

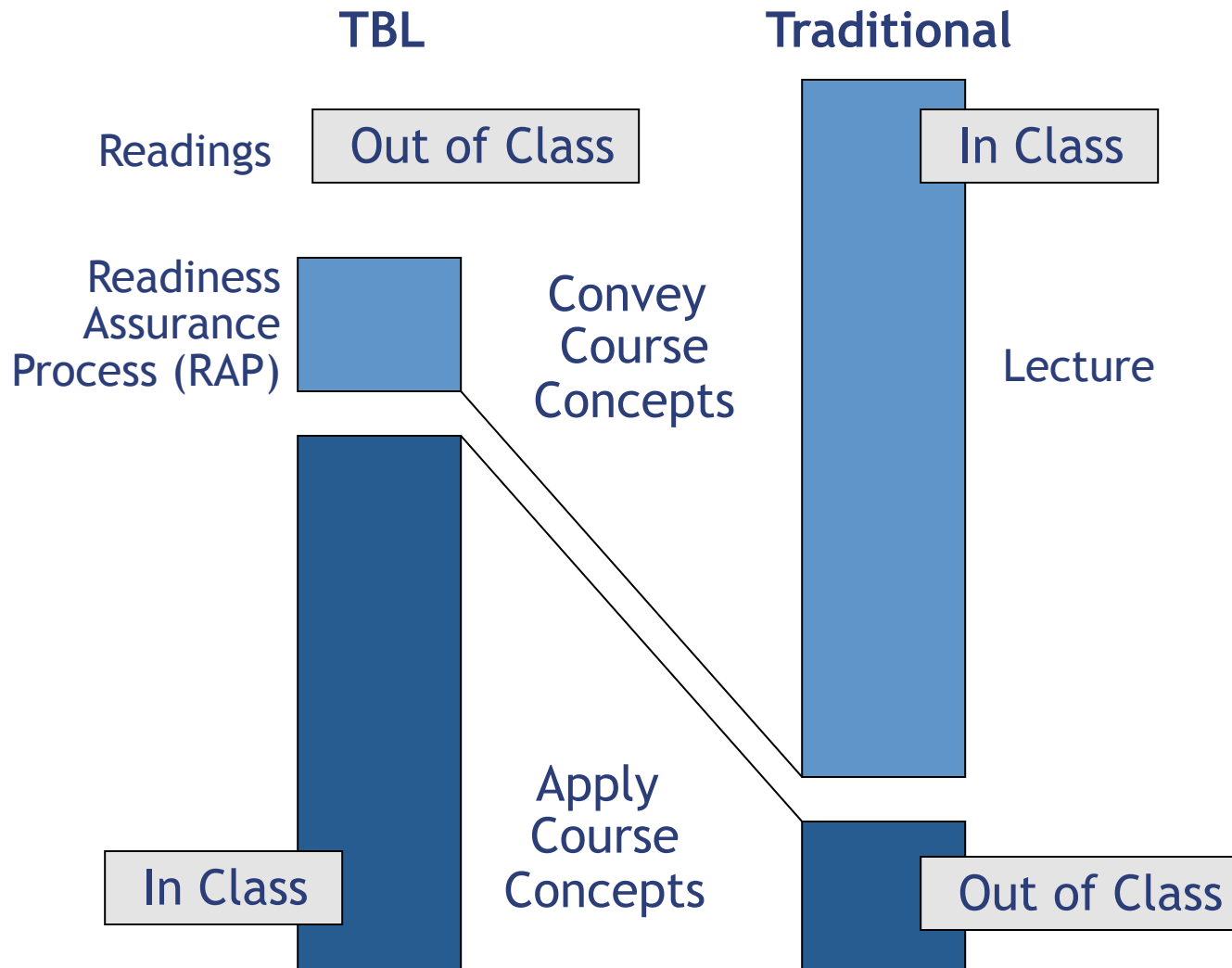
# Data Structures

# Today's Plan

- Intro to Team-Based Learning (30 minutes)
  - About TBL(10 minutes)
  - Team Formation (15 minutes)
  - Team Naming (5 minutes)
- Sample TBL experience (30 minutes)
  - Review syllabus (5 minutes)
  - Individual quiz (5 minutes)
  - Team quiz (10 minutes)
  - Reporting and Discussion (10 minutes)
- Grade Weight Assignment (15 minutes)

# About TBL

- What is TBL? How does it work?
  - Why do I like TBL?
  - What have my students said about TBL?
- Team Formation
- The “Readiness Assurance Phase”
- Application Activities
- Peer Evaluation!



