognitive Overload**
  - Structuring information in a way that avoids overwhelming students (e.g., through scaffolding or chunking) helps them feel **less frustrated and more capable**, sustaining motivation.

The 5 Studies

1. The One About Growth Mindset
2. The One About Resilience
3. The One About Motivating Bored Students
4. The One About Academic Buoyancy
5. The One About the Kohler Effect

Carol Dweck


"Failure is an opportunity to grow"
GROWTH MINDSET
"I can learn to do anything I want"
"Challenges help me to grow"
"My effort and attitude determine my abilities"
"Feedback is constructive"
"I am inspired by the success of others"
"I like to try new things"
"Failure is the limit of my abilities"
FIXED MINDSET
"I'm either good at it or I'm not"
"My abilities are unchanging"
"I don't like to be challenged"
"I can either do it, or I can't"
"My potential is predetermined"
"When I'm frustrated, I give up"
"Feedback and criticism are personal"
"I stick to what I know"

1. The One About Growth Mindset
The Study

- Students aged 9-12 completed a problem-solving game and were then told that they had gotten 80% of the questions right.
- Some were praised for their **natural intelligence**, whereas others were praised for **how hard they had worked**.
- The researchers investigated how the students **felt, thought and behaved in subsequent tasks.**

1. The One About Growth Mindset
The Main Findings

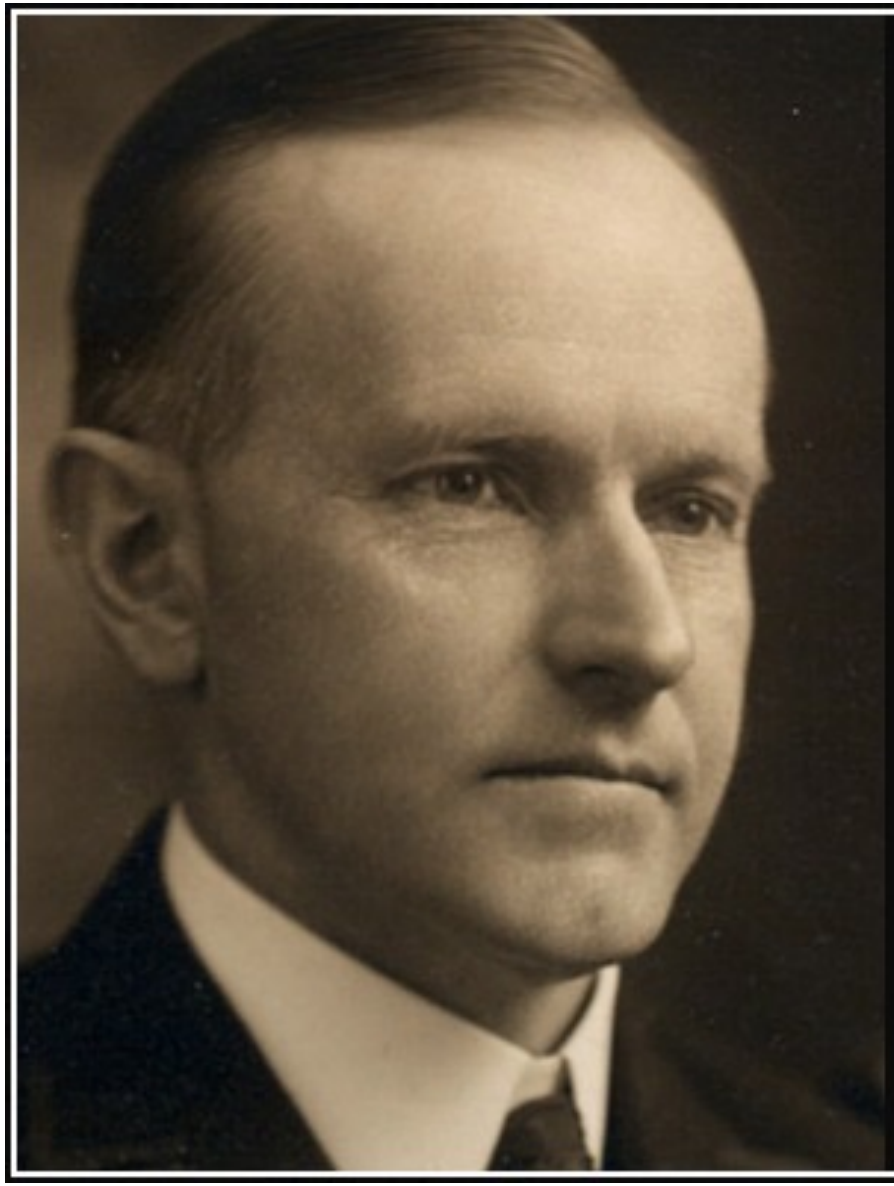
Children Praised for Intelligence	Children Praised for Effort
Were more likely to choose future tasks that would make them look smart	Tended to choose tasks that would help them learn new things
Reported they enjoyed the task less	Reported they enjoyed the task
Were less likely to persist on a task	Were more likely to persist on a task
Performed worse in future tasks	Performed better in future tasks
86% asked for information about how their peers did on the same task	Only 23% were interested on how their peers did, the majority asked for feedback on how to do better
33% lied about the number of problems they solved in the task	Only 13% lied

