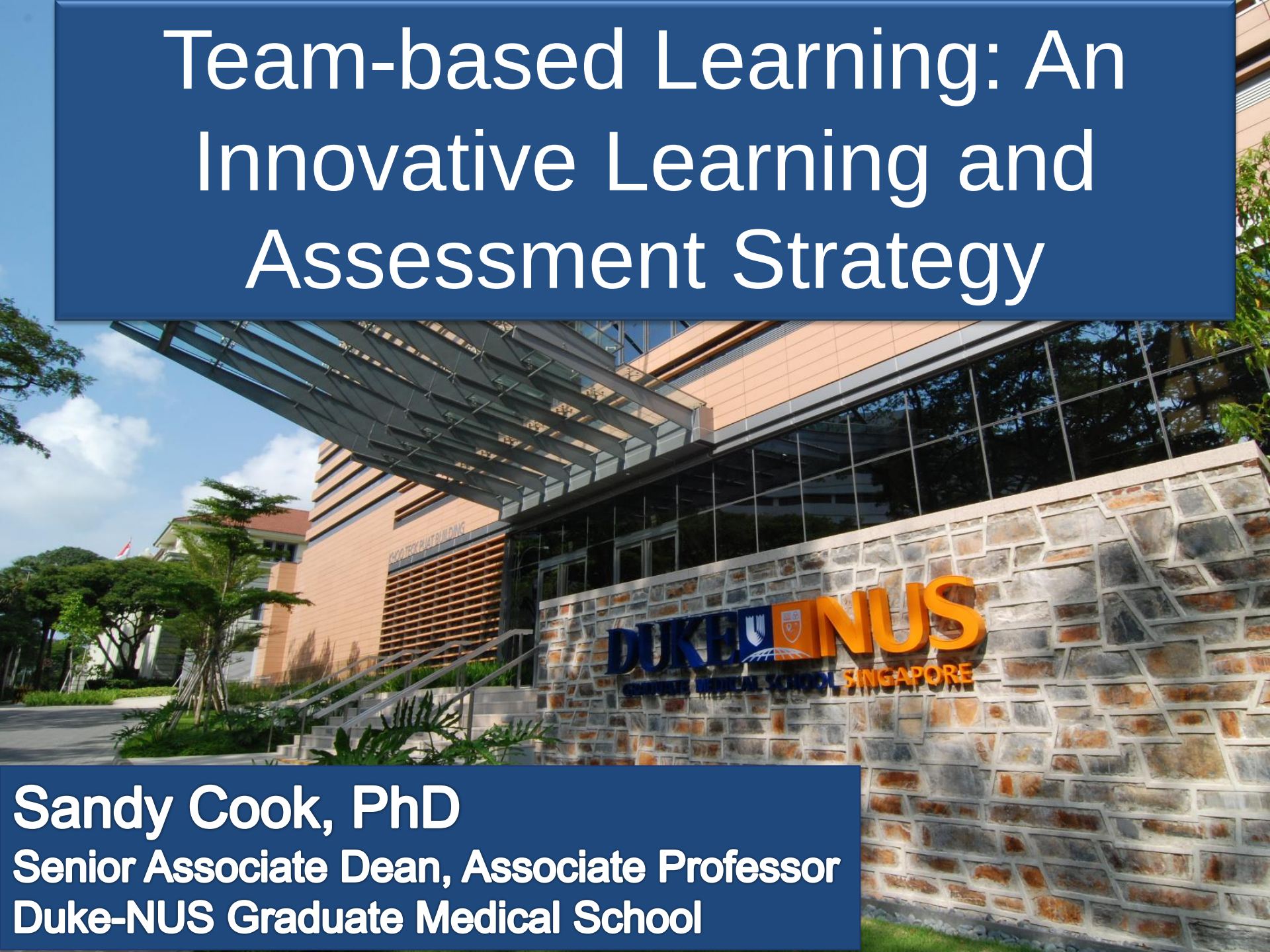
Team-based Learning: An Innovative Learning and Assessment Strategy



Sandy Cook, PhD
Senior Associate Dean, Associate Professor
Duke-NUS Graduate Medical School

Students have changed

Retention: 1st 10 mins: 70%
last 10 mins: 20%
(McKeachie, 1986)

