UNIVERSITY of BRADFORD

Motivating and engaging students in the flipped classroom

Team-Based Learning

Simon Tweddell
Senior Lecturer in Pharmacy
s.j.tweddell@bradford.ac.uk
@simontweddell

Outcomes

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

Outline

- Why TBL?
- What is TBL?
- Readiness Assurance Process
- Application exercise
- Our Experiences of TBL

Pharmacy Curriculum

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

What we liked about TBL

- Improve attendance
- Improve engagement
- Come prepared
- Benefits of small-group learning but scalable
- Accountability to self and team
- Removes passivity
- Removes anonymity

What we wanted students to do:

- Prepare
- Attend!
- Participate and engage
- Apply knowledge
- Take a deep approach to their learning
- Engage in debate
- 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

Content

Pre-class

- Individual Study
- Directed to Learning Resources

Readiness Assurance Process (RAP)

20-30% of class time

- iRAT

A Team-Based Learning Unit

Content

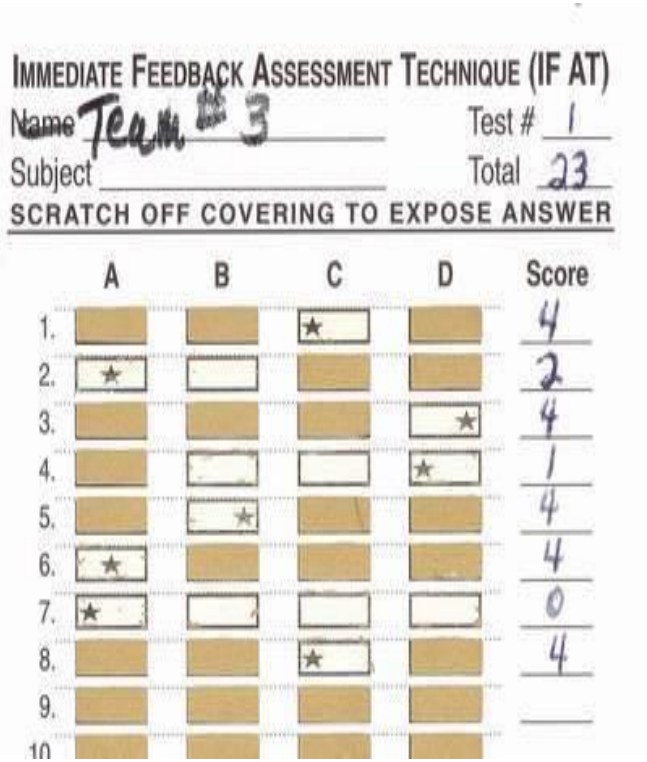
Pre-class

- Individual Study
- Directed to Learning Resources

Readiness Assurance Process (RAP)

20-30% of class time

- 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
1.			★		4
2.	★				2
3.				★	4
4.				★	1
5.		★			4
6.	★				4
7.	★				0
8.			★		4
9.					
10					

A Team-Based Learning Unit

Content

Pre-class

- Individual Study
- Directed to Learning Resources

Readiness Assurance Process (RAP)

20-30% of class time

- iRAT
- tRAT
- **Challenge**

A Team-Based Learning Unit

Content

Pre-class

- Individual Study
- Directed to Learning Resources

Readiness Assurance Process (RAP)

20-30% of class time

- iRAT
- tRAT
- Challenge
- **Feedback**

A Team-Based Learning Unit

Content

Pre-class

- Individual Study
- Directed to Learning Resources

→

Readiness Assurance Process (RAP)

20-30% of class time

- iRAT
- tRAT
- Challenge
- Feedback

→

Application Exercises

70-80% of class time

- Problem Solving
- 4S criteria
  - Significant
  - Same
  - Specific Choice
  - Simultaneous

A Team-Based Learning Unit

Content

Pre-class

- Individual Study
- Directed to Learning Resources

Readiness Assurance Process (RAP)

20-30% of class time

- iRAT
- tRAT
- Appeals
- Corrective Instruction

Application Exercises

70-80% of class time

- Problem Solving
- 4S criteria
  - Significant
  - Same
  - Specific Choice
  - Simultaneous

- Intra-team discussion
- Inter-team discussion, debate and justification

Peer Evaluation

- Formative
- Summative

Let's have a go!

