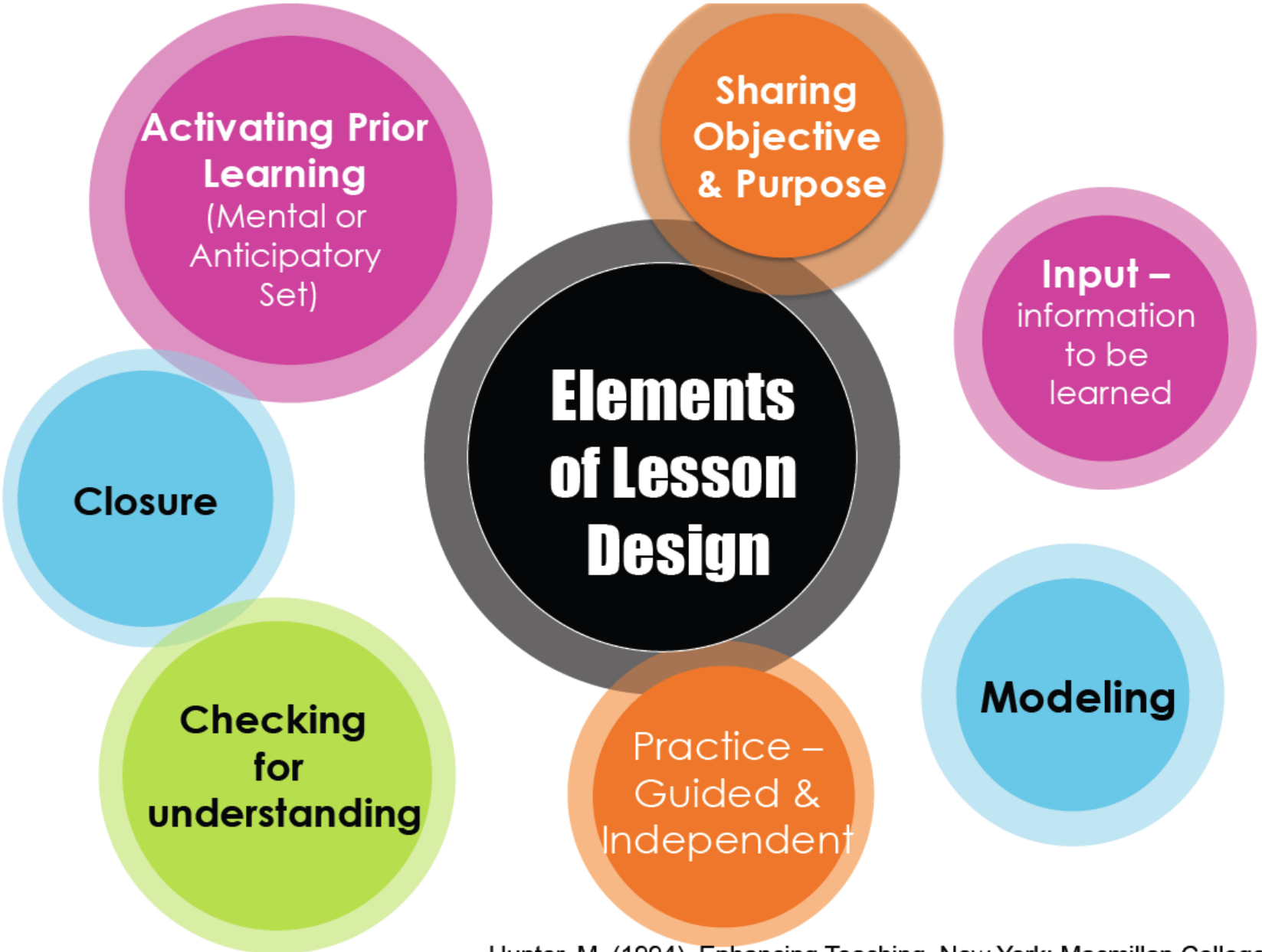
Lesson Planning
-microteaching course-

Credits to Carol Rolheiser, director of CTSI, for developing the lesson planning material for the TATP staff training, July 2013

Today`s learning outcomes

- **Analyze** elements of effective lesson planning and specific cases in which they can apply them for a lab/tutorial
- **Design** a lesson plan for a physics lecture



Hunter, M. (1994). Enhancing Teaching. New York: Macmillan College.