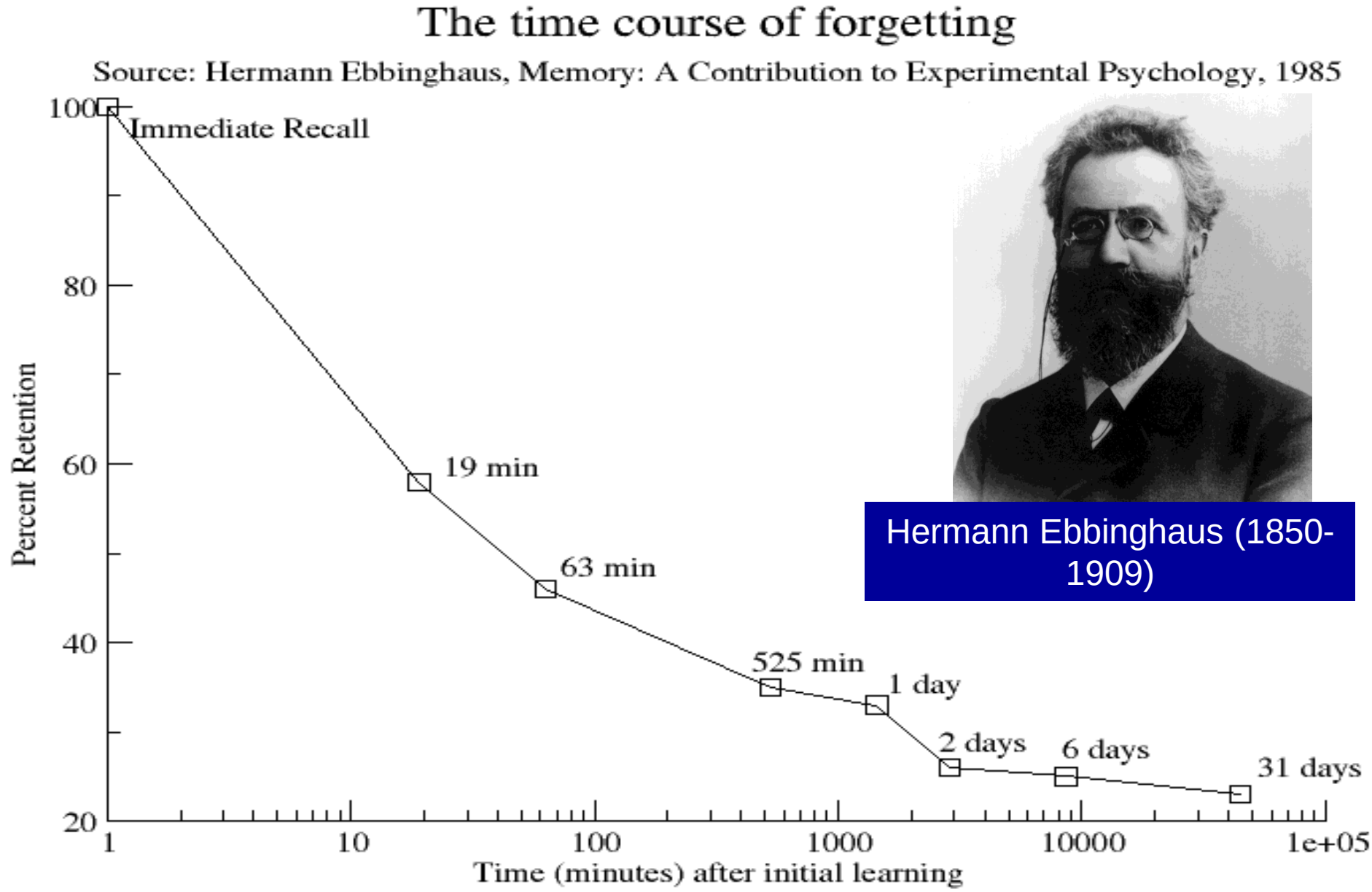
Paying attention: 40%
(Pollio 1984)

Patient care is a team effort

15,000 to 17,000

15,000-17,000
medical journals!!!

