

# **Transformative Teaching:**

## **A Journey Through Active Learning Strategies**

**Presenter: Neeraj Buch**

**Tuesday, May 14 | 10-10:50AM | Wallace, Room 3420**

**Welcome! Please take a seat.**



# Transformative Teaching-A Journey Through Active Learning Strategies

**Prepared & Presented by Neeraj Buch**

**May 14, 2024**

## Acknowledgements

- Thank you CTL for allowing me to share my views on active learning in the classroom.
- Thank you Marty Golia (Teaching and Learning Consultant, CTL) for your comments, edits and feedback on the presentation.

## By way of Introduction

- Faculty since 1995 (Prairie View A&M, Michigan State University & RIT).
- Taught the entire spectrum of courses 1XX-8XX (service and discipline based courses).
- Class size range from 10-450 students.
- Scholarship of Teaching & Learning (SOTL)-outcome based education, student persistence and retention, workforce development, active learning strategies, train the trainer.
- Discipline based research focuses on Transportation Engineering.

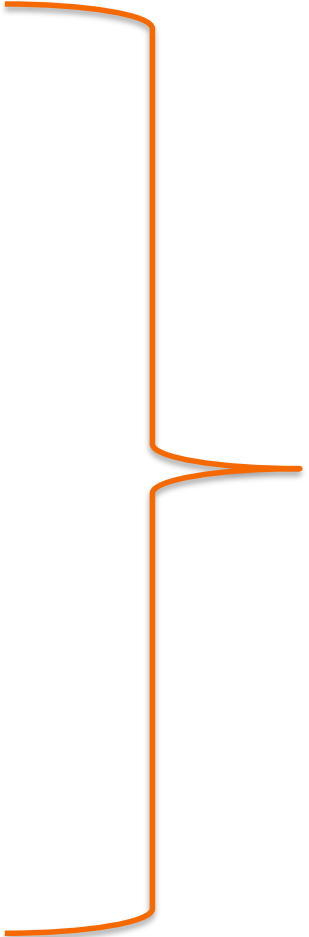


# The Questions I ask

- **How can I maximize my student's**
  - Understanding
  - Knowledge retention
  - Knowledge transfer
- **How can I motivate my students to attend class and come prepared to class?**
- **How can I use formative feedback to improve my teaching and student's learning?**

## Who is in our courses?

- Digital Natives
- Entrepreneurial Outlook
- Diversity and Inclusion
- Individuality
- Short Attention Spans
- Pragmatic and Realistic
- Fluidity of Identity
- Tech Savvy Consumer



**Commonly associated with Gen Z (1990's-2010). Not all individuals exhibit the same traits to the same extent**

# What is Active Learning?

1. Take two minutes to create a definition or description of Active Learning.
2. Find a partner. Together, finalize your definition of Active Learning.
3. Be prepared to share your work.



# Operating Definition of Active Learning

Instructional activities involving students doing things and thinking about what they are doing. The focus shifts from what the instructor should deliver to what students should be able to do.

Carefully structured, designed w/intention

Doing vs. Listening

Short activities integrated  
into a class to engage students



# Think/Pair/Share-Peer to Peer learning



- ✓ Pose a question and ask to formulate a response.
- ✓ Fix a time window.
- ✓ Have students share their “individual” responses.



- ✓ Ask students to pair up with a neighbor or near-neighbor.
- ✓ Pose the same question and ask to the pair to formulate a response.
- ✓ Have the pair share their responses.

