Team-Based Learning

Develop Master Adaptive Learners in the Competency Curriculum Environment

Webinar Series **Team**

Adonis Wazir

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Applications of Learning Science

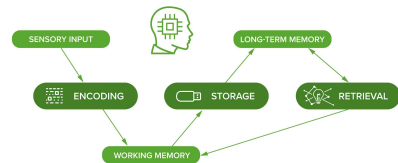Cognitive Science & Neuroscience ➡ Implementation of Effective Teaching Strategies ➡ Durable Learning

Learn it   Link it

| Interleaving | A | B | C | B | C | A | C | B | A |
| Blocking | C | C | C | A | A | A | B | B | B |

| Spacing | A | | | | | A | | | A |
| Massing | | | | | | | A | A | A |

Memory Process

SENSORY INPUT → ENCODING → WORKING MEMORY → STORAGE → LONG-TERM MEMORY → RETRIEVAL
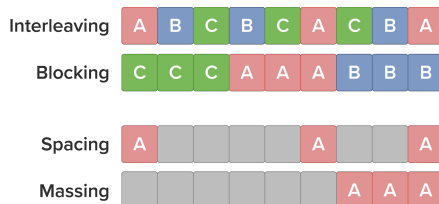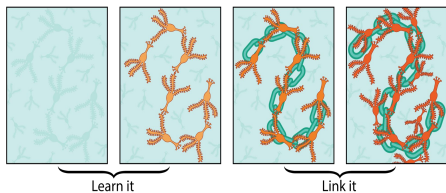
Webinar **Guest Speaker**

Charles Gullo, PhD

- Assistant Dean for Faculty Development & Associate Professor, Medical Education at TCU Burnett School of Medicine

- **Email: c.a.gullo@tcu.edu**

TCU SCHOOL *of* MEDICINE

Our mission is to transform health care by inspiring Empathetic Scholars ™.

Learning Outcomes

1. **Describe** how medical education is changing.

2. **Outline** Team-Based Learning.

3. **Define** a Master Adaptive Learner (MAL).

