



**The Flipped
Classroom**

**Team-Based
Learning**

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Exploring the Benefits and Challenges of using TBL

Outcomes

- **Learning Outcomes – by the end of this session you will be able to:**
 - Explain how and why team-based learning works.
 - Discuss the benefits and challenges of team-based learning

Programme

- Why TBL?
- What is TBL?
- Team Formation
- Readiness Assurance Process
- Application exercises
- Our Experiences of TBL
- Discussion and Q&A

Pharmacy C2012



- ▶ **Drivers for Change**
 - Growing student numbers
 - Surface learners
 - Disengaged learners
 - Disruption and absenteeism
- ▶ **New UG MPharm Programme**
 - Engaging L&T Strategy

What we liked about TBL



- Benefits of small-group learning but scalable
- Accountability to self and team
- Removes passivity
- Removes anonymity

What we wanted students to do:



- Prepare for class
- Come to class
- Participate and engage
- Apply knowledge
- Take a deep approach to their learning
- Enjoy classes

What is TBL?

- “A special form of collaborative learning using a special sequence of individual work, group work and immediate feedback to create a motivational framework in which students increasingly hold each other accountable for coming to class prepared and contributing to discussion”.

Four Key TBL Design Principles

- Teams must be properly formed and managed
 - Diverse resources
 - Permanent teams formed transparently
- Students must be motivated to come to class prepared
- Students must learn to use course concepts to solve problems
- Students must be truly accountable

A Team-Based Learning Unit

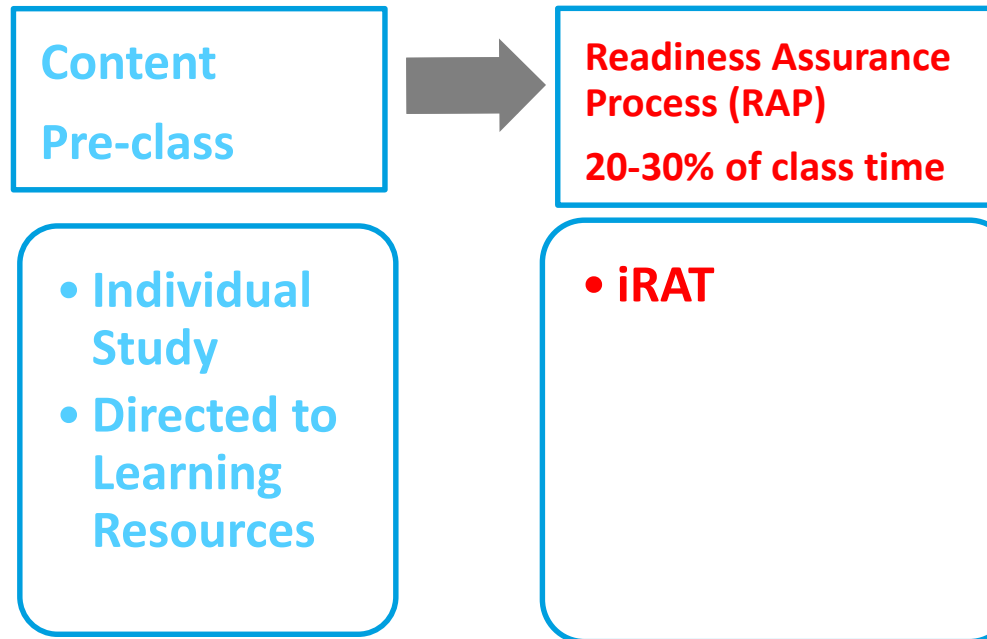
Content

Pre-class

- **Individual Study**
- **Directed to Learning Resources**



A Team-Based Learning Unit



A Team-Based Learning Unit

Content
Pre-class



Readiness Assurance
Process (RAP)
20-30% of class time

- Individual Study
- Directed to Learning Resources

- iRAT
- tRAT
 - IF AT cards
 - Same Test as a team

IMMEDIATE FEEDBACK ASSESSMENT TECHNIQUE (IF AT)