Forgetting curve



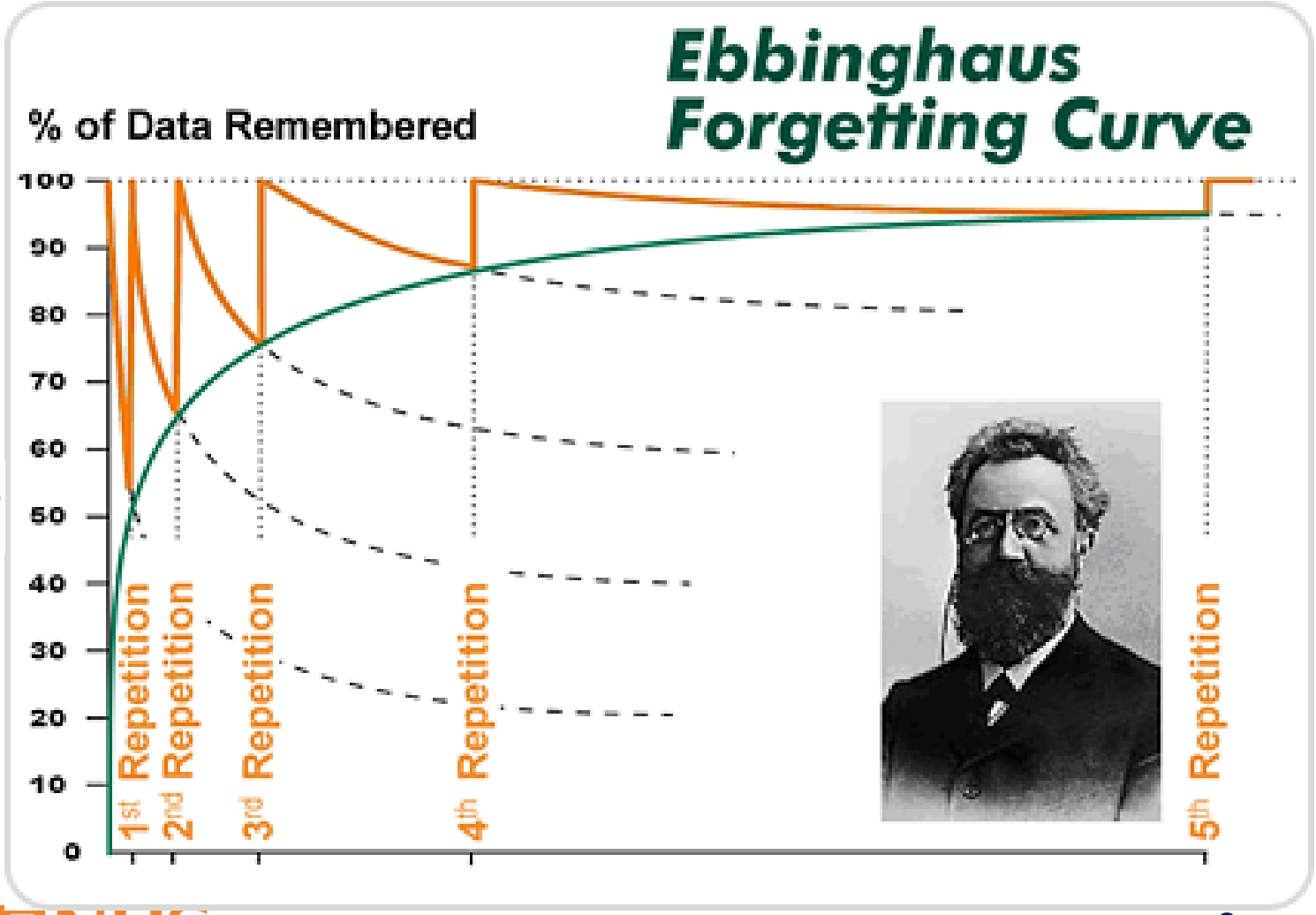
Hermann Ebbinghaus (1850-1909)

Studies of Learning and Forgetting

Ebbinghaus, *Über das Gedächtnis (About memory)*, 1885

Retention, is exponentially related to time, t, and strength, S:

$$R = e^{-\frac{t}{S}}$$

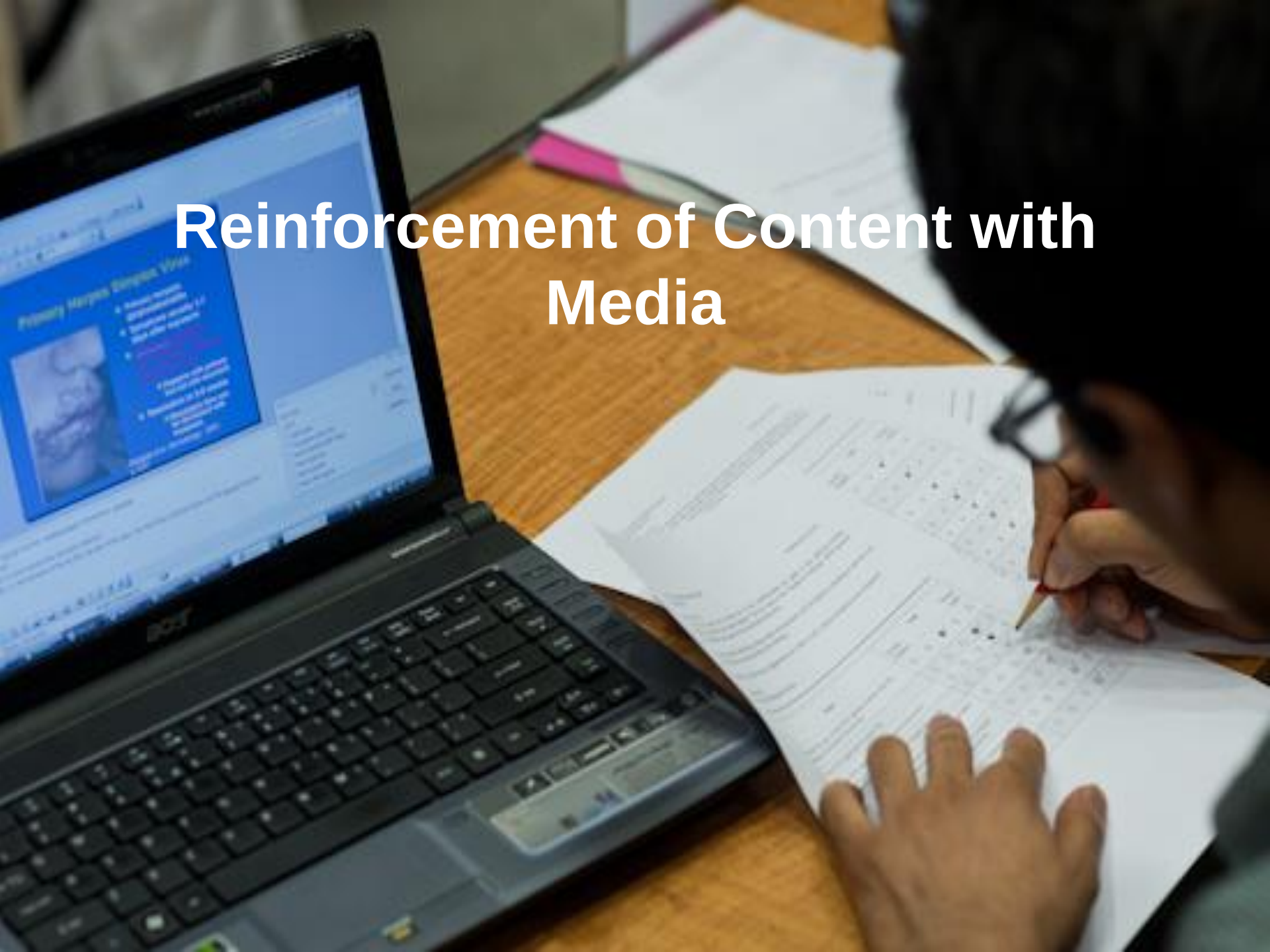


Cognitive Learning Theory

- Learning is not transfer of info into an empty vessel

What Faculty Wanted

Engaged Students - Asking Questions



Reinforcement of Content with Media

Teamwork, Creative and Critical Thinking

- **Efficient use of Faculty time**

Learning as Fun

Our Instructional Strategy:

→ **TeamLEAD**

(Learn, Engage, Apply, Develop)