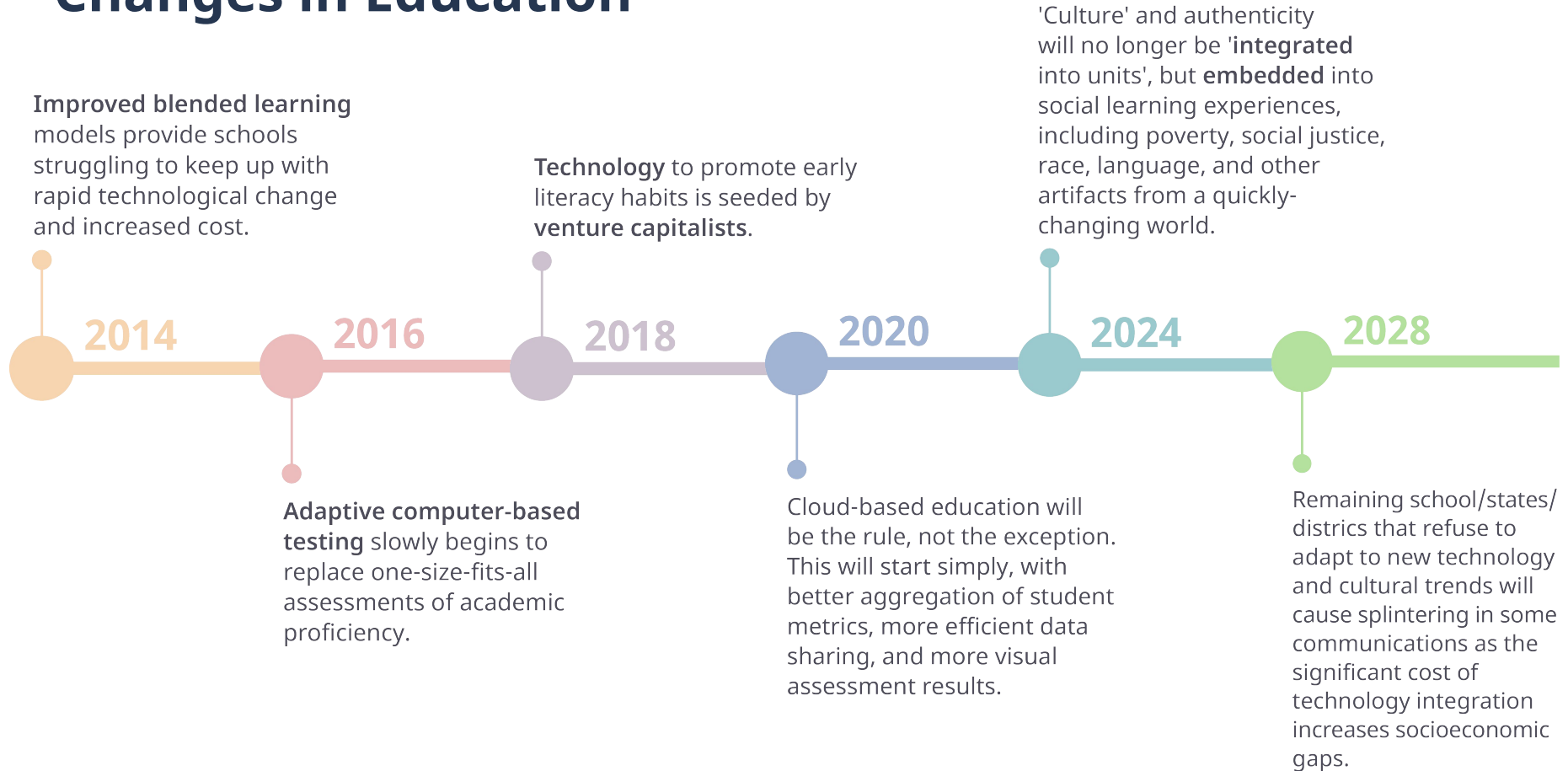4. **Explain** Competency-Based Medical Education (CBME).

5. **Discover** how TBL can be used to promote MAL & support CBME.

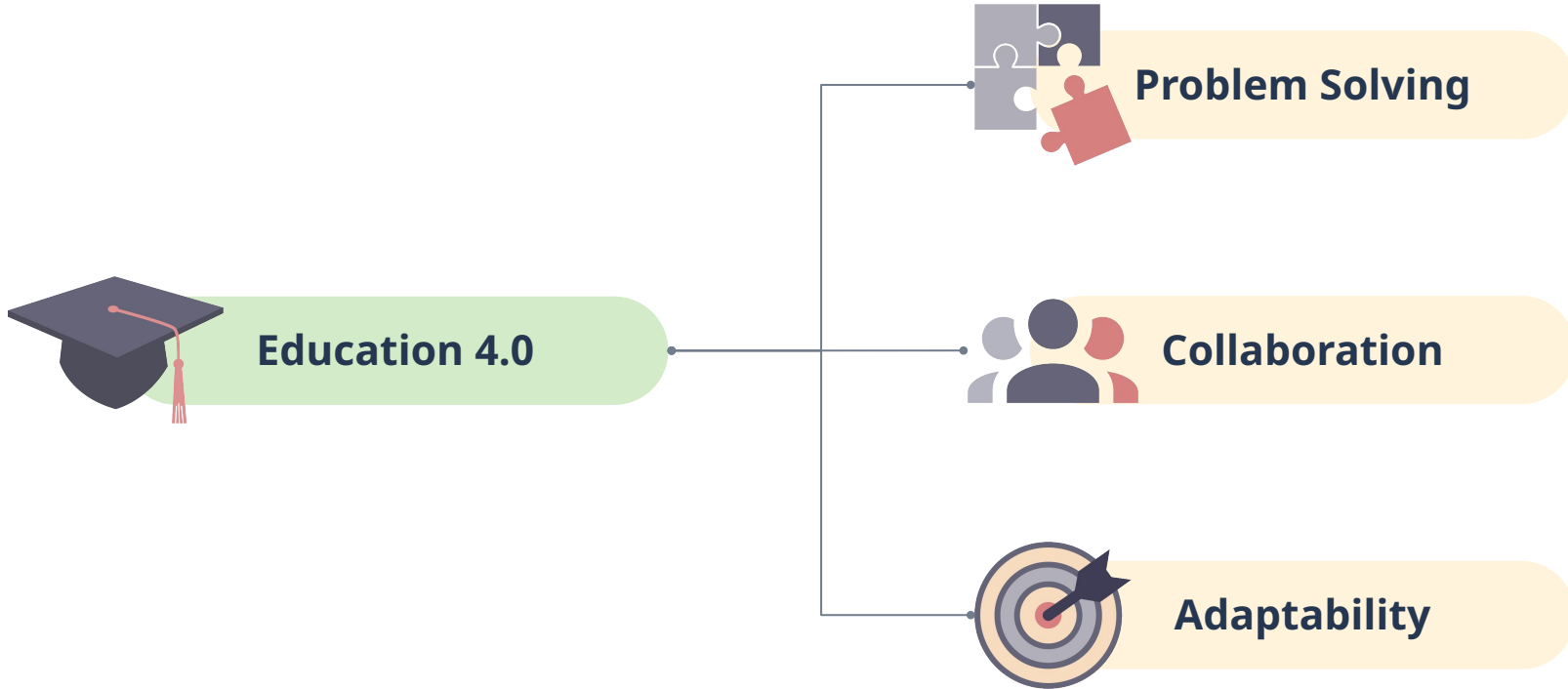# Education has dramatically changed...