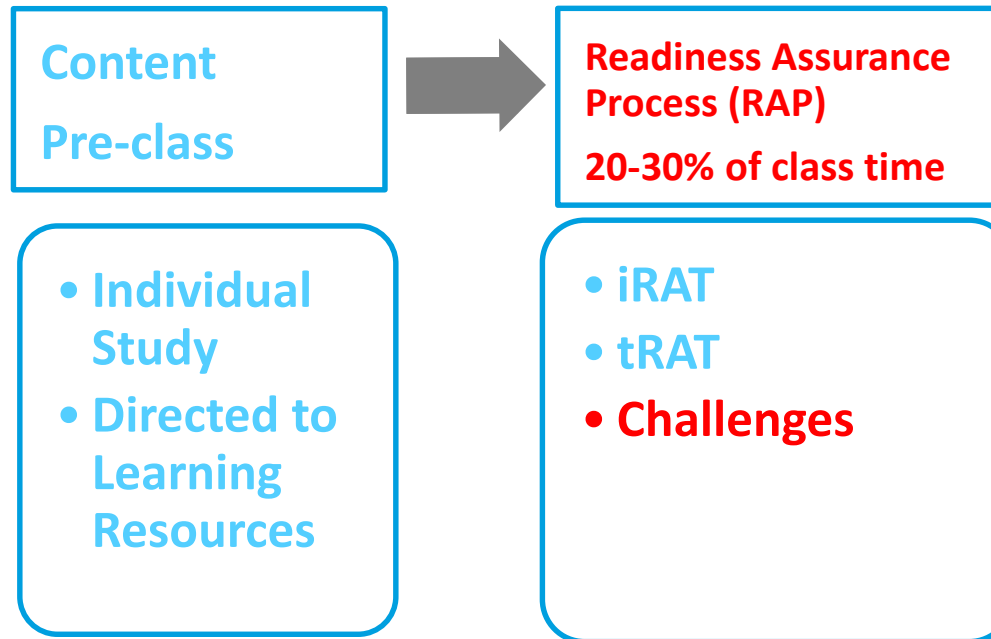
Name Team # 3 Test # 1

Subject _____ Total 23

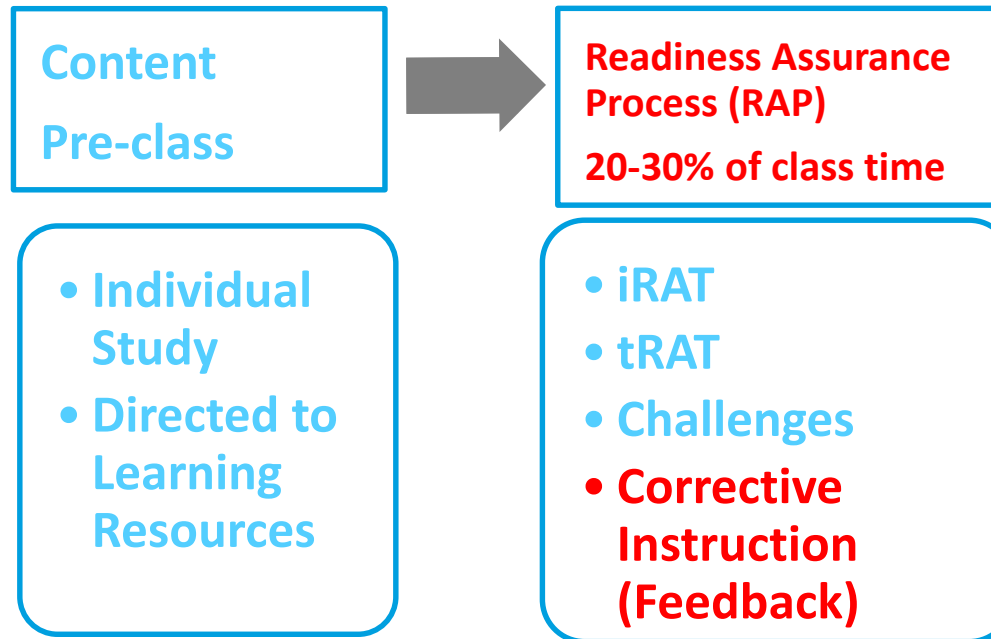
SCRATCH OFF COVERING TO EXPOSE ANSWER

	A	B	C	D	Score
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2.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
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5.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
6.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
7.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
8.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4
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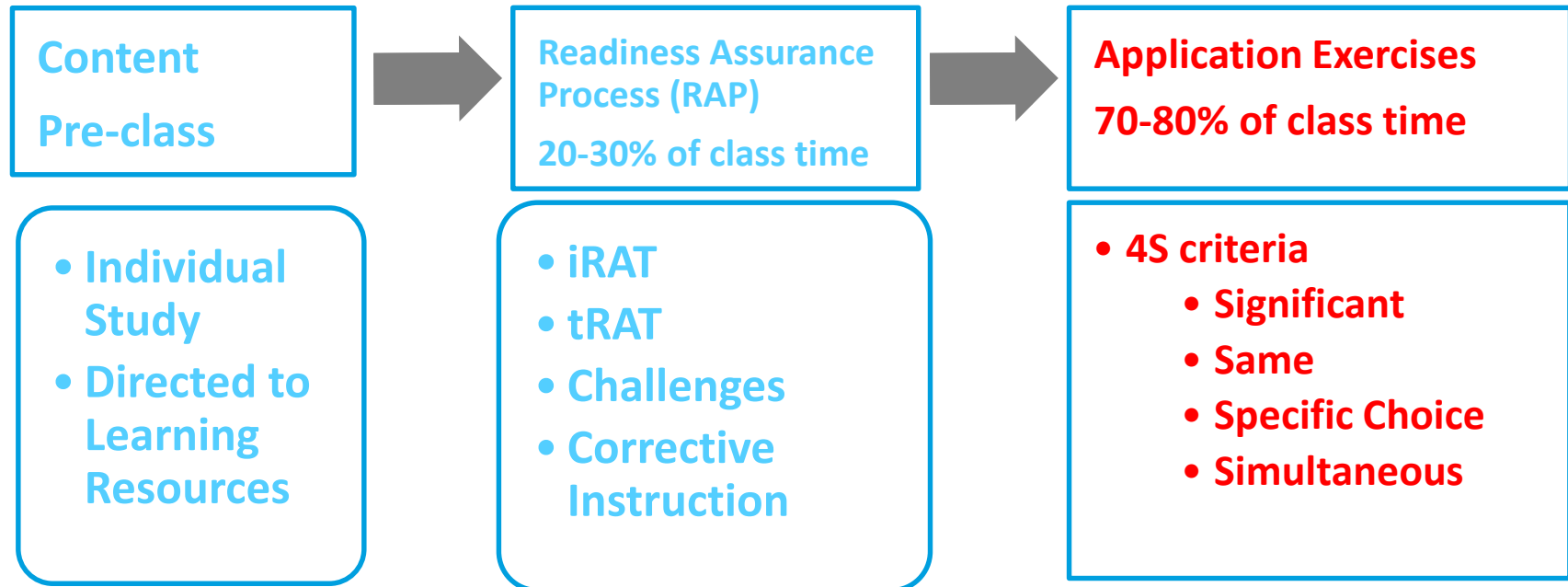
A Team-Based Learning Unit