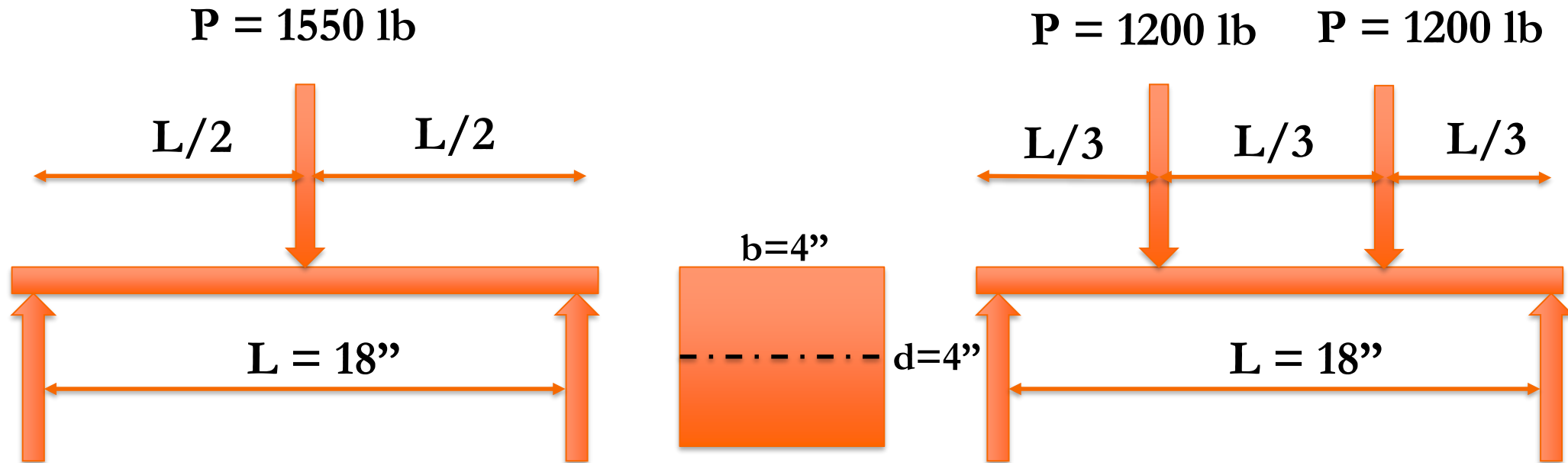
## Minute Paper/Muddiest Point

- List two concepts that you need further explanation?
- Create a prompt starting with “What is the muddiest point in \_\_\_\_\_?” and fill in the blank for the specific topic or idea you want students to explain.

*Muddiest point is a classroom assessment technique (C.A.T.) that gives students opportunities to point out what they are most confused about and clearly explain what is muddy.*