- Emphasize **competence**
- Use of **Technology** – digitization
- Incorporate **active learning**
- Use of Teams/**Group work**
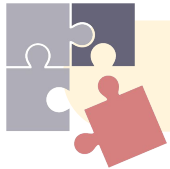- Focus on **self- directed/lifelong learning**
- Others

Changes in Education

Improved blended learning models provide schools struggling to keep up with rapid technological change and increased cost.

2014

2016

Adaptive computer-based testing slowly begins to replace one-size-fits-all assessments of academic proficiency.

Technology to promote early literacy habits is seeded by **venture capitalists**.

2018

2020

Cloud-based education will be the rule, not the exception. This will start simply, with better aggregation of student metrics, more efficient data sharing, and more visual assessment results.

'Culture' and authenticity will no longer be '**integrated** into units', but **embedded** into social learning experiences, including poverty, social justice, race, language, and other artifacts from a quickly-changing world.

2024

2028

Remaining school/states/districs that refuse to adapt to new technology and cultural trends will cause splintering in some communications as the significant cost of technology integration increases socioeconomic gaps.

The Reskilling Revolution-World Economic Forum

Education 4.0

Problem Solving

Collaboration

Adaptability

The Reskilling Revolution-World Economic Forum

Problem Solving

Additional skills developed: creativity, data analysis, perseverance, critical-thinking

- ○ Approaches problems with curiosity
- ○ Studies situation to identify root cause
- ○ Brainstorms potential solutions and tests on small scale
- ○ Reviews outcomes, scales up, keeps monitoring

The Reskilling Revolution-World Economic Forum

Collaboration

Additional skills developed:
communication, persuasion, conflict resolution, task management

- Is influential with and influenced by good data
- Willing to change mind when confronted with new evidence
- Able to build relationships with anyone
- Acts quickly to lower tension and resolve conflicts
- Communicates respectfully and listens actively

The Reskilling Revolution-World Economic Forum
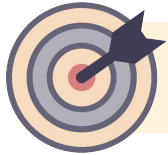
Adaptability