- Team Formation
- Diverse Teams

Readiness Assurance Process

- iRAT
  - Complete the test
  - Closed Book
  - Individual
  - Turning Point – Session ID =
- tRAT
  - Closed book
  - Team
  - IF-ATs
- Challenge
- Feedback

1. Where should I start when preparing a TBL Unit?

A. Preparing the Student Study Guide to cover the content
B. Writing the RAT questions
C. Preparing a mini-lecture
D. Writing the application exercises
E. Writing the Unit Outcomes

2. What are the '4Ss' of effective application exercises?

A. Simple Problem, Same Problem, Significant Choice, Simultaneous Report
B. Significant Problem, Same Problem, Specific Choice, Simultaneous Report
C. Same Team, Same Topic, Simple Concepts, Sequential Report
D. Separate Teams, Similar Problems, Synchronised Reports, Significant Results
E. Specific Team, Specific Problem, Simple Choice, Sequential Reports

3. How many students should be in a team for TBL to work effectively?

A. 4 or less
B. 4 to 6
C. 5 to 7
D. 6 to 8
E. 7 to 9

Application Exercise

From your perspective as educators, 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

Our Experiences of TBL

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

UNIVERSITY of BRADFORD

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

UNIVERSITY of BRADFORD

Outcomes - Challenges

- Large scale change
- Facilitation skills
- Application exercises
  - Authentic, integrated and challenging
  - Timings
- Difficult concepts
  - Student Support Sessions
- 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

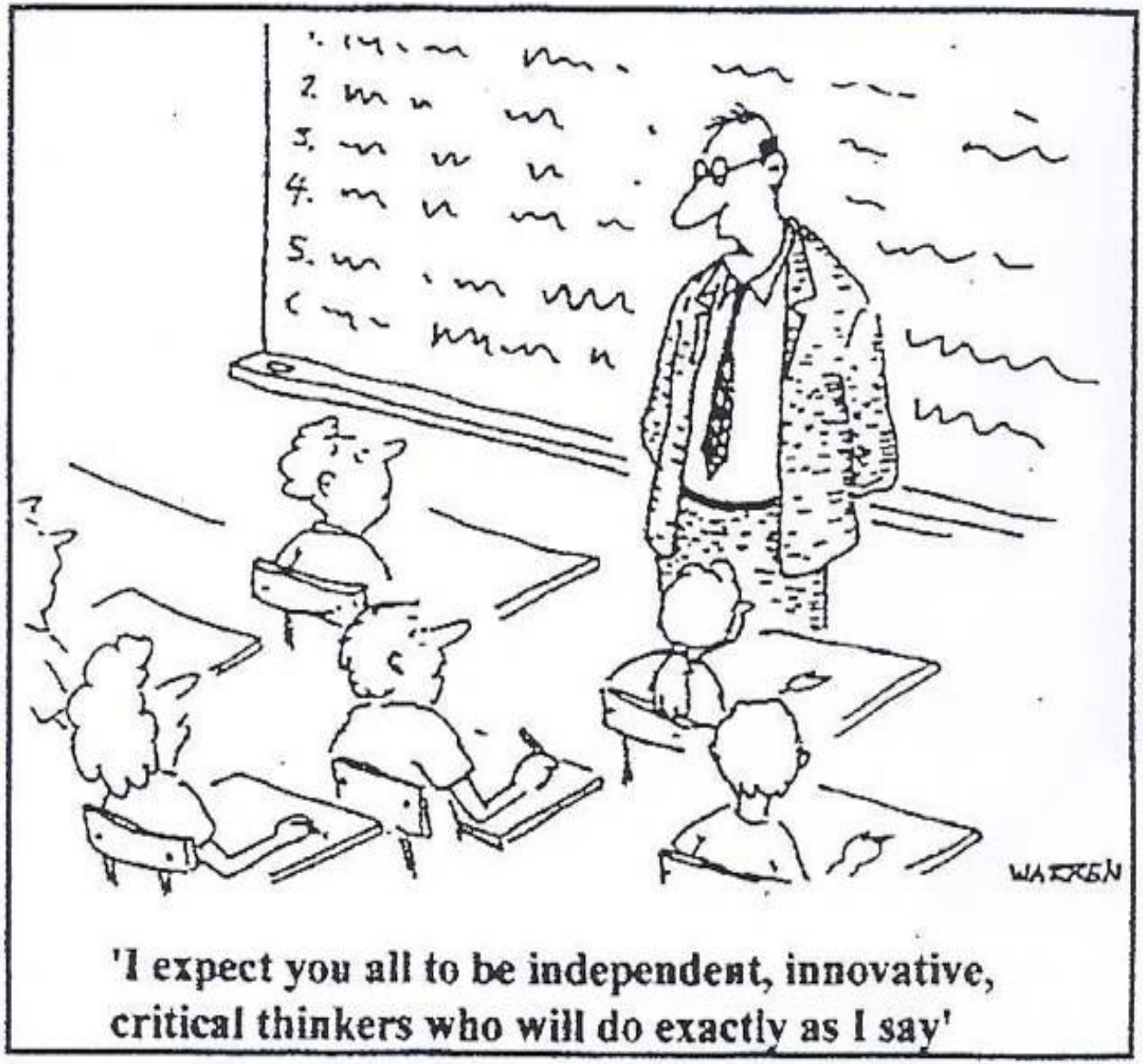
"They need to be stricter with timings, you're often waiting for everyone to finish when you could move on to the next exercise." Student