Sharing Objectives and Purpose

Think of the objective you have in mind for the lesson

Write it down

Share that objective and purpose with your students

Learning Outcome

- Articulate what a student should know or be able to do by the end of the class

Activity: Write learning outcomes

- Write down one learning outcome for the 5 min presentation you did today

- Use ACTIVE verbs: communicate, explain, implement, develop, evaluate, analyze, create, identify, prepare, design
- Don`t use VAGUE verbs: understand, appreciate, discuss, enhance knowledge of

Activating Prior Knowledge

- **Why?**

Activating Prior Knowledge

- Get their minds ready to learn
- Engage students
  - they will feel more encouraged to participate when you start from a level they are comfortable with
- Links to the past experiences or knowledge will help students build stronger logical connections
- **How?**

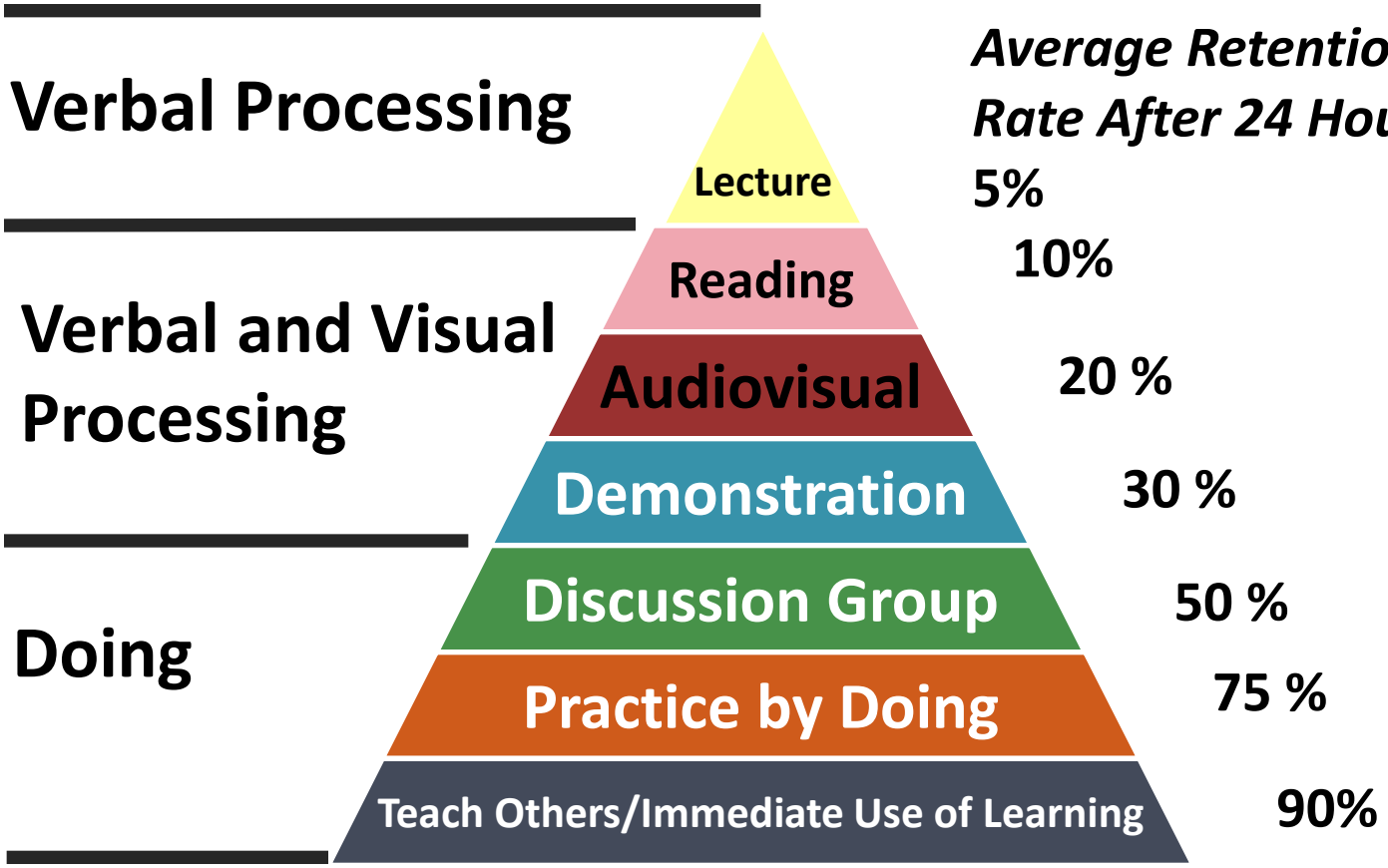
Activating Prior Knowledge

- Get their minds ready to learn
- Engage students
  - they will feel more encouraged to participate when you start from a level they are comfortable with
- Links to the past experiences or knowledge will help students build stronger logical connections
- Activate prior knowledge by:
  - Ask them questions in class
  - Questionnaire based assessment
  - Overview of the previous lecture

Modeling /Demonstration

- Clear demonstration of the concepts presented in the input
- Students can discuss what they see or hear and identify critical elements in the learning outcomes
- Examples:
  - Solving a problem in class (illustrate all the steps and generalize for a particular class of problems)
  - Show a demo of a concept you have just discussed
  - Illustrate a lab procedure by doing it yourself