Additional skills developed: resilience, buoyancy, self-regulation, goal-setting

- Shows comfort with uncertainty, sudden changes, unfamiliarity
- Makes decisions and develops solutions under pressure
- Shifts seamlessly from following to leading
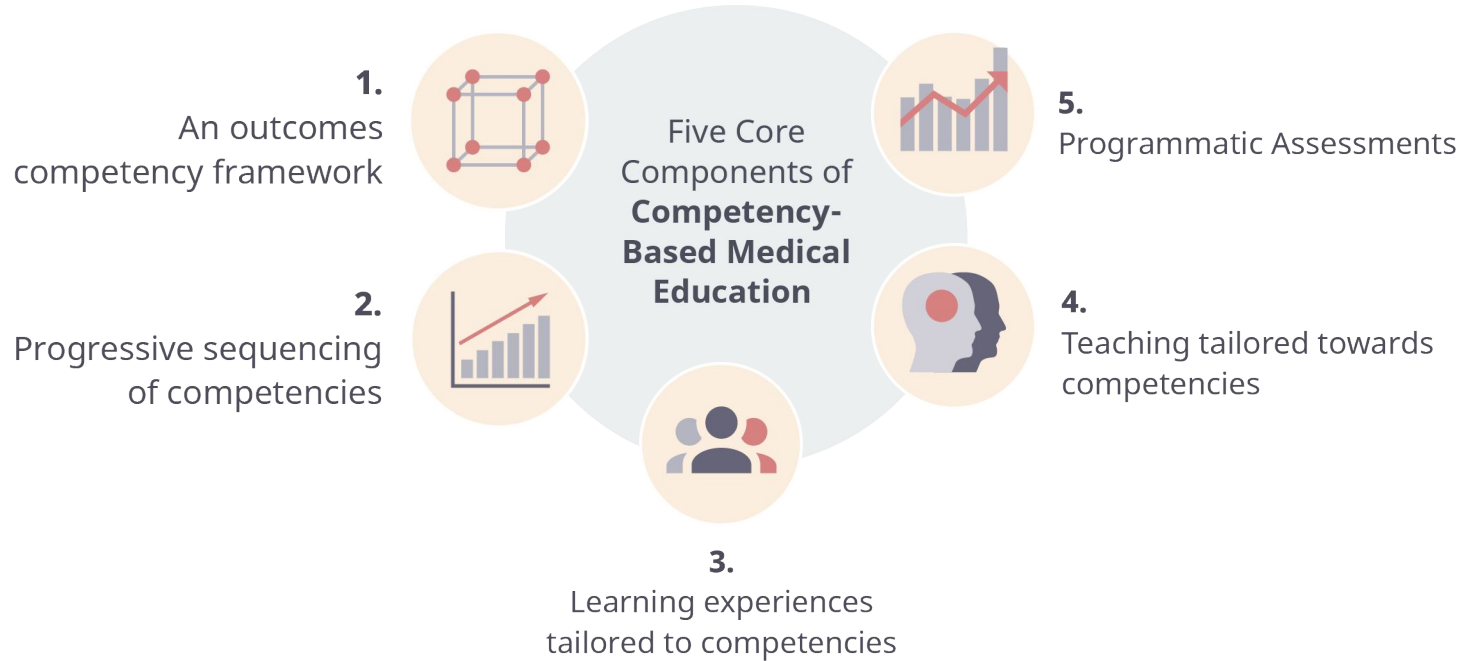- Welcomes opportunities to learn new topics, master new skills

How familiar are you with the concept of Competency-Based Medical Education?

A.   Unfamiliar (Not very much at all)

B.   Slightly familiar (I know a little bit about it)

C.   Familiar (I know a fair amount)

D.   Very familiar (I live and breathe it daily)

POLL

1

CBME

1.
An outcomes competency framework

2.
Progressive sequencing of competencies

Five Core Components of **Competency-Based Medical Education**

5.
Programmatic Assessments

4.
Teaching tailored towards competencies

3.
Learning experiences tailored to competencies

1.   Five core components of CBME [Internet]. International Competency-based Medical Education | FIVE CORE Components of CBME. [cited 2023Feb13]. Available from: https://gocbme.org/icbme-site/five-core.html