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

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



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

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

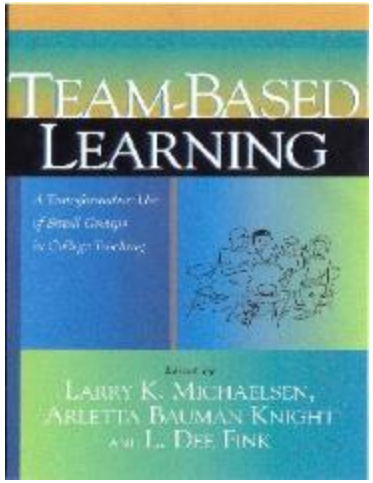
Lessons Learned

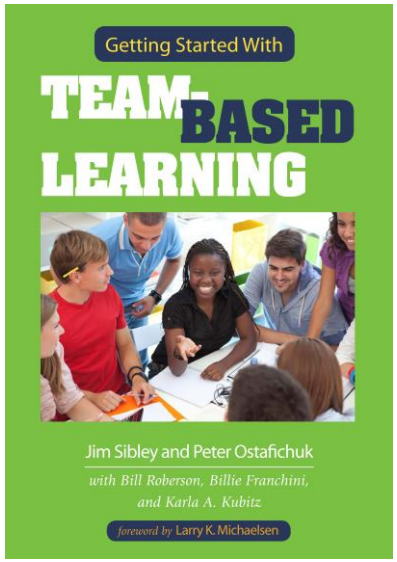
- Help and support invaluable
- Ensure you include all elements of TBL
- Majority of time should be dedicated to application
- Don't underestimate the preparation time
- Peer review of TBL resources
- Writing effective application exercises that are authentic and challenging
- Orienting students

UNIVERSITY of BRADFORD

TBLC

Team-Based Learning™ Collaborative





- References and Further Resources
  - Books (Michaelsen and Sibley)
  - TBLC
    - www.teambasedlearning.org
    - ETBLC
      - Dissemination
      - Research
      - CoP
      - Support
  - Email s.j.tweddell@bradford.ac.uk

UNIVERSITY of BRADFORD

Estates and Facilities

Estates and Facilities

Questions?

Reference

- Hrynchak, 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

- Tweddell, S., Nelson, M. and Clark, D. (2016) 'Team-based Learning in Pharmacy: The Faculty Experience', *Curr Pharm Teach Learn*, 8(1), pp. 7-17.

Research Study

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
Development Needs	Understanding the TBL Process Developing effective facilitation skills Writing effective application exercises
Benefits	Enhanced student engagement Peer Learning Faculty benefits Enhanced transferable skills

Research Study

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.*