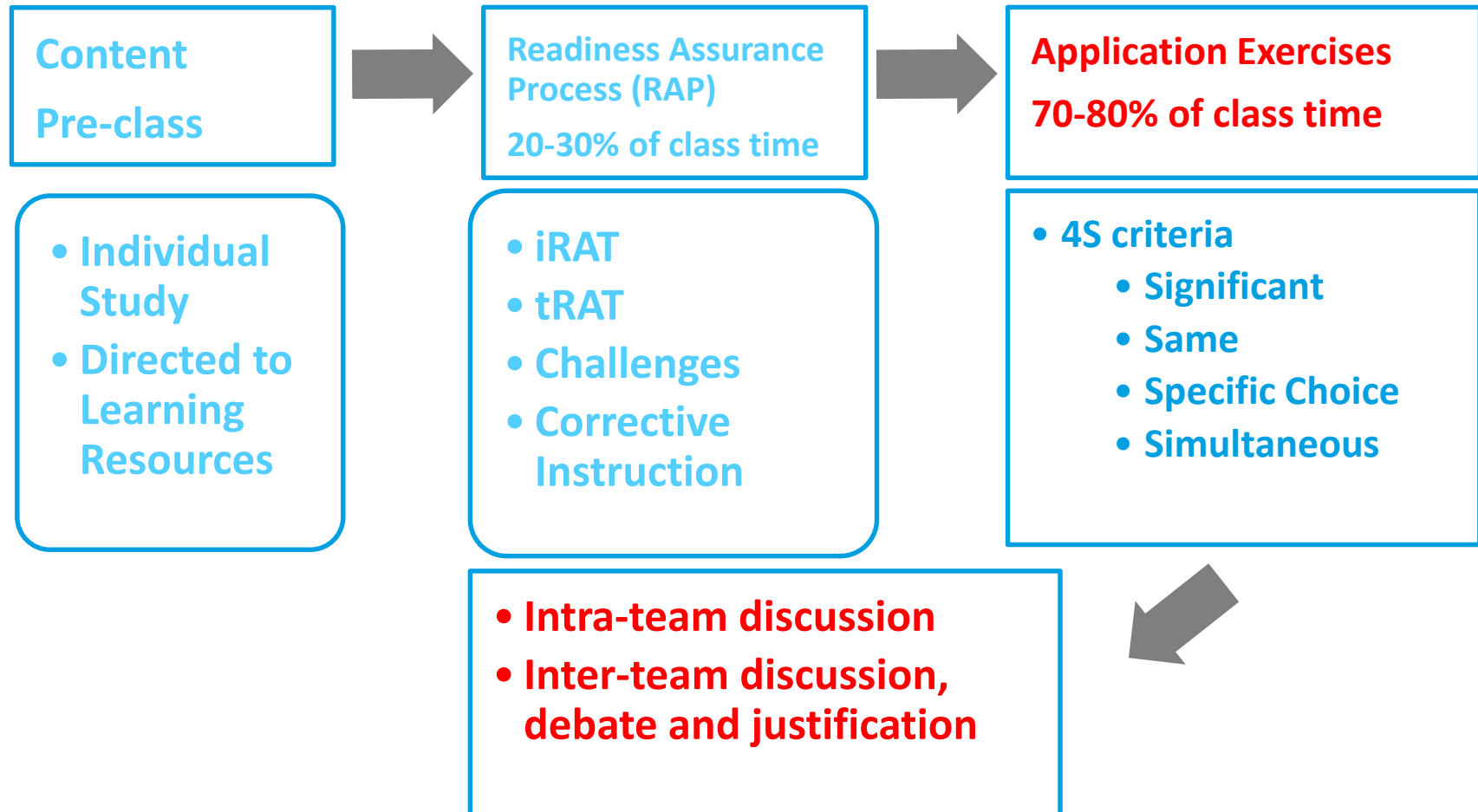
A Team-Based Learning Unit



A Team-Based Learning Unit



A Team-Based Learning Unit

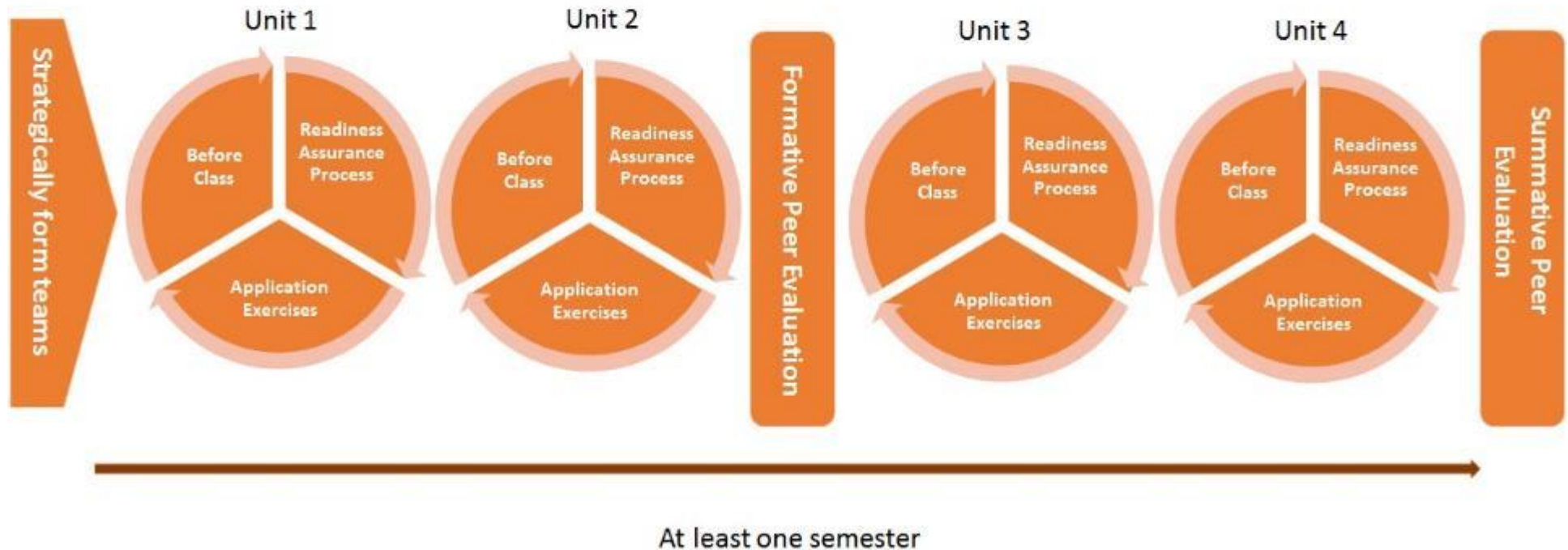


Peer Evaluation

- Formative
- Summative

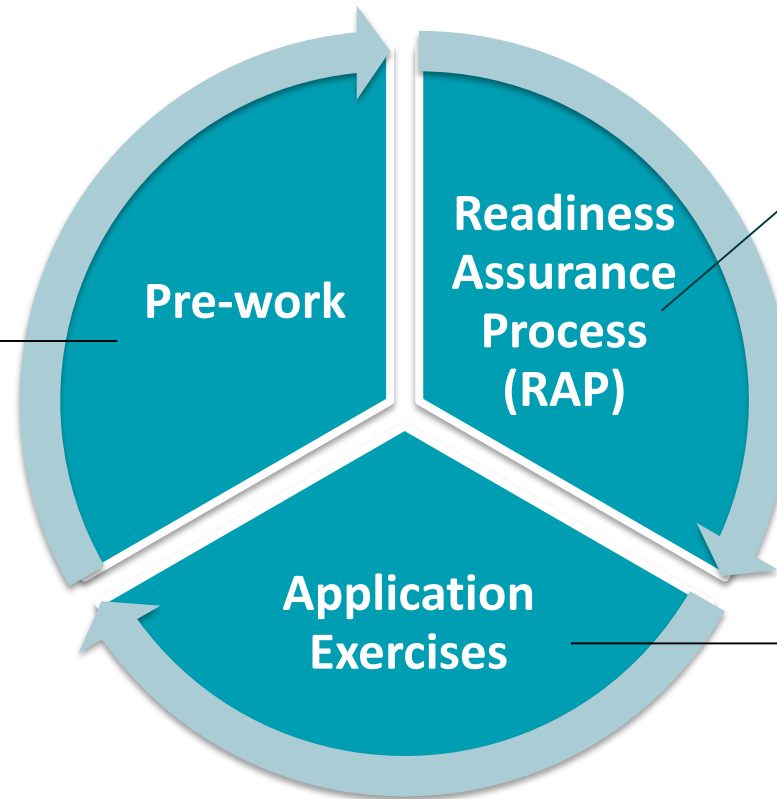
How does Team Based Learning Work?

Team Based Learning: teaching pattern



At a unit level...

- What used to be covered in lectures
- Videos & reading you MUST complete before class



- Individual test (iRAT)
- Team test (tRAT)
- Appeals & instant feedback
- You solve authentic problems
- Develops both academic & employability skills

Let's have a go!

- Team Formation
- Diverse Teams
- Team formation
 - Used TBL?
 - Attended a TBL workshop?
 - Understating of TBL
 - Rank your self from
 - 5 – I fully understand it to
 - 1 – I still haven't got a clue

Readiness Assurance Process

- iRAT
 - Complete the test
 - Closed Book
 - Individual
 - TP
- tRAT
 - Closed book
 - Team
 - IF-ATs
- Appeals
- Corrective Instruction (Corrective Feedback)

Application Exercise 1

From a staff perspective, which of the following do you believe is the *most* important benefit of TBL to students? – 5 minutes

- A Increased breadth of content covered
- B Enhanced student attendance
- C Increased student engagement
- D Reduction in staff workload
- E Increased student attainment
- F Enhanced student motivation
- G Promotes deeper approaches to learning
- H Development of skills to enhance employability

Application Exercise 2

Which of the following aspects of TBL do you feel that you (as teachers) will find the most challenging skill? – 5 minutes.