Time-Based vs. Competency-Based Medical Education

Time-Based Medical Education	Competency-Based Medical Education
Assessment of trainees' knowledge to determine professional competency	Assessment of trainees' knowledge, skills and problem solving to determine professional competency
One-size-fits-all approach to learning	Personalized learning plans
Trainees learning mainly occurs during clinical rotations only	Trainees gain skills to continue self-regulated lifelong learning
Trainees may or may not independently seek out informal mentors	Trainees formally paired with an academic coach who guides the trainee's process
Trainees evaluated with one global, non-specific end of rotation evaluation	Trainees evaluated with multiple low-stakes assessments throughout the rotation
Underperforming trainees may still pass due to "failure to fail"	Underperforming trainees more likely to be identified and provided with remediation opportunities

1. Competency-based Medical Education: A new era of residency training for ... [Internet]. [cited 2023Feb13]. Available from: https://dailynews.ascopubs.org/do/competency-based-medical-education-new-era-residency-training-medical-oncologists

How familiar are you with the Master Adaptive Learner Framework?

A. Unfamiliar (Not very much at all)

B. Slightly familiar (I know a little bit about it)

C. Familiar (I know a fair amount)

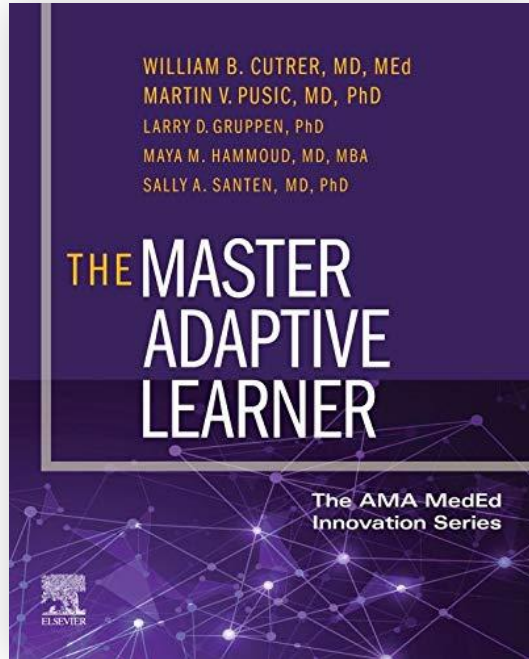D. Very familiar (I live and breathe it daily)

POLL

2

Definition

Master Adaptive Learner (MAL)

- Master adaptive learners (MALs) are **resilient, self-regulated** learners who continue to discover and improve their skills and knowledge.

1. Cutrer WB, Atkinson HG, Friedman E, Deiorio N, Gruppen LD, Dekhtyar M, et al. Exploring the characteristics and context that allow Master Adaptive Learners to thrive. Med Teach [Internet]. 2018 Aug 3 [cited 2023 Feb 1];40(8):791–6. Available from: https://doi.org/10.1080/0142159X.2018.1484560
2. Envisioning the Master Adaptive Learner [Internet]. American Medical Association. 2023 [cited 2023 Feb 1]. Available from: https://www.ama-assn.org/education/accelerating-change-medical-education/envisioning-master-adaptive-learner

Master Adaptive Learner

1 Clinician must be a **lifelong learner**

2 Must be a **resilient learner**

3 Novice – Advanced – Competent – Proficient – Expert – Adaptive Expert (Dreyfus Model)

4 Includes coaching model

5 Learning emphasizes understanding

Definition

Team-Based Learning

- Students join **teams** to collaborate and work through problems.

- TBL engages student knowledge through **individual testing** and **group collaboration**.

The History of Team-Based Learning (TBL)

- Originated in 1979 – Larry Michaelson (Univ. of Oklahoma)