1. The One About Growth Mindset Classroom Implications

- How we deliver feedback is complex and important.
- Too much praise can lead to narcissistic behavior and can create a culture of low expectation.
- There are problems with praise when you say *"You are so clever"* or *"You are so talented."*
- That type of praise **DOES NOT** tell students what they need to do in the future in order to be successful.
- **PRAISE THEIR EFFORT AND THE STRATEGIES THEY USED**
  - This provides students with a template of behaviors they can follow next time

Activity #1

- Pull out the **green** index card.
- Label it **1. The One About Growth Mindset**
- With your partner, share and write 2 common pieces of teacher feedback to reflect Growth Mindset language. Fixed vs Growth
- EX: *"You're so smart"* → ***"You worked hard to apply that strategy correctly."***



Nothing in this world can take the place of persistence. Talent will not: nothing is more common than unsuccessful men with talent.

— Calvin Coolidge —

AZ QUOTES

2. The One About Resilience
The Study

- **Is resilience something that can be learned or developed?**
- History of studies in resilience have focused on children suffering traumatic events.
- Focus has now turned to **resilience in education.**
- Through interviews with students, researchers identified **three key attributes** that lead to resilient learners.

2. The One About Resilience
The Main Findings

#	3 Key Attributes BEHIND Resilience
1 – A Sense of Perspective	Managing one's emotions Concentrating on things one can control Setting both short-term and long-term goals Self-reflection to manage new or uncomfortable situations
2 – Staying Healthy	Help students respond well under pressure and during adversity Ensure students have physical activity such as participating in team sports Prompt more social interactions Identify and celebrate successes Encourage positive self-talk to improve mental health
3 – Social Support	NO SOCIAL ISOLATION Maintain good relationships with family, friends and teachers

2. The One About Resilience
Classroom Implications

- TO BE CLEAR, the researchers stated ”Failure is a central part of learning, but its associated connotations need to be reconceptualized as a learning opportunity.”
- Many students feel that ***mistakes = bad = avoid at all costs***
- Help students understand that mistakes and setback at some stage are inevitable
- **PROVIDE THEM WITH STRATEGIES TO CAPITALIZE ON MISTAKES**
- Develop resilient learners
  - Talk to students how to improve physical and mental wellbeing so they have energy and skills to navigate rough times
  - Teach students self-reflection and how to set appropriate goals that will benefit them

Activity #2

- Pull out the **blue** index card.
- Label it **2. The One About Resilience**
- Create a 2 column chart with 3 rows. The first column is labeled Potential Academic Setbacks and the second column is labeled

Potential Academic Setback	**Classroom Response (Bounce-Back Protocols)**
Test Failure	✓ One to one/small group review ✓ Allow a second opportunity to take the test ✓ Teacher reflect if content was presented in a clear manner

- Brainstorm with your partner 1 setbacks and 1 response.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3. The One About Motivating Bored Students
The Study