- A. Writing the Student Study Guide
- B. Writing the RAT questions
- C. Writing application exercises
- D. Facilitating application exercises
- E. Giving the corrective feedback after the RAP
- F. Mastering the technology
- G. Managing the timings of application exercises
- H. Managing the appeals process
- J. Managing the peer evaluation process

Our Experiences of TBL

- Benefits
- Challenges
- Staff and Student Positives and Negatives
- Quantitative data
- Qualitative data
- Employability skills
- Summary of Lessons Learned
- Estate

Outcomes - Benefits

► Students

- Mostly very positive
- Enjoyable experience
- 4th years helped explain to 1st years

► Staff

- Students come prepared
- Students engaged in learning
- Students are more confident
- Students are less needy and less pastoral issues

“TBL has been so good and rewarding to the point that I am suggesting that we use it within the optional modules. It almost makes me want to be a first year again.” – 4th year Student

“The power of instant feedback, the students totally on topic, talking, engaged, coming prepared, it is unbelievable.” Staff

“I would definitely recommend TBL because you get the chance to apply your knowledge. It stays in your mind a lot more and you find your performance is a lot better” –Student

“100% never going back.” Staff

Outcomes - Challenges

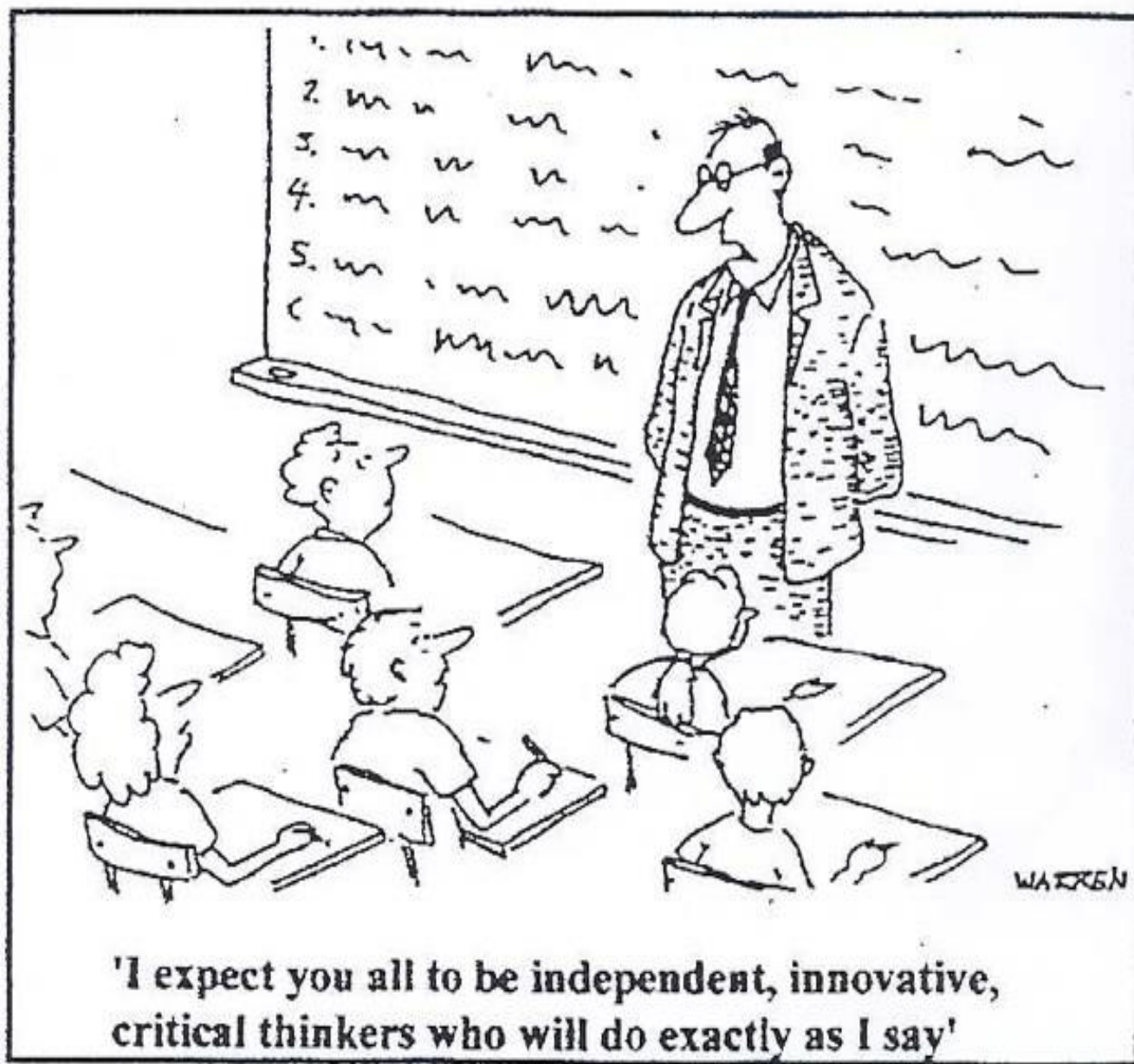
- ▶ Large scale change
 - Human resource
 - Managing Expectations
 - Staff
 - Students
- ▶ Facilitation skills
- ▶ Application exercises
 - Authentic, integrated and challenging
 - Timings
- ▶ Difficult concepts
 - Student Support Sessions
 - Age/experience?
- ▶ Orientating students

“Some staff need to improve the way they ask the questions” - Student

“You definitely need more preparation time and to learn how to facilitate discussions” Staff

“They need to be stricter with timings, you’re often waiting for everyone to finish when you could move on to the next exercise.” Student

“For me the most difficult part of TBL is writing application exercises that challenge them as a team” Staff



- Employability Skills
 - Collaborative
 - Communication
 - Critical thinkers
 - Independent learners
 - Confidence
 - Teaching

Outcomes – Comparative data

- ▶ Performance in written assessment
 - 7% increase in a stage 4 60 credit module (1 cohort of 200 students)
 - 13% increase in stage 4 20 credit module (2 cohorts of 100 students)
- ▶ Heidi Mennenga's Team-Based Learning Student Assessment Instrument (TBL-SAI)

Subscale	Accountability Score	Preference for TBL	Satisfaction with TBL	Total Score
Range	8-40	16-80	9-45	33-165
Neutral	24	48	27	99
MPharm	33.2	57.6	36.5	127.2