- Small group learning for large classrooms

- **Baylor College of Med. 2000 (Published 1st)**
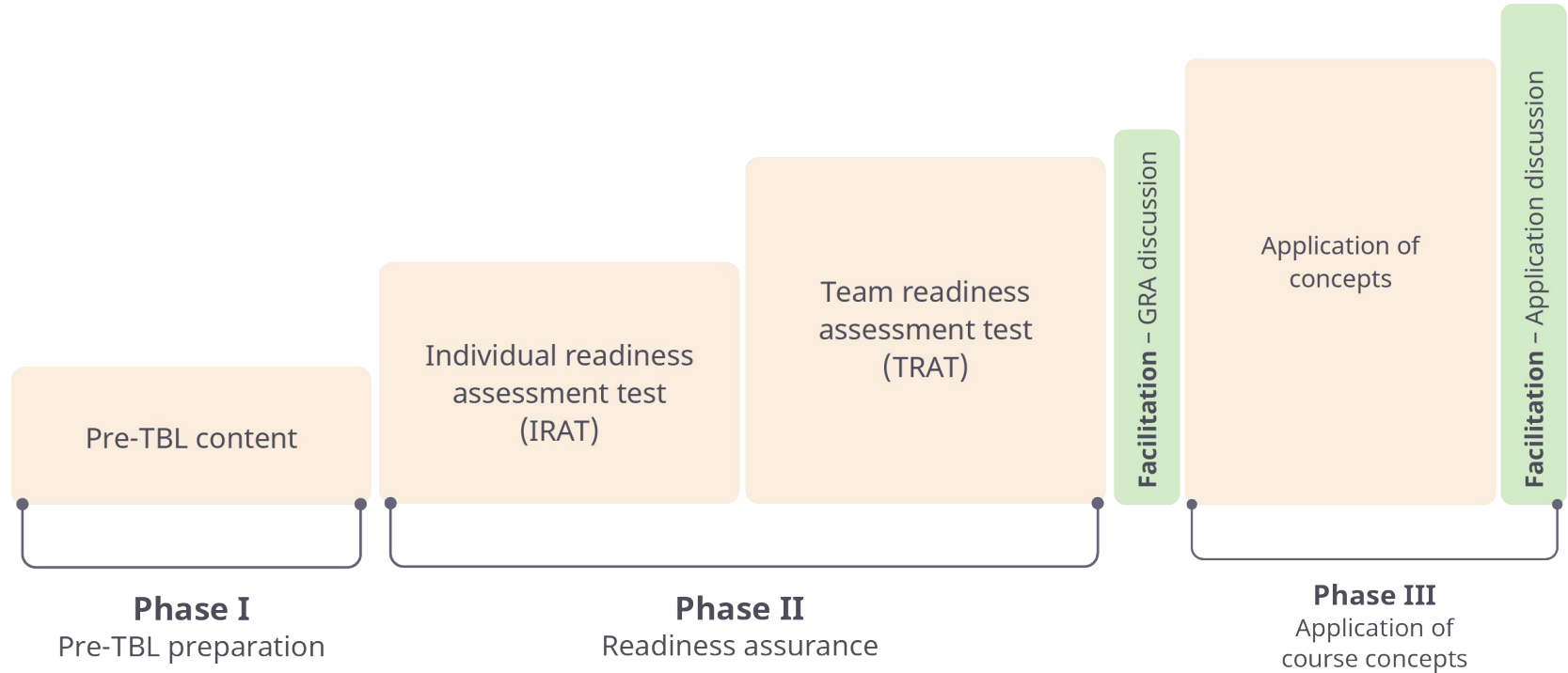 TBL used by 25% or more medical schools (Allied health too)

Discussion Question

TBL is mostly used in small group learning for large classrooms.

What was the biggest number of students you had in your classes and what challenges did you face?

Share your thoughts in the *chat.*

The Phases of Team-Based Learning

Pre-TBL content

Individual readiness assessment test (IRAT)

Team readiness assessment test (TRAT)

Facilitation – GRA discussion

Application of concepts

Facilitation – Application discussion

Phase I
Pre-TBL preparation

Phase II
Readiness assurance

Phase III
Application of course concepts

1. Gullo C, Ha TC, Cook S. Twelve tips for facilitating team-based learning. Med Teach. 2015;37(9):819-24. doi: 10.3109/0142159X.2014.1001729. PMID: 25665624; PMCID: PMC4776725

Phase I: Pre-TBL Preparation

1 Relevant materials are assigned

2 Students read or watch videos before class

3 Students are aware of accountability

Phase II: Readiness Assurance

1. **First, students are assessed on their individual understanding** of the materials via an Individual Readiness Assessment Test (IRAT); the IRAT may occur before class meets.