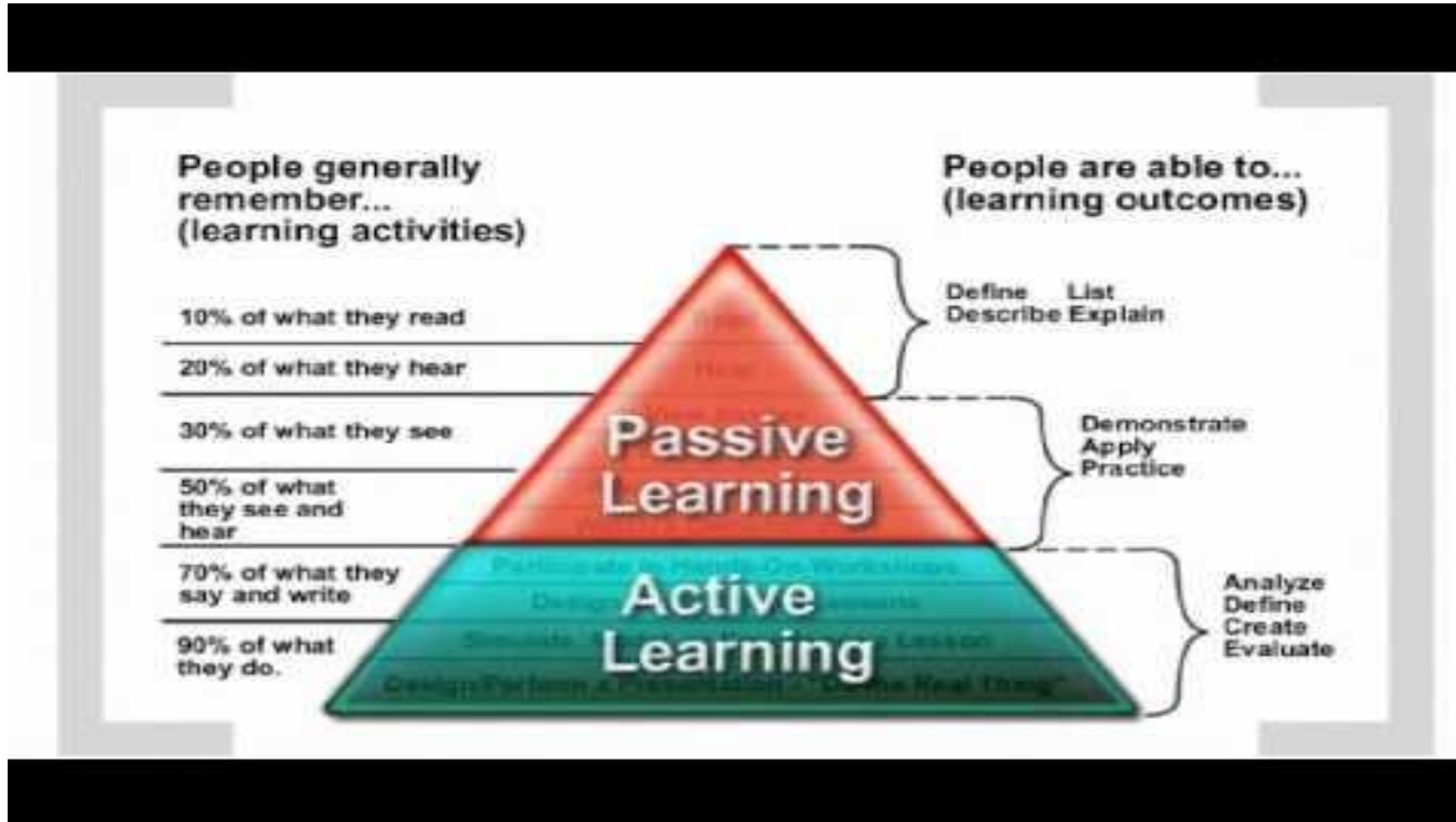
## Handouts w/gaps



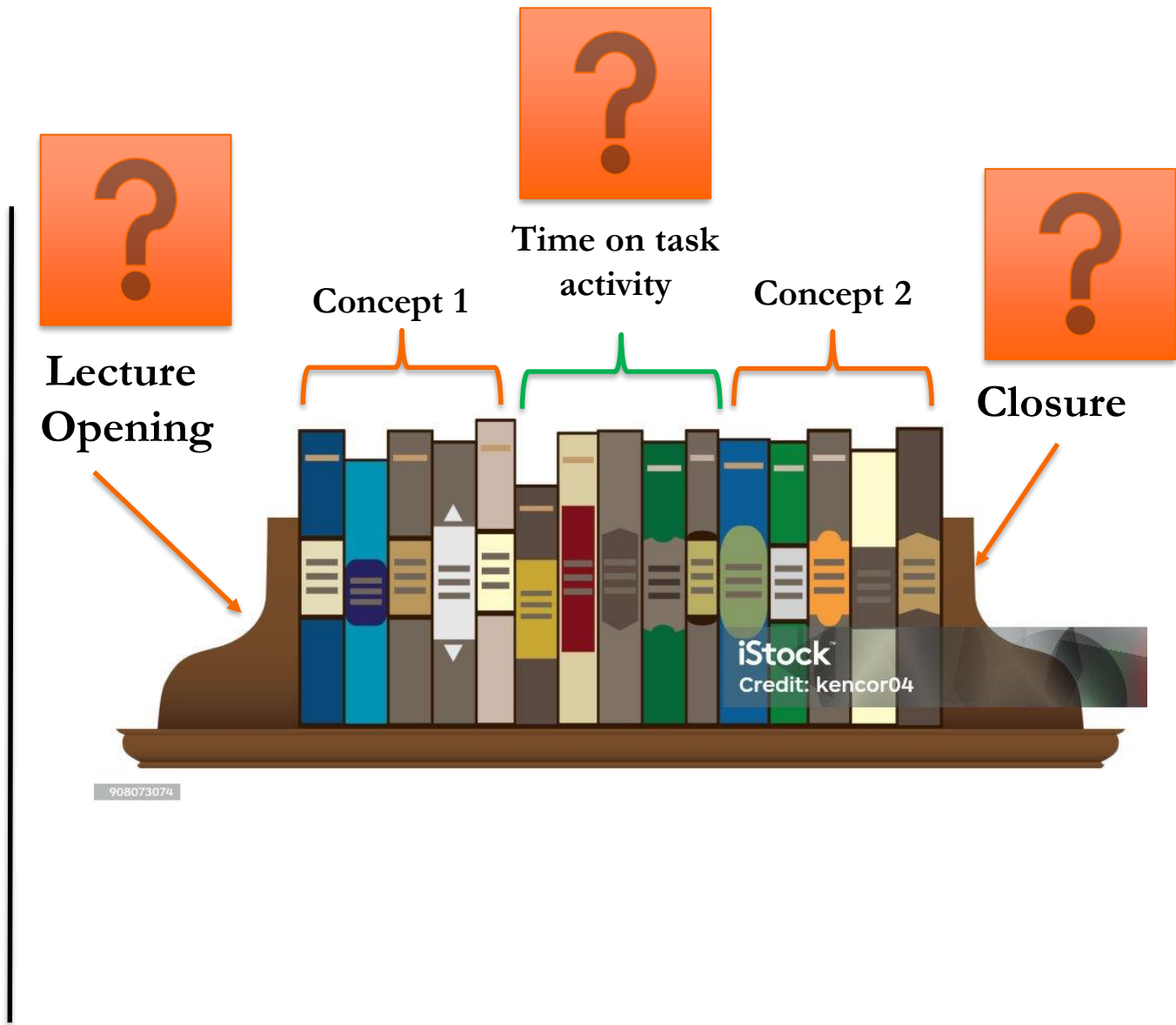
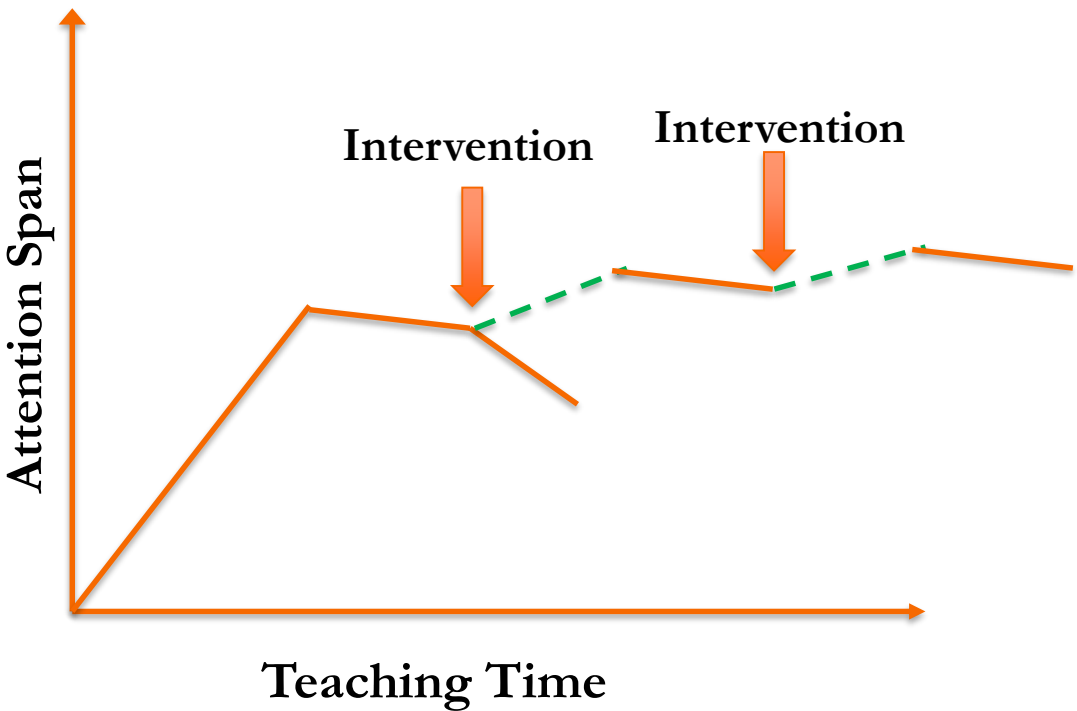
**Goal-Determine the bending stresses in the two concrete beams shown above?**