Input: share new information

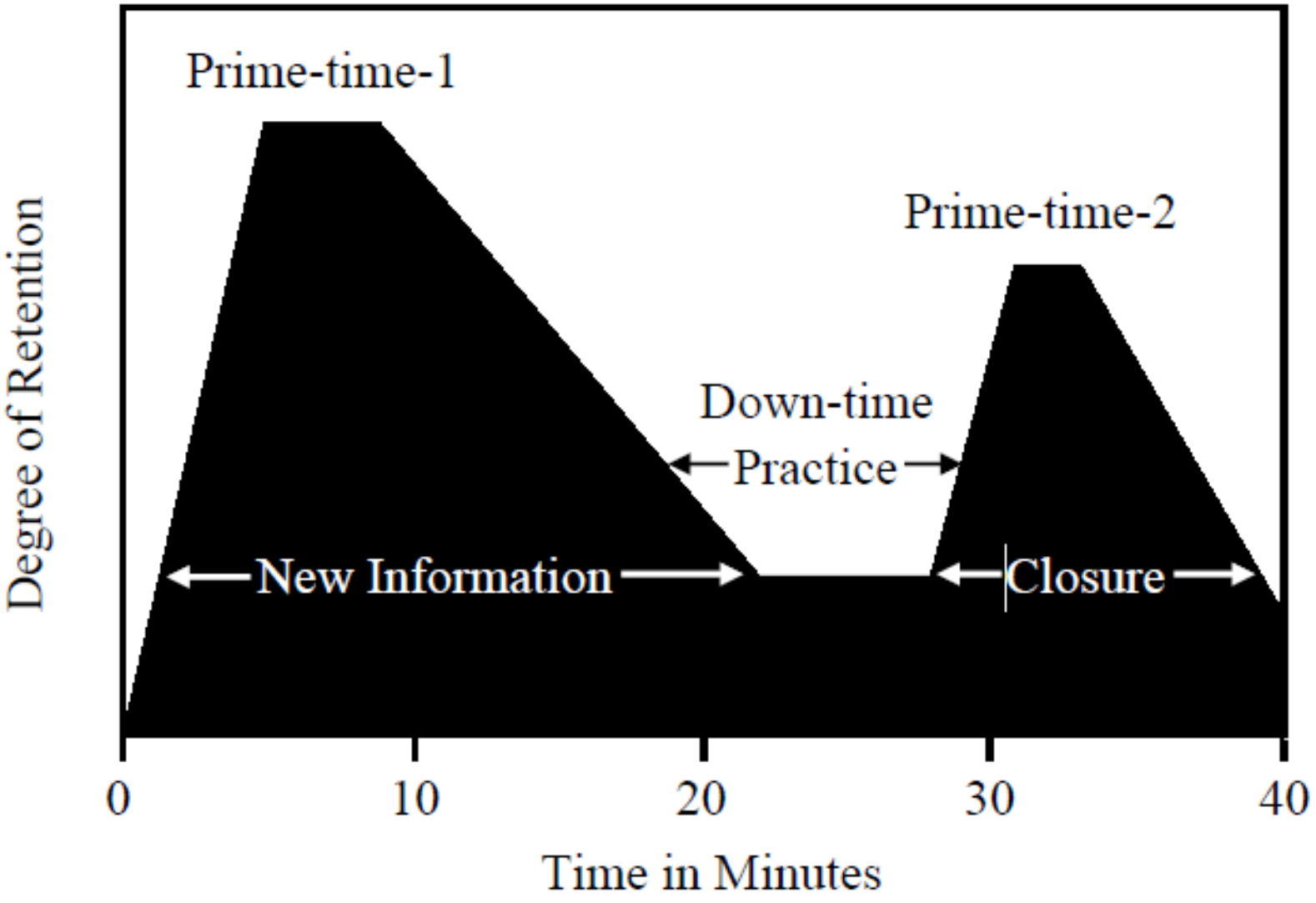


The average percent retention of information after 24 hours for each of the instruction methods.

Note that the percentages are not additive.

Source: Adapted from National Training Laboratories of Bethel and NTL Institute of Alexandria, VA, cited in David Sousa (2006) , *How the Brain Learns*, 3rd ed. California: Corwin Press.

Retention During a Learning Episode



What is active learning?

Definition:

Active Learning: *anything that students do in a classroom other than merely passively listening to an instructor's lecture.*