# TBL Sequence During Each Unit

- Readings and Outside Work
  - Selected readings assigned in advance
  - Students really are responsible
  - May have other outside work during the unit
- Readiness Assurance Process (RAP)
  - Individual Readiness Assurance Test (iRAT)
  - Team test Readiness Assurance Test (tRAT)
  - Appeals
  - Instructor feedback
- In-Class Team Application Exercises
  - Simple to Complex
  - In-class practice

# Why I Like TBL

- I hear from more students during class, so I have a better sense of what's tricky, what's difficult
- *Students* hear from more students during class, so they have a better sense of how their understanding compares to others'
- It uses more modes of learning—mini-lecture, reading, hand-on, group discussion/debate
- More students pass!

# What students say

This is a great way to learn something new, its also prepares you for the real world and helps you be better at working with people.

It is difficult when a team is falling behind, and other members are not willing to pull their own weight.

You have teammates willing to assist you and help you understand. When a teammate needs help you have the opportunity to help and teach them which helps in your learning as well. The best way to learn is to teach.

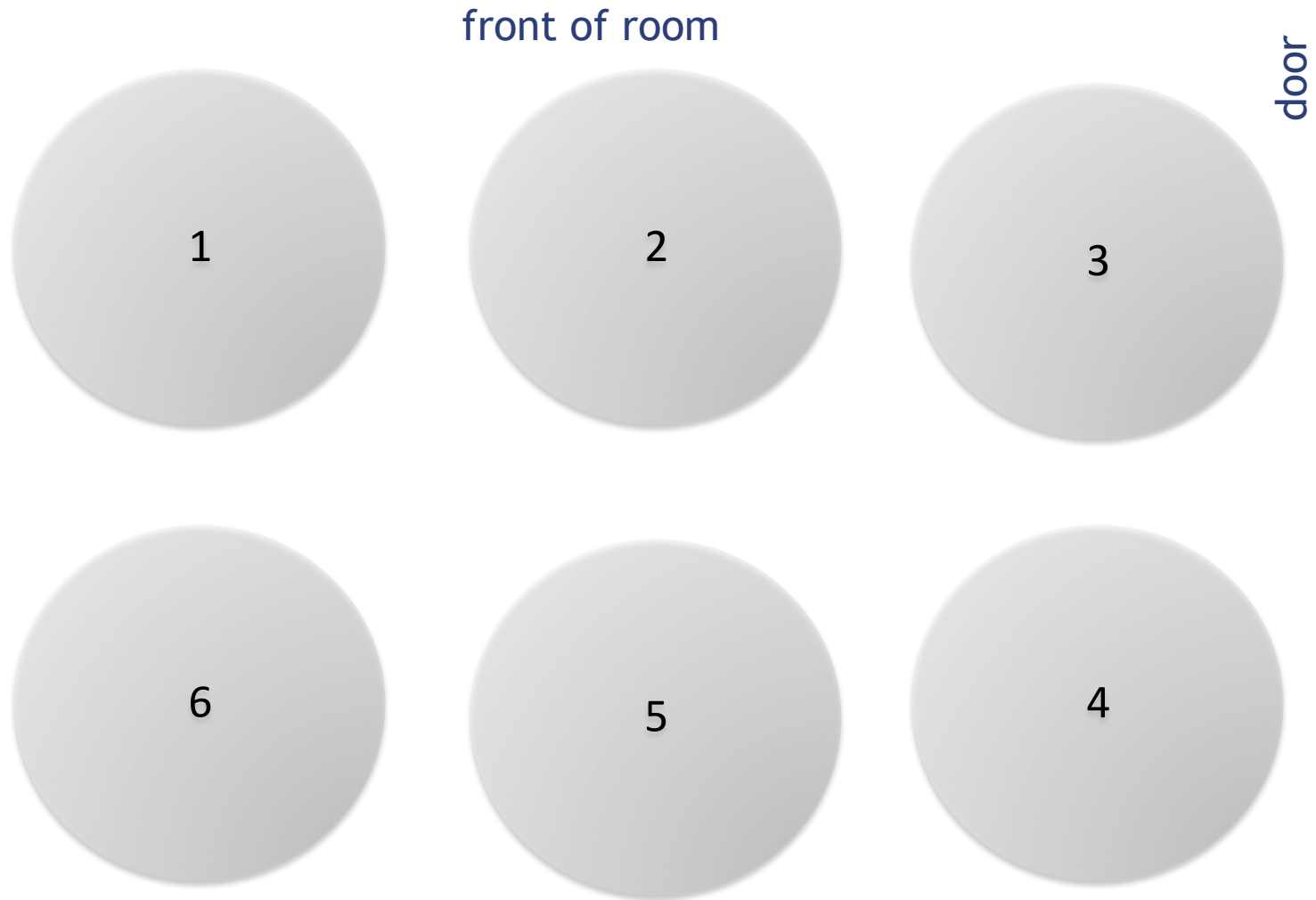
A lot better than just normal lecture, mainly because a lot of team member arguments stuck in my head helping me to remember.