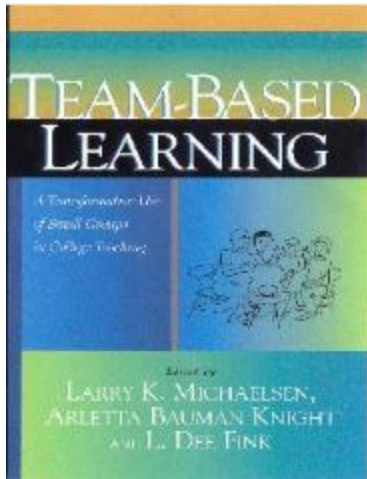


- **Benefits**
 - Attendance
 - Engagement
 - Peer Learning
 - Peer Support
 - Improved satisfaction
 - Improved results
 - Fun

Team-Based Learning: Group Work that Works

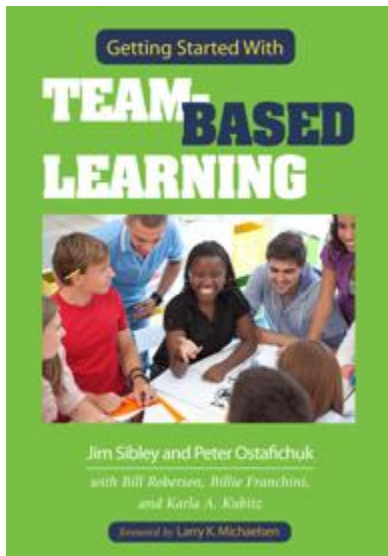
Lessons Learned

- Help and support invaluable
- Don't drop any one aspect of TBL
- Don't underestimate the preparation time
- Peer review of TBL resources
- Writing effective application exercises that are authentic and challenging
- Taster sessions at interview



- References and Further Resources

- Books (Michaelsen and Sibley)
- TBLC
 - www.teambasedlearning.org



- Contact

- s.j.tweddell@bradford.ac.uk

- TBLC Membership
 - Communities of Practice
 - Discounted events
 - Resources
 - Research and collaboration
 - Developmental opportunities
- ETBLC
 - Masterclasses –
 - University of Dundee – 26th June

OfS Catalyst Project



- Scaling up the use of Active Learning for Student Success
- NTU/ARU/UoB
- Outcomes
- Attainment Gap
- Project Conference
 - Friday 28th June

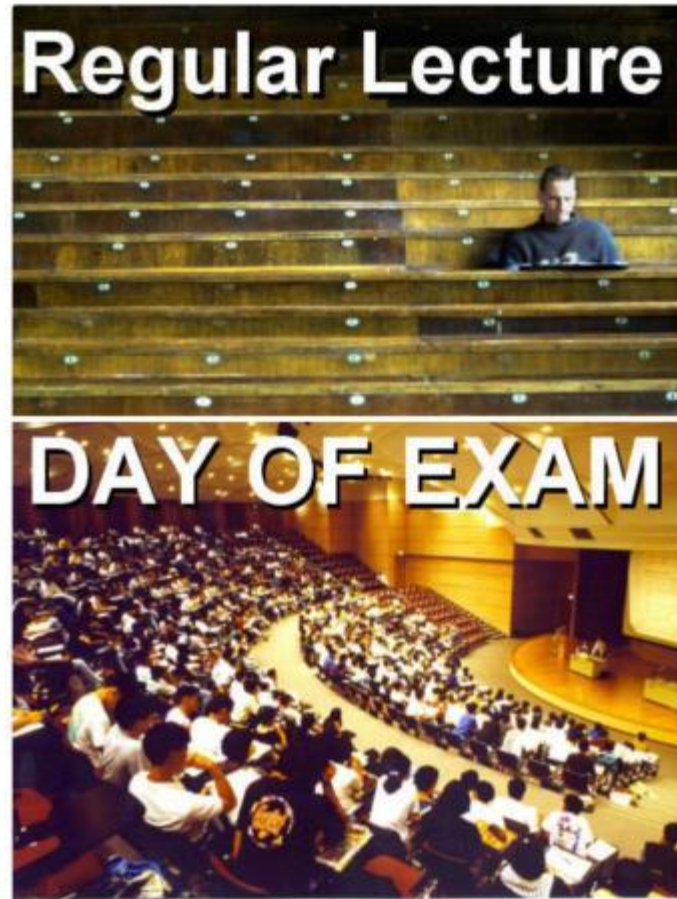
Estates and Facilities





Questions?

Reality: students are assessment driven

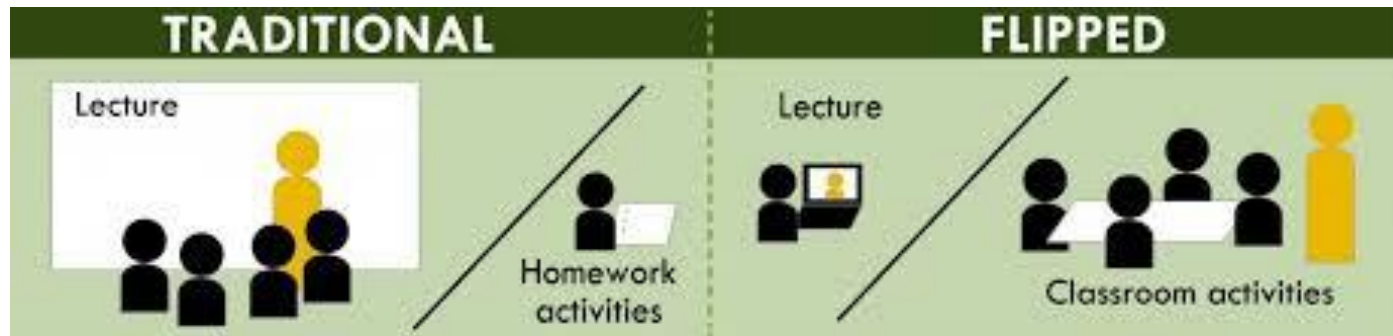


Why active learning?



“I hear and I forget.
I see and I remember.
I do and I understand.”
Confucius

Why active learning?



- Students were 1.5 times more likely to succeed with active learning than traditional lectures (Freeman et al 2014)
- Students prefer and more likely to complete courses with interactive and communicative learning (Rienties & Toetenel 2016)

Why collaborative learning?

“If you want to go fast,
go alone.

If you want to go far, go
together”

African proverb



Why collaborative?

Top 10 skills

in 2020

1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility

in 2015

1. Complex Problem Solving
2. Coordinating with Others
3. People Management
4. Critical Thinking
5. Negotiation
6. Quality Control
7. Service Orientation
8. Judgment and Decision Making
9. Active Listening
10. Creativity



Source: Future of Jobs Report, World Economic Forum

Key points for teams

- 5–7 people
- Instructor formed
- Long term
- Maximise diversity
- Embed Peer Evaluation



Are they really just multiple-choice questions?