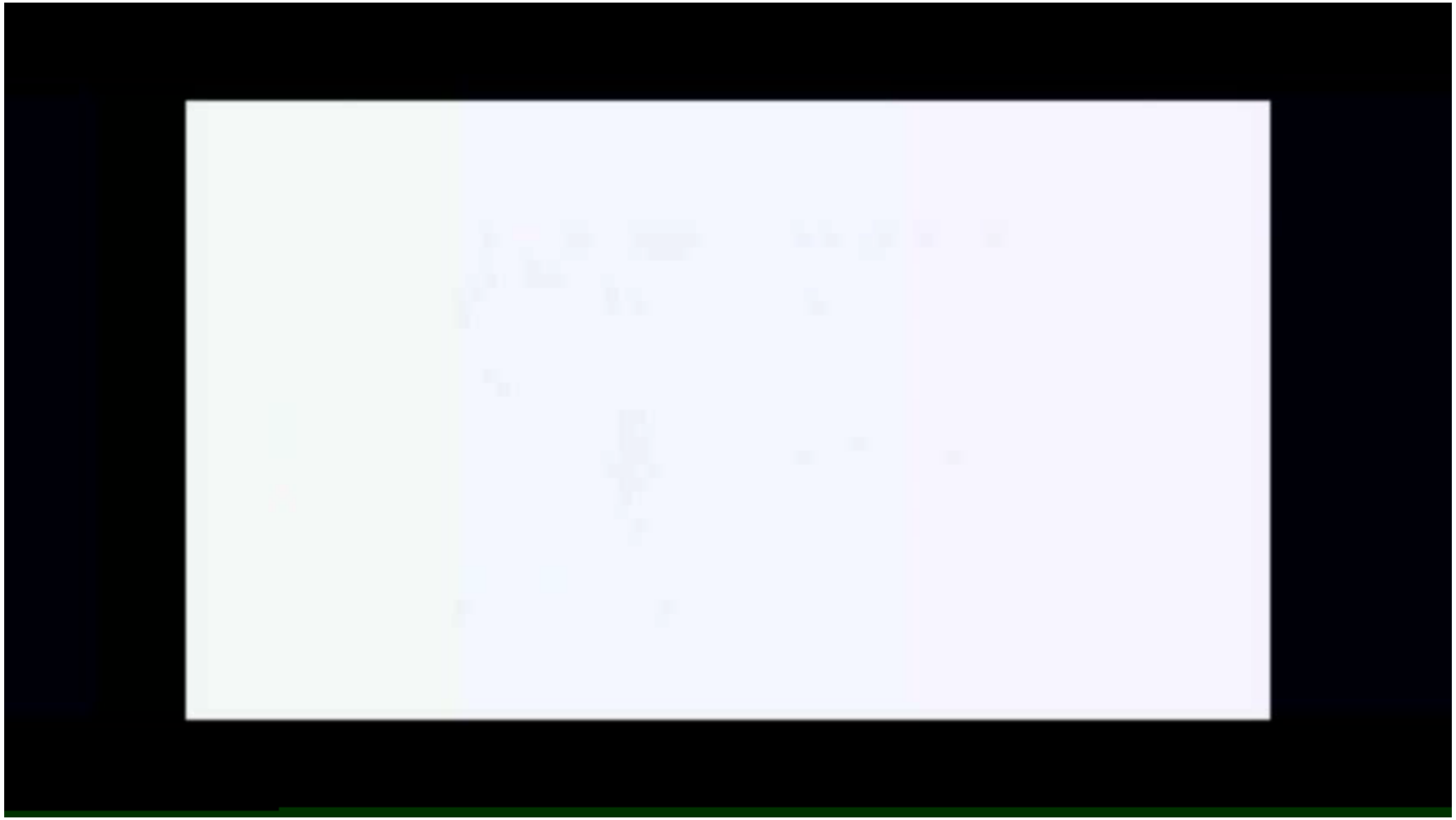
What is involved?:

- Writing based
- Discussion based
- Reciprocal Peers Teaching
- Problem Solving
- Graphic Information Organizers

Barkley, Cross & Major, 2005

Keys to Success

- Thoughtful active learning strategies
- Clear / Developed Lesson Plan
- Well defined goals
- Detailed objectives
- Debriefing that identifies where student can improve.



Dan Meyers, 2010, TEDxNYED

Be effective in lab/tutorial

- Use multimedia
- Encourage student's intuition
- Ask the shortest questions possible
- Let the student build the problem
- Be less helpful

Dan Meyer, 2010, TEDxNYED

Checking for understanding

YES Example: Consider the problem we have just solved, what are the differences between the quantum and classical oscillator. Try to think of oscillation amplitude and frequency , energy levels. Take 1 min to write your ideas on a piece of paper. I will ask 3 students to share their thoughts with the rest of the class.

NO Example: Does everyone understand how the quantum oscillator works? Any questions?

Checking for understanding

- ❑ Involve all students (active participation)
- ❑ Students get specific feedback on their answers
- ❑ Give some time to think of the answers
- ❑ Used before practice
- ❑ Example: ask them to write down some “muddy points”, which you can revisit at the end of the class

Practice: Guided or Independent

- Must relate to lesson outcomes and involve all students
- Guided practice:
  - Support from instructor, peers
  - Immediate feedback and support
  - To use before working independently
- Independent practice:
  - Without support (working on your own in class or outside of the class)

Closure

- Final check for understanding : revisit “muddy points”
- Summary of key learning in the lesson
- Relate summary to the learning objectives

Designing a Lesson Plan

- Use the lesson design template and work in pairs to begin designing a lesson plan