# Formation of Teams

(designed to distribute students' unique  
“assets” equally across teams)



# Sit with your Team



Choose a name for your team; write down all team members

# Readiness Assessment Process (RAP)

1-2 hours per unit

- Complete reading assignment before each class
- Individually complete test
- Hand in individual test. I will score it while you
- Complete the same test with your team (IF-AT “scratch-off” sheets)
- Consider and submit any appeals (Appeal Form)
- I will then clarify any questions or issues from the readings or test



# iRAT: At the Beginning of Each Unit

Instructions: Each question is worth 4 points. You should assign a total of 4 points on each line. If you are uncertain about the correct answer, you may assign points to more than one box.

Q. #	A	B	C	D
1		4		
2	2		2	
3	1	1	1	1
4			4	

# Demonstration iRAT

(closed book!)

When finished, turn over your answer sheet.

# Readiness Assurance Test #0

1. Where is the professor's office?

- a) near CIS department
- b) basement of Ingersoll
- c) WEB building
- d) fifth floor of Ingersoll

2. The textbook is published by

- a) O'Reilly
- b) Addison-Wesley
- c) Prentice Hall
- d) None of the above

3. What do you get if you go to office hours?

- a) The professor's full attention
- b) Some extra credit
- c) Both a and b
- d) A stale cookie

4. What is the name of the College's Career Center?

- a) The Magnet Center
- b) The Magner Center
- c) The Magnus Center
- d) The Mango Center

5. What programming language will we be using this semester?

- a) C++
- b) HTML
- c) Java
- d) Python

# tRAT

Taken with team immediately after iRAT

If you choose the right answer, you will see the star.  
4 points for choosing the right answer in 1 scratch; 2 points for 2 scratches; 1 point for 3 scratches and 0 points if you have to scratch 4 or more all squares.

IMMEDIATE FEEDBACK ASSESSMENT TECHNIQUE (IF AT)					
Name	<u>TEAM #1</u>			Test #	<u>1</u>
Subject	_____			Total	<u>34</u>
SCRATCH OFF COVERING TO EXPOSE ANSWER					
	A	B	C	D	Score
1.					<u>4</u>
2.					<u>1</u>
3.					<u>4</u>
4.					<u>2</u>
5.					<u>4</u>
6.					<u>4</u>
7.					_____

# Demonstration tRAT (closed book!)

**\*\*Be sure to scratch the correct question number!\*\***



# Appeals

(using the Appeals Form)

**APPEAL- RE-WRITE OF BAD QUESTION  
(TEAMS ONLY) - TEAM # \_\_\_\_\_**

**INDIVIDUAL QUESTION # \_\_\_\_**

**For appeals based on **AMBIGUITY**, you should:**

1. Identify the source of ambiguity in the question
2. Offer an alternative wording that would have helped you to avoid the problem.