2. **Then, teams are assessed** via a Team Readiness Assessment Test (TRAT)
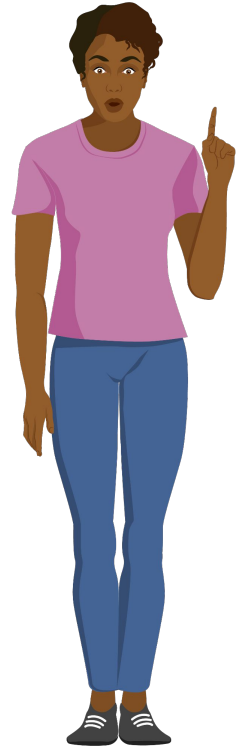
Facilitation: GRA Discussion

Facilitation takes place *after* (not *during*) the team readiness assurance test (TRAT).

- Addressing misunderstandings rather than presenting content
- **Assimilative learning:** the process of incorporating new information into existing knowledge structures (Seel 2012)
- **Transformative learning:** the process of altering existing knowledge structures through critical thought (Mezirow 1991).
- **Elaborative Interrogation Technique:** an effective learning methodology (Dunlosky et al. 2013)
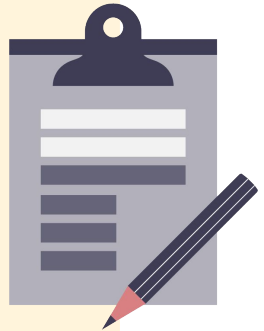
Phase III: Application of Course Concepts

1 Significant problem

2 Same problem
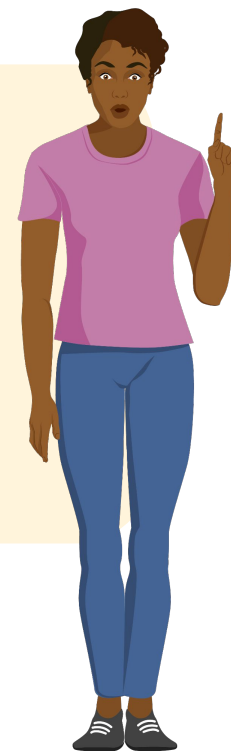
3 Specific choice

4 Simultaneous Report

Facilitation: Application Discussion

- Plan your time: discussion time = application time
- **Listen 90%, talk 10%**
- Find the **student expert** in the room
- Wait for students to respond to questions
- Provide time for closure

Medical School TBL Example - Immunology

Pre assigned videos - Immunology content (15 min x 4)

RAT   Total time - 1 - 2 hour(s)
IRAT quiz - 10 questions (Closed book)
TRAT quiz - 10 questions

Facilitated Discussion for RAT

AE   Total time 2 - 3 hours
Team questions - 1.5 hours (Open book)

Facilitated Discussion for AE

Wrap-up or mini lecture (optional)

TBL Challenges

1 Getting faculty buy-in

2 Keeping learners engaged and accountable

3 Drawing out the answers from the class

4 Prevent interruption of learning - desirable difficulty

TBL Best Practices and Evidence of Effectiveness

- **Original Publication:** Larry K. Michaelsen Team learning in large classes. New Directions for Teaching and Learning Volume 1983, Issue 14, pages 13–22, June 1983

- **TBL in Medicine:** Haidet P, O'Malley KJ, Richards B. An initial experience with "team learning" in medical education. Acad Med. 2002 Jan;77(1):40-4. doi: 10.1097/00001888-200201000-00009. PMID: 11788321.

- **Overview Team learning:** McMahon, K.K. (2010), "Team-Based Learning", in An Introduction to Medical Teaching (ed. William b. Jeffries and Kathryn N. Huggett) Springer, Heidelberg, Germany, pp 55-64.