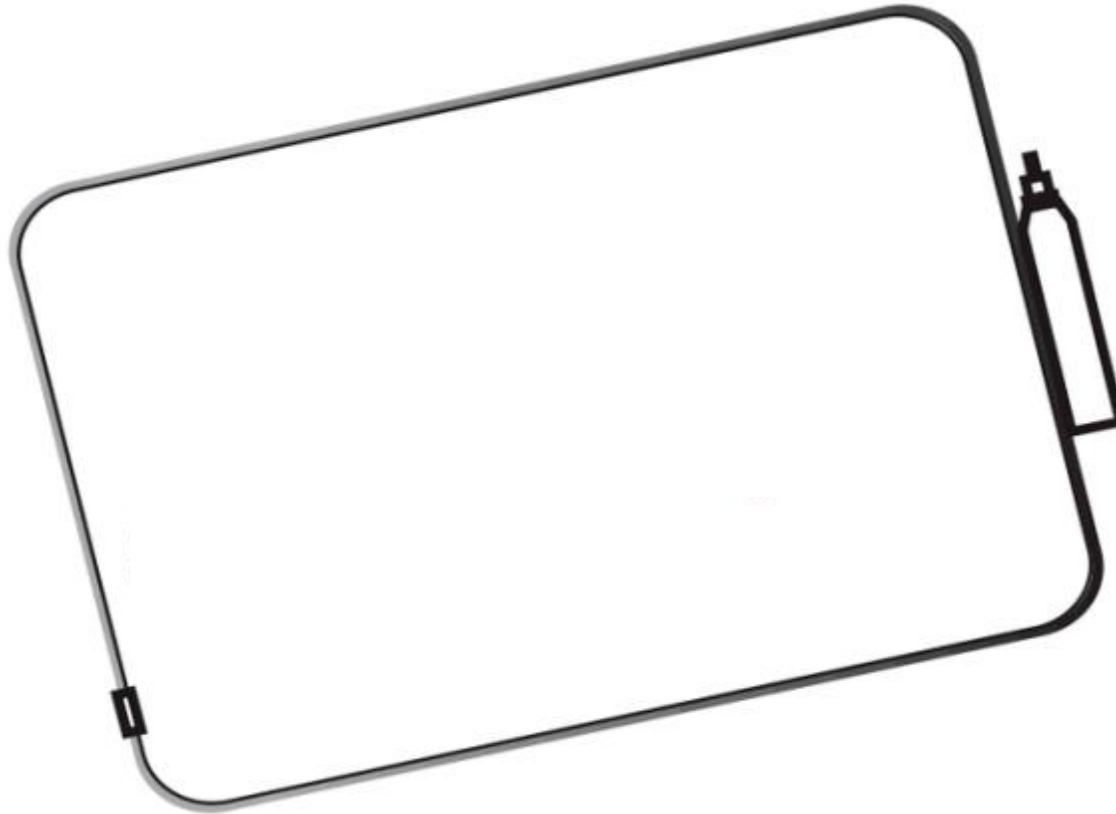
Complex data, complex decisions, simple report



A patient come into emergency with the following symptoms... (ADD appropriately COMPLEX SCENARIO HERE)

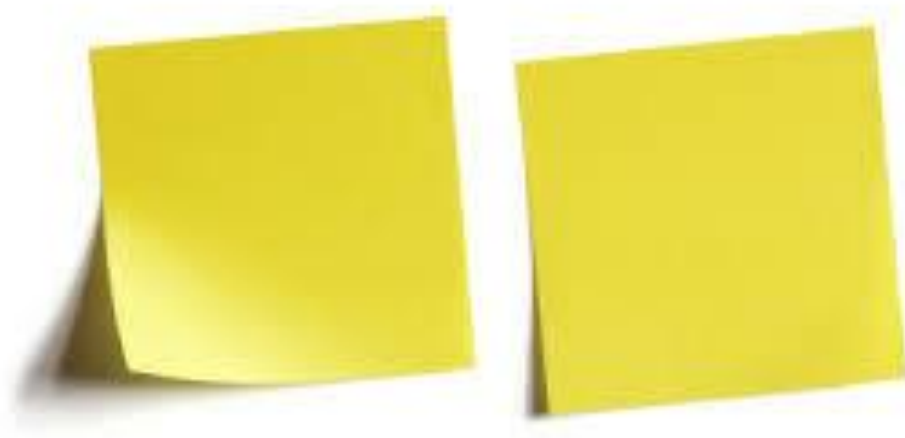
- A. What is the first thing you would do? And why?
- B. What is the first test you would order? And why?
- C. What would be the worst thing to do? And why?