# Appeals

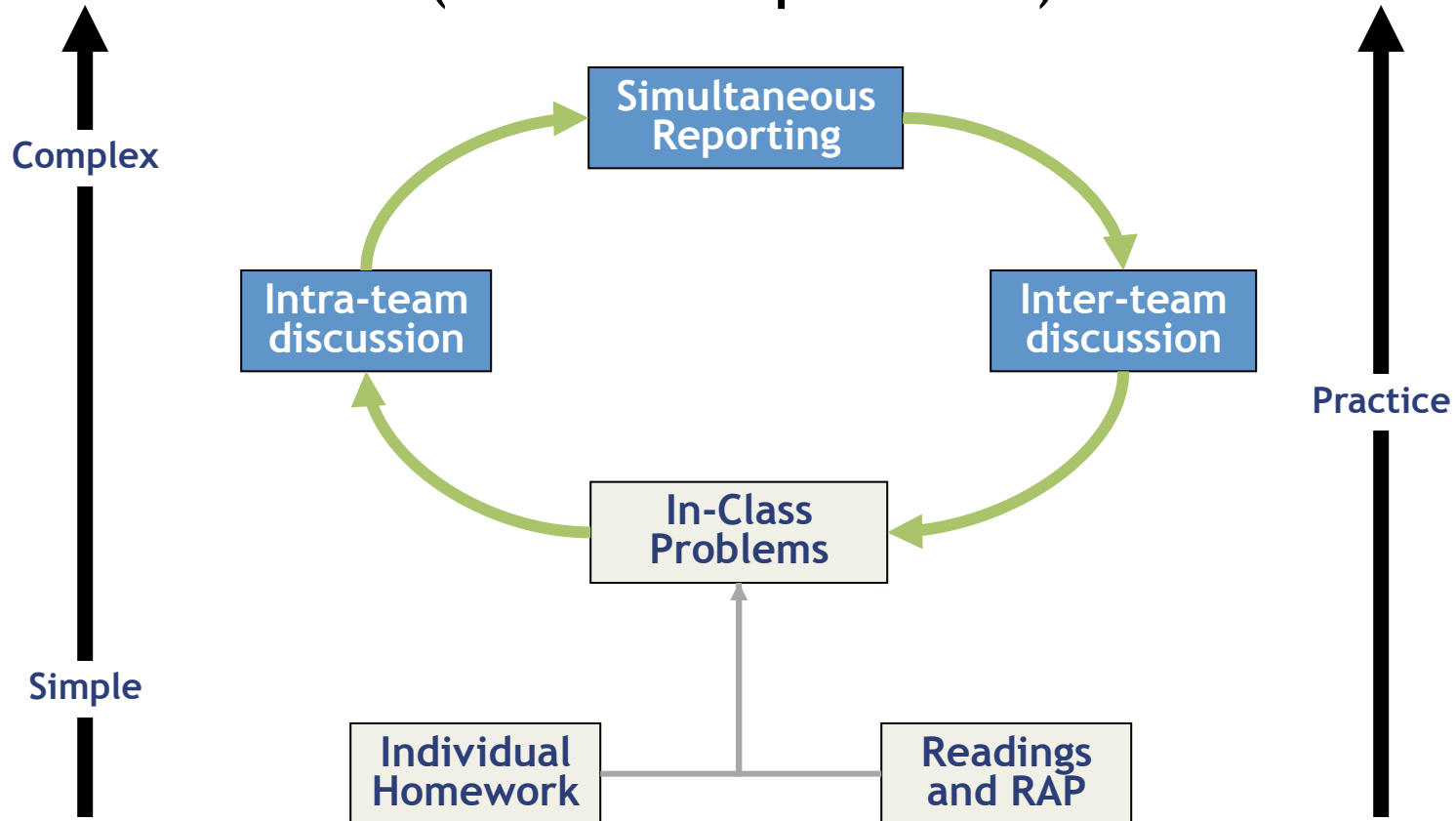
For appeals based on **CONTENT**, you should:

1. State the reason(s) for disagreeing with our answer and,
2. Provide specific references from the reading material to support your point of view.

Instructions:

**“In the space below, explain, with references from the readings if possible, why you feel your selected response was the BEST one.”**

# Application Phase (2-8 hours per unit)



# Making Application Activities Work

- Team activities (4 S' s)
  - Same Problem. Teams work on the same problem, case or question.
  - Significant Problem. Teams work on a problem, case, or question demonstrating a concept's usefulness.
  - Specific Choice. Teams must use course concepts to make a specific choice.
  - Simultaneous Report. Teams report their choices simultaneously. Visibility of student thinking.

# How Assignment Design Affects Individual Thinking, Intra- & Inter-Team Discussion

- “Make a list”—basic
  - Low cognitive skills
  - Low commitment to output
  - Low accountability
- “Make a specific choice”—better
  - Focuses on ‘why?’
  - Higher cognitive skills
  - Higher commitment to output
  - Higher accountability/cohesiveness

# Peer Evaluations

(Promoting Individual & Team Accountability)

1. Each individual will evaluate the contributions of all of the other team members by assigning an average of 10 points to the other team members.
  - In a 6-member team, you have 5 team-mates, so you must assign a total of 50 points to the other 5 of your team
  - For a 7-member team it would be 60 points
2. The ratings must differentiate the team members
  - Must give at least one score of 11 or higher (with a maximum of 15) and at least one score of 9 or lower.

# Peer Evaluation Rules

- You cannot evaluate yourself.
- You cannot give the same score to all teammates (there must be some differentiation)
- Keep in mind an average of 10 points to each of the other members of your team.
- This is not a time to be “nice” and give everyone the same grade. It is an *opportunity*
  - to provide *honest* and *anonymous* feedback to teammates who contributed less than others
  - to *reward* the people who contributed the most

# Peer Evaluations, continued

Example: Alice evaluated her team members

1. Alice --
2. Bob 8
3. Clark 10
4. Denise 10
5. Edward 12

TOTAL: 40

Average: 10 each



# Peer Evaluations, continued

- You will carry out this evaluation process twice, once around the sixth week of class, and once at the end of class.
- *Filling out* the evaluation will contribute to your individual performance grade
- Your scores on the *midterm* evaluation will not affect your course grade; it's an opportunity for you to get feedback
- Your scores on the *final* evaluation *will* contribute to your course grade.