- **TBL Team Selection:** Michaelsen, L. K., Black, R. H. (1994) Building learning teams: The key to harnessing the power of small group in higher education. In S. Kadel, & J. Keehner,(eds.), Collaborative Learning: A Sourcebook for Higher Education, Vol. 2. State College, PA: National Center for Teaching, Learning and Assessment.

- **Implementation TBL:** Thompson, B. M et al. (2007) "Factors Influencing Implementation of Team-Based Learning in Health Sciences Education". Academic Medicine, Volume 82(10) Suppl, pp S53-S56.

Summary

The correct implementation of TBL strategies allow **maximal participation** and **optimal learning** in a safe yet stimulating environment.

Key Takeaways

- Education and educational practices have dramatically changed and will continue to change.

- The **Master Adaptive Learner Framework** is designed to meet the needs of our future doctors

- **CBME** supports learner progression for Novice to Master Clinician.

- **TBL** allows the development of important learning skills including: problem-solving, collaboration, and adaptability.

Q&A Session

Team-Based Learning Collaborative

The **TBLC** is a non-profit organization of educators and other professionals from around the world who encourage and support the use of team-based learning in all levels of training and education.

TBLC 2023 Annual Meeting
Engaging with TBL

TBLCmeeting.org
Orlando, Florida (USA)
March 11-14, 2023

Post-Event Handouts

WORKSHEET FOR HEALTHCARE EDUCATORS

Learning Science

Team-Based Learning

Lesson Plan Outline

Lecturio
www.lecturio.com

The Plan	Details
Topic	
Learning objectives	
Main task, problem, or case that will be presented	

Before Class	
Pre-work for students (e.g. links, videos, other content)	
Materials to be available during class for reference (e.g. links, books, printed materials)	
Individual readiness (e.g. online quiz before class)	

Important Post-event Information

- **Follow-Up:** We will share the TBL **handout** along with our follow-up **survey**, which we encourage you to complete.

- **Certificates:** An attendance certificate for the seminar can be requested on the survey form.

- **Summary Document:** A summary document of key strategies, including implementation tips and key points will be sent to all participants next week.

Are You Interested in Our Future Events?

Nursing Educator Webinar – Save the Date!

Key strategies for preparing your students for the Next Gen NCLEX

Prof. Rhonda Lawes, Ph.D., R.N.

Wednesday, March 29
9:00 PST | 12:00 EST | 18:00 CET

Durable Learning Seminar - Save the Date!

Coaching for Health Professions Education

Dr. Louise Jones, Ph.D., M.Ed.

Wednesday, April 5
09:00 PST | 12:00 EST | 18:00 CET

Implementing TBL With Lecturio

Evidence on **why** and **how** TBL works

Platform Demo Session

Team-Based Learning

Join our free 30-minute demonstration session to learn how you can use Lecturio to **implement TBL in your courses**.

If interested, please stay in the Zoom meeting. Our facilitator will be with you shortly.

Demo **Facilitator**

Adonis Wazir, MD

- Medical Education Consultant, Learning Science team, Lecturio

- **Email: adonis.wazir@lecturio.de**

Why use TBL?

1   Accommodates high student-to-teacher ratios (large classes)

2   Better academic scores, knowledge, and skills

3   Higher student motivation, engagement, satisfaction, and self-directed learning

4   Enhanced clinical outcomes and better patient care

1.   Joshi T, Budhathoki P, Adhikari A, Poudel A, Raut S, Shrestha DB. Team-Based Learning Among Health Care Professionals: A Systematic Review. Cureus. 2022 Jan 14;14(1):e21252. doi: 10.7759/cureus.21252. PMID: 35178311; PMCID: PMC8842312.

2.   Improvements in ICU simulation through collaborative training of medical and nursing students. Milzman D, Campbell M, Compton P, Frenkel S, Sharp A, Thompson W. Crit Care Med. 2013;41:28–29.

3.   The effectiveness of team-based learning in nursing education: a systematic review. Alberti S, Motta P, Ferri P, Bonetti L. Nurse Educ Today. 2021;97:104721.

Thank you for joining!

Contact us:
learning-science@lecturio.de