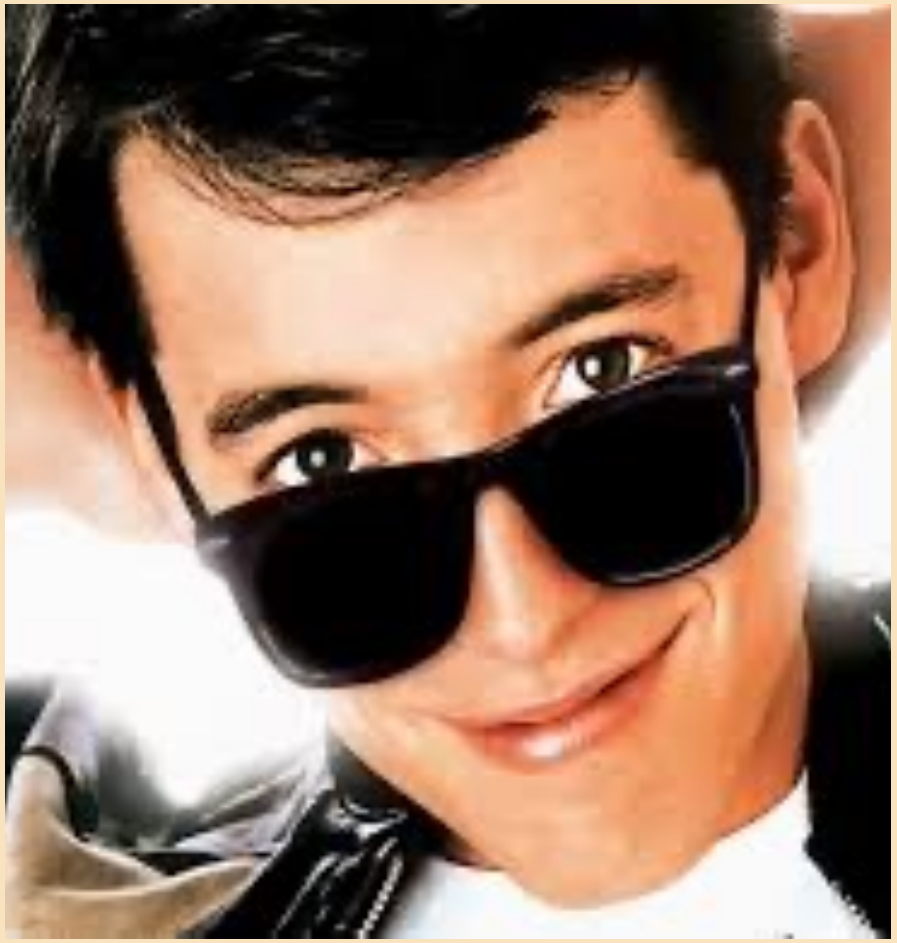
- Students were divided into 2 groups before they had to watch a boring lecture
- This lesson was boring – dull fashion, monotonous style, no embellishments. Just like the video you just watched.
- Prior to the lecture the treatment group of students were briefly told why and how this lecture would help them in the future. They were told ***"It's not going to be fun, but it will help you in the future."***
- The control group did **NOT** receive any message before the class.

3. The One About Motivating Bored Students
The Main Findings

- Treatment Group (Heard the brief rationale **beforehand**)
  - **Enhanced motivation** during the lesson
  - **25% higher level of engagement** during the lesson, and it increased as the lesson went on
  - Rated they were **significantly more interested** in the subject as it would help them in the future
  - **11% higher levels** of both factual and conceptual knowledge of the topic after the lecture leading to an increased rate of learning.

3. The One About Motivating Bored Students
Classroom Implications

- In a quest to motivate students, we need to highlight how learning the topic will benefit students.
- We also need to remind them of their personal capacity to overcome the challenges of learning it.
- *"To facilitate student's motivation, rationales need to produce two effects: students need to see the importance and personal utility within the task, and students need to perceive high autonomy while working on that task."*



Activity #3

- Pull out the yellow index card.
- Label it **3. The One About Motivating Bored Students**
- Write numbers 1-5 on the index card.
- Brainstorm with your partner an example on Lesson Importance under each category.