- What is the governing equation for both the loading cases?
- Derive the bending stress equation for each loading case, in terms of  $P$ ,  $L$ ,  $b$  and  $d$
- Sketch the bending moment and shear force diagrams for each loading case

# Learning Pyramid



# Design of Lecture



# Active Learning Strategies versus Time Commitments

AL Strategy	Preparation Time	Class Time	Implementation Time	Data Processing Time
Minute Paper/Muddiest Point	Low	Low	Low	Low
Think/Pair/Share	Medium	Medium	Low-Medium	Low-Medium
Handouts w/Gap	Medium	Medium	Low-Medium	Low-Medium
Time on Task	Medium	Low	Low	Low-Medium
Inquiry Based	High	High	High	High
Flipped Class	High	High	High	High



# Where do you want to incorporate Active Learning in your courses?

- What knowledge or skills do you want to see students demonstrate in class?
- Give examples of such activities?
- What kind of support will allow you to implement active learning in the Fall?



# Keys (possible) to Success

- ✓ Explain to students the what and why-build a partnership
- ✓ Be proactive w/reliquant students early
- ✓ Challenge the students
- ✓ Keep the activities short and targeted
- ✓ Be organized and clear instructions
- ✓ Make sure there is accountability
- ✓ Vary the nature of the activities-format, length and intervals