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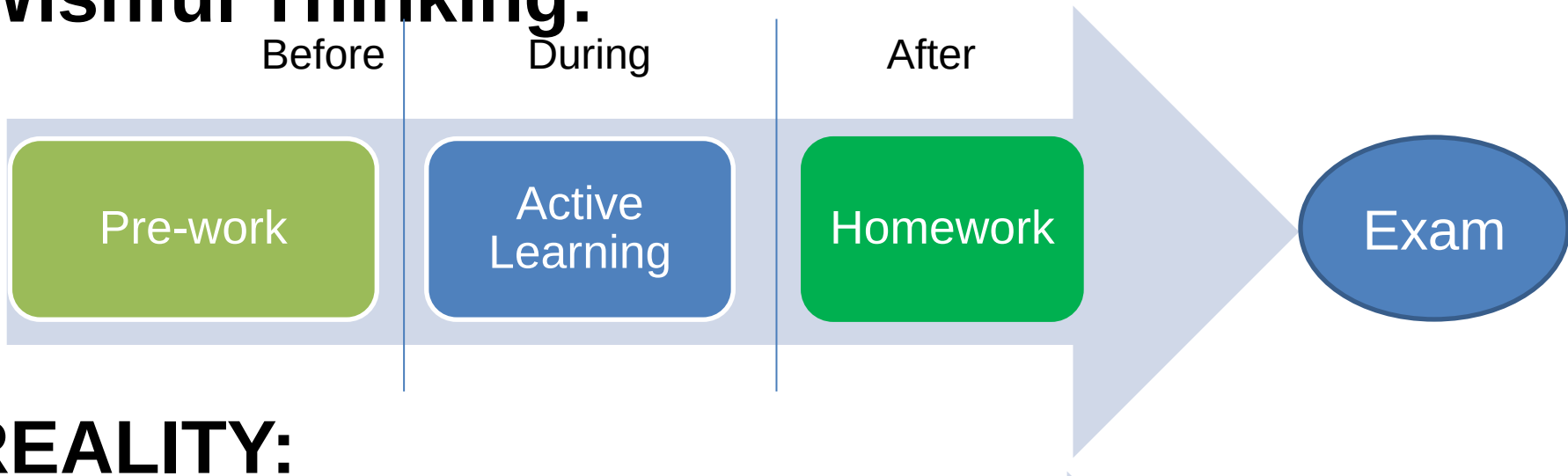
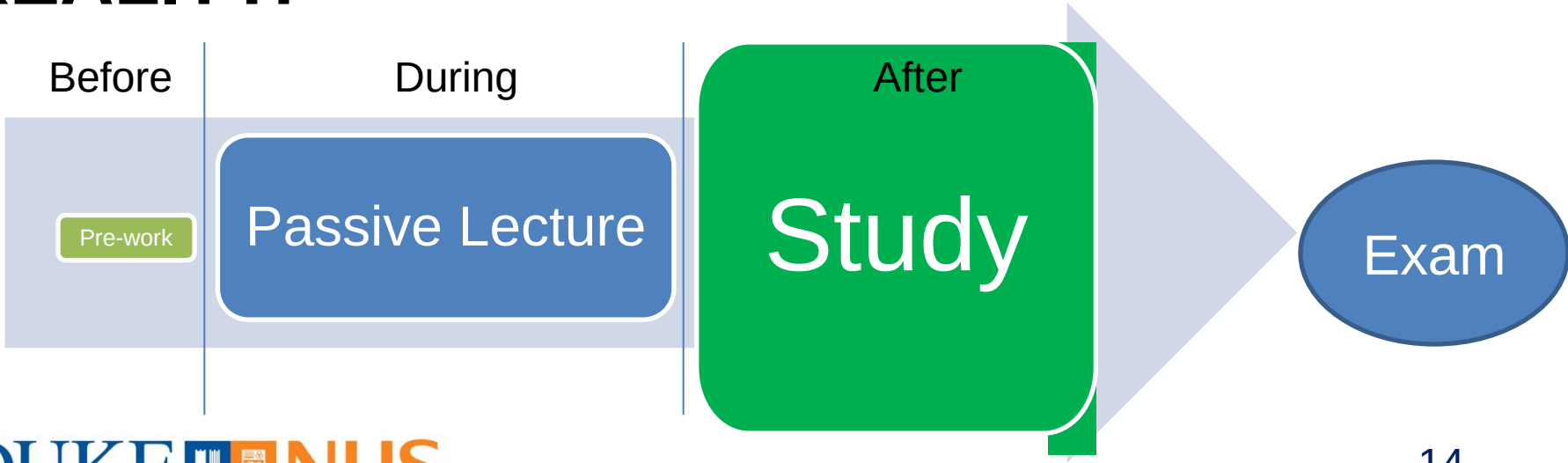
TRADITIONAL

Wishful Thinking:



REALITY:



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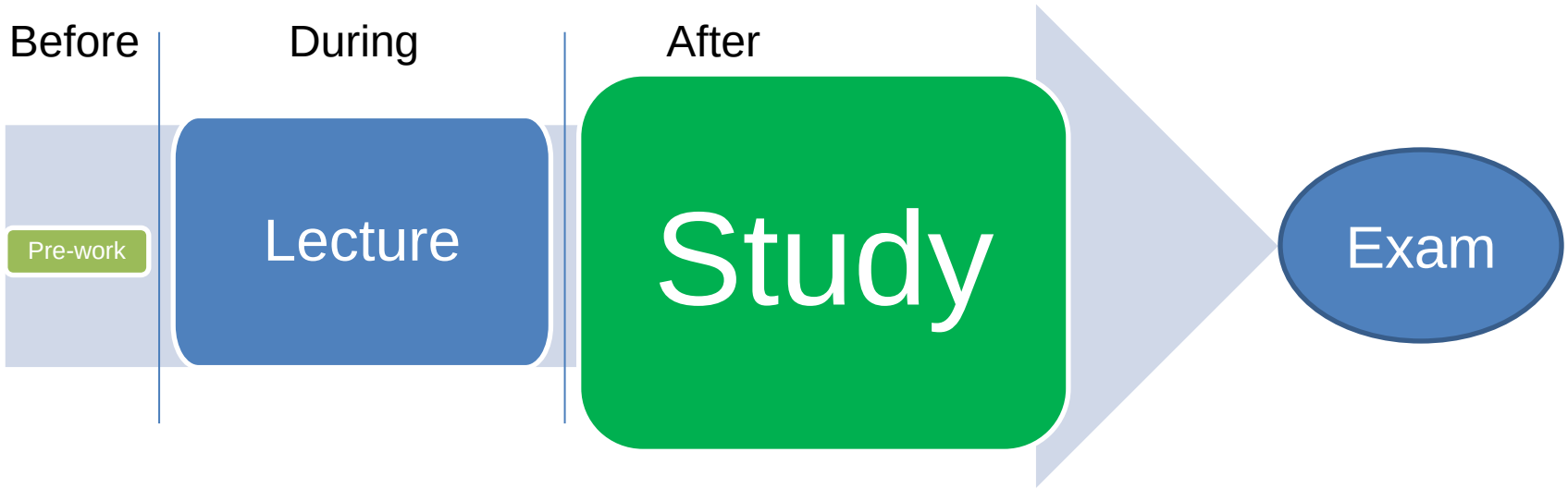
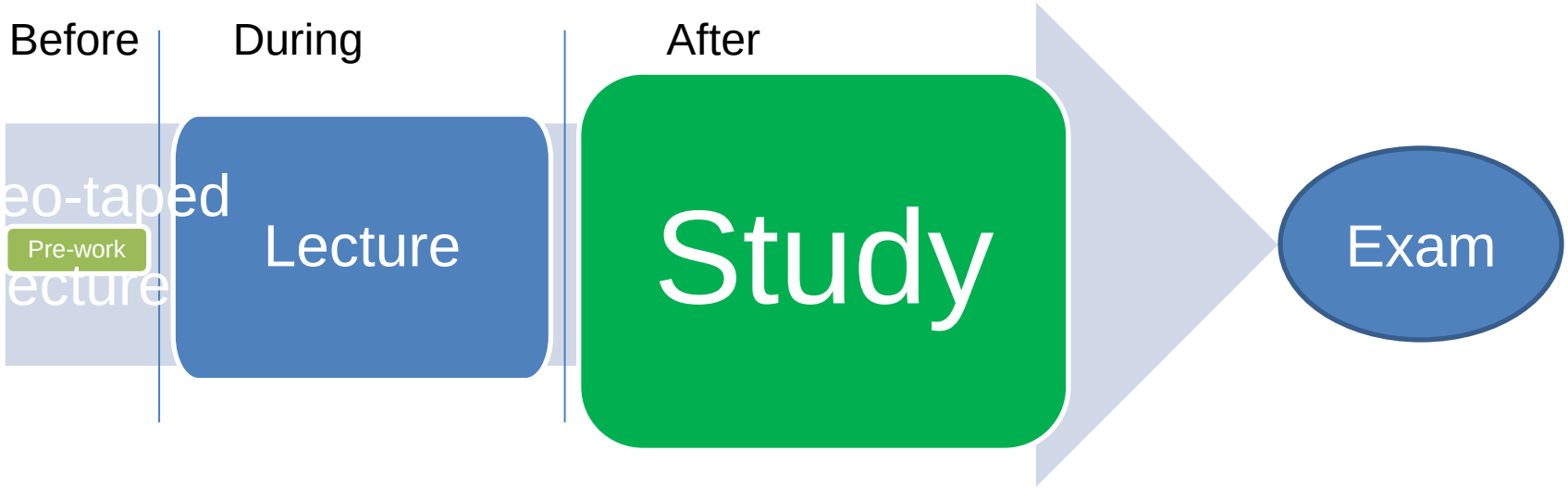
Traditional Reality:



TeamLEAD:



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