Small Whiteboards



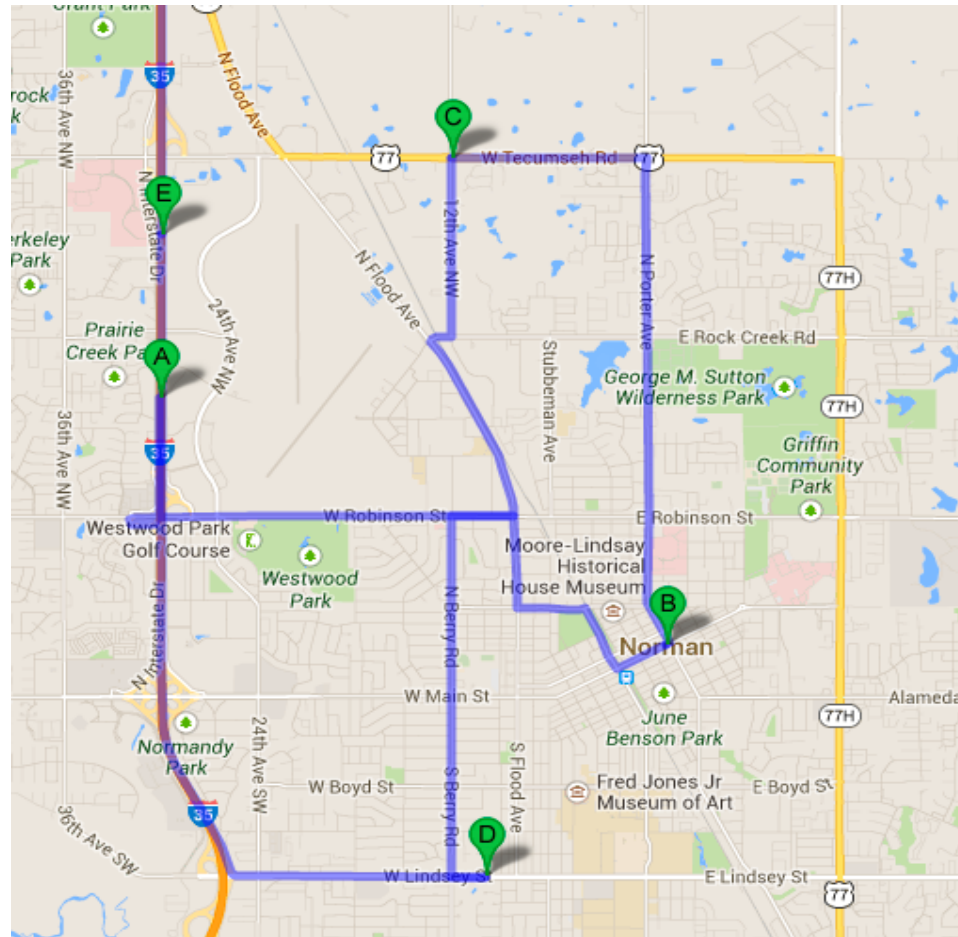


Post-it-Notes



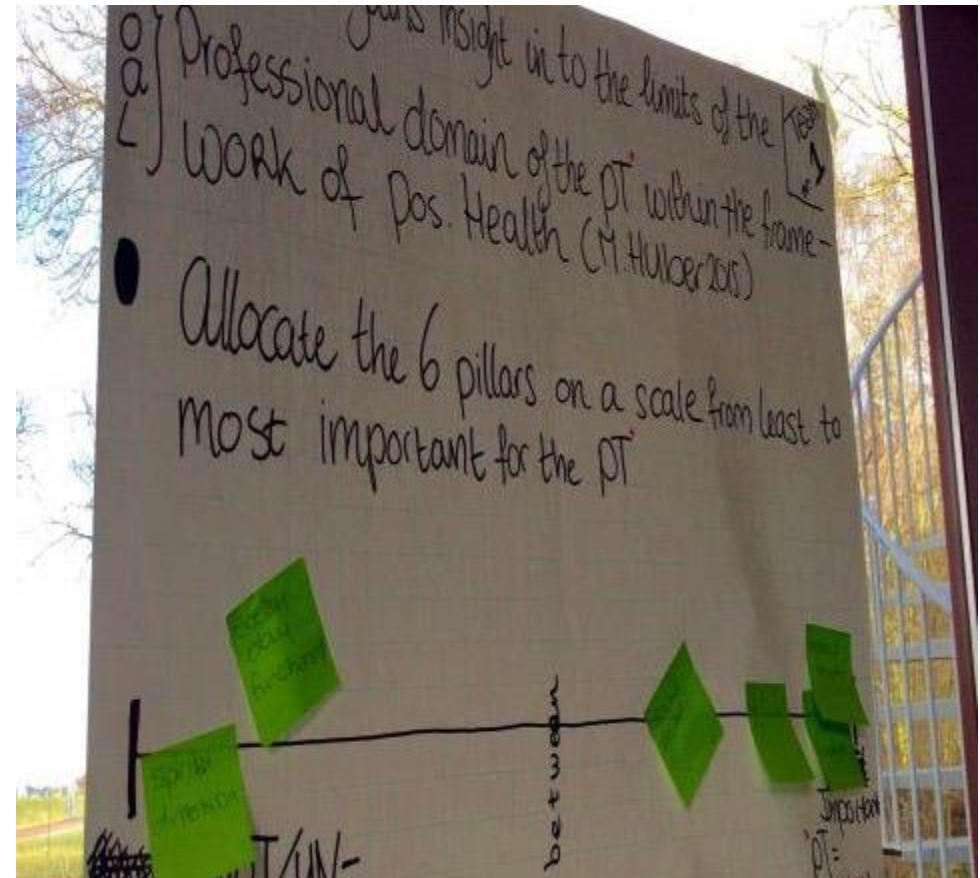
You are consulting for a new business owner who wants to open a dry-cleaning store in Norman, Oklahoma. Where would you recommend locating a new dry-cleaning business (and why)?