- **Technique 1** – Connect to real life. "*Today's lesson on percentages will help you understand discounts when shopping or figuring out tips at a restaurant.*"

- **Technique 2** – Link to student's goals and interests. "Today's lesson…"

- **Technique 3** – Show how it builds on previous learning. "Today's lesson…"

- **Technique 4** – Relate to future learning or careers. "Today's lesson…"

- **Technique 5** – Use current stories, scenarios, or hooks. (Ask a young person/survey.) "Today's lesson…"

4. The One About Academic Buoyancy The Study

- **Academic Buoyancy – Focuses on a student's ability to overcome the everyday challenges of school.**
  - **Doing poorly on a piece of homework**
  - **Working under the pressure of coursework deadline**
- In contrast, Resilience refers to a person's ability to overcome large stressful events.
- Researchers explored the key components of Academic Buoyancy and how it can be developed.
- There are 5 academic components of **Academic Buoyancy** that can be targeted to help students overcome the everyday challenges they face at school.

4. The One About Academic Buoyancy
The Main Findings
The Five C's

- **Confidence**
  - The self-belief that students have that if they work hard then they will have the abilities needed to successfully complete a specific task.
- **Co-ordination**
  - Better planning, preparation and time management to avoid procrastination.
- **Commitment**
  - Displaying high levels of resilience, determination and persistence.
- **Composure**
  - The ability to manage nerves, anxieties and stress.
- **Control**
  - Focusing on what is important and what they can control.

4. The One About Academic Buoyancy Classroom Implications

- *"Developing self-efficacy (confidence) can involve* ***restructuring learning*** *so as to maximize opportunities for success*
- ***Individualizing tasks*** *where possible,*
- *Addressing and enhancing students'* ***negative beliefs*** *about themselves and developing skills in* ***effective goal setting.***
- *Work into self-regulation and goal-setting also provide direction for enhancing students' planning (co-ordination) and persistence (commitment)."*

Activity #4

- Pull out the pink card.
- Label it **4. The One About Academic Buoyancy**
- **Create a 3 column chart with 6 rows.** The first column is the 5C's, the second column is the definition, the third column is How to Support In Your Classroom.
- Brainstorm with your partner.

5C's	Definition	How to Support In Your Classroom
Control	Focusing on what is important and what they can control.	Teach study and management skills. EX: Checklist for an upcoming project
Confidence	Better planning, preparation and time management to avoid procrastination.	
Co-Ordination	Displaying high levels of resilience, determination and persistence.	
Commitment	The ability to manage nerves, anxieties and stress.	
Composure	Focusing on what is important and what they can control.	

5. The One About The Kohler Effect
The Study

- German psychologist Otto Kohler found that when **TWO** people completed a joint task, the individual performance of the weaker member was better than if they had done it by themselves.
- EX: If mountaineers are tethered together and can only go at the slowest member's pace, this would still be faster than if the slowest person did it by themselves.
- In Education, we should use the word "struggling."

5. The One About The Kohler Effect
The Main Findings

- **Working with someone of higher ability prompts the struggling member to**
  - Try harder at the task
  - Set a higher benchmark of what is possible
  - Not want to let their team-mate down.
- **Best Practices:**
  - Students must feel connected to each other.
  - Students must trust that the other person is working as hard as them.
  - Teachers must provide regular feedback on individual performance and effort levels.
  - The ability gap between pairs cannot be too big or too small.
  - Don’t always have the same partners.

5. The One About The Kohler Effect Classroom Implications

- Kohler Effect sort of happens in classrooms when teachers strategically place a struggling student next to a stronger student.
- The distinction is the teacher must assign a JOINT task with an expected outcome/product, not a tutor/helper.
- *"When **TWO** people complete a joint task, the individual performance of the weaker member was better than if they had done it by themselves."*

Activity #5

- Pull out the purple index card.
- Label it **5. The One About The Kohler Effect**
- Copy the brief explanation onto the card:
- **German psychologist Otto Kohler found that when TWO people completed a joint task, the individual performance of the weaker member was better than if they had done it by themselves.**
- **In Education, we should use the word ”struggling.”**

Time to Build Your Beachball

- Please listen first.
- Blow up the beach ball.
- ***Think about the effort you are taking to blow into that beach ball.***
- Use the Velcro dots and attach the colored index cards to the colors on the beach ball.
- ***Again, think about the effort you are taking to create the beach ball.***
- **The beach ball has all the strategies you need to increase student motivation, but you have to put effort into it.**

- Today we will identify key factors that influence student motivation and their impact on academic achievement and engagement.
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PODCAST

with Liliana Salazar

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Evaluating your
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training session