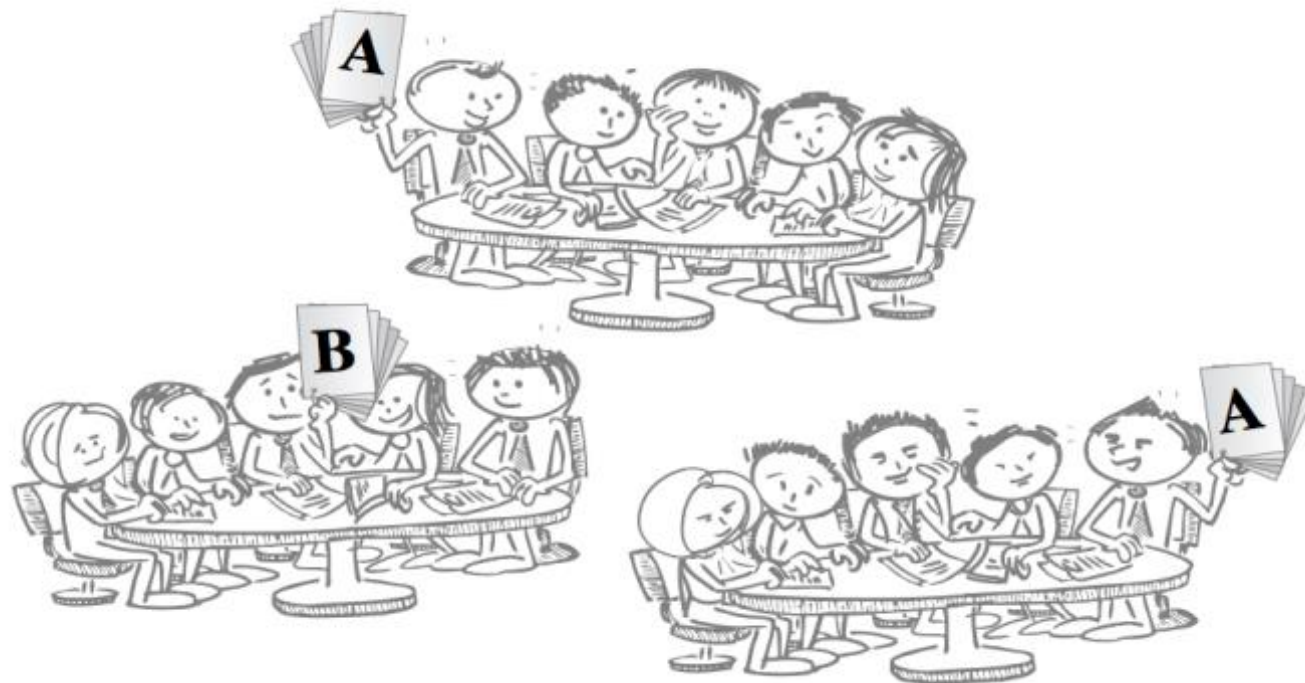


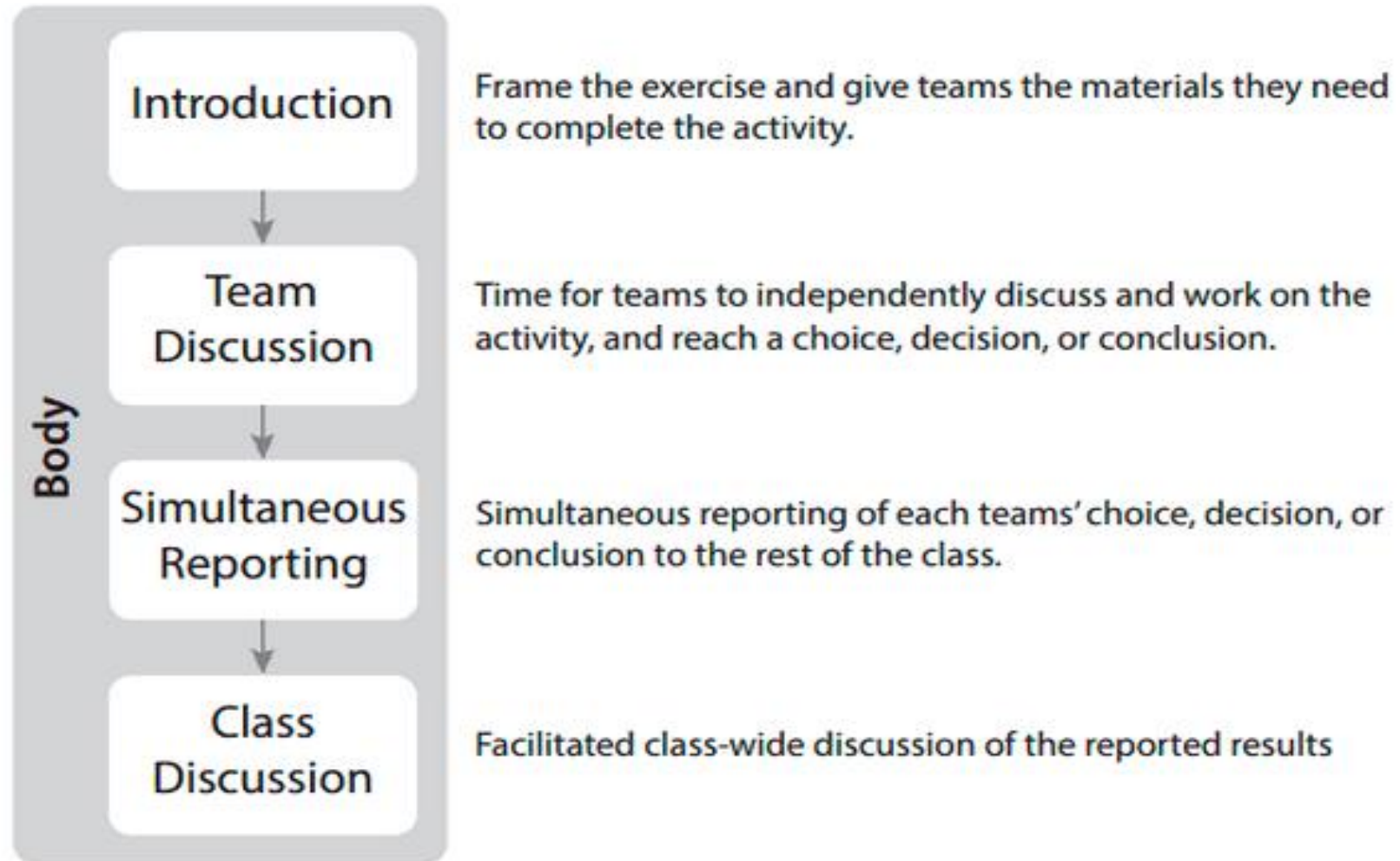
Push Pin in Map

Gallery Walk



Decisions give visible form to students thinking and use of knowledge





Structure of Application Activities



Application Exercise 3 – why does TBL Work? – 10 minutes

Which of the following is the *most* important reason that TBL works?

- A. Students receive immediate feedback in the tRATs
- B. Students work on challenging and authentic applications
- C. Students are held accountable to their teams
- D. Students are actively applying knowledge to solve problems
- E. Students are able to challenge staff and other student teams
- F. Students relate new knowledge to, and integrate it with, pre-existing knowledge (constructivist learning theory)

Reference

- Hrynychak, P. (2012). The educational theory basis of team-based learning. *Medical Teacher*, 34(10), 796–801. doi:10.3109/0142159X.2012.687120
- Van der Vleuten, C. P. M., & Driessen, E. W. (2014). What would happen to education if we take education evidence seriously? *Perspectives on Medical Education*, 3(3), 222–232. doi:10.1007/s40037-014-0129-9

Research study

- 2 Pharmacy Schools (US and UK)
- Qualitative Research
- Thematic analysis
- Benefits
- Challenges

Area of Enquiry	Emergent Themes
Experience of Previous Teaching Methods	Poor Student Engagement
Initial Perceptions of TBL	Feelings of anxiety Feelings of excitement Lack of understanding of logistics Faculty recruitment in US
Development Needs	Understanding the TBL Process Developing effective facilitation skills Writing effective application exercises
Benefits	Enhanced student engagement Peer Learning Faculty/Staff benefits Enhanced transferable skills

Area of Enquiry	Emergent Themes
Challenges	Workload Facilitating student-centred classes
Lessons Learned	Writing effective application exercises Managing the readiness assurance process Managing content Staff teamwork is key Consistency

Benefits

- Engagement
 - *The most tangible positive is 100% attendance. That's pretty impressive; you can't get that almost anyway else. Having students there is a good starting point*
 - *Absolute student engagement. When you walk in the room, [the students] are awake and they're there.*
 - *I love the engagement. The most positive thing is the ability to actually hear them reason. They think it through and you know that they've either mastered or struggled with the material before they leave the classroom. You also have that immediate assessment of where they're learning is at*

Benefits

- *Peer Learning*
 - *I hear [students] talking about the issues and teaching each other in ways that I couldn't do because it's individualized between the students*
 - *Teams are together all the time so they don't feel bad saying "well I don't understand, how did you guys get there? Show me!"*

Benefits

- Teamwork
 - *For some students it increases their ability to speak with others and come to common solutions, to have differences of opinion but then find one best answer to a problem. I think it's pivotal for healthcare providers to be able to come together with different opinions on what is best for the patient, but then come out with one solution in a relatively timely fashion.*

Challenges

- Workload
 - *Workload is substantially higher than normal lecturing*
 - *The first time [faculty] teach it's a lot of work, but the second time you have all this data on which applications went well, which didn't, how long did they took. So each year it is less work*

Challenges

- Facilitation Skills
 - *I still find myself talking too much. When you're not getting the answers you want then it's in our nature to say "let me just tell you". If [faculty] can hold back and try to get the students to get there themselves, then that's [the sign of] a really good TBL facilitator*

Challenges

- Application Exercises
 - *Coming up with applications that take a team to figure out is challenging. You want to keep [students] engaged by developing diverse types of applications and ensure they're relevant to practice*
 - *I want students to be able to justify their answers. So I'll ask a question, more often now than I did before, where I have multiple correct answers. I force [teams] to make a choice and then they have to justify their decision.*

Summary quotes

- *I really enjoy this style of teaching. I really feel that our students are grasping the concepts a lot earlier and to a deeper level. For my job satisfaction I really enjoy the way that we teach. I don't know if I could go to a school that was purely lecture-based*
- *Wherever I'm teaching, whatever I'm doing for the rest of my life I will always be, to some degree, using team-based learning*

Summary Quotes

- *I don't think we're perfect or the students are perfect or TBL's perfect, but I think it's far better for student learning, enjoyment and satisfaction, and the same for faculty. It's much more enjoyable to go into class, even though you're more vulnerable. There's more satisfaction in the interactions you have and knowing immediately that students are understanding what you're talking about and what you want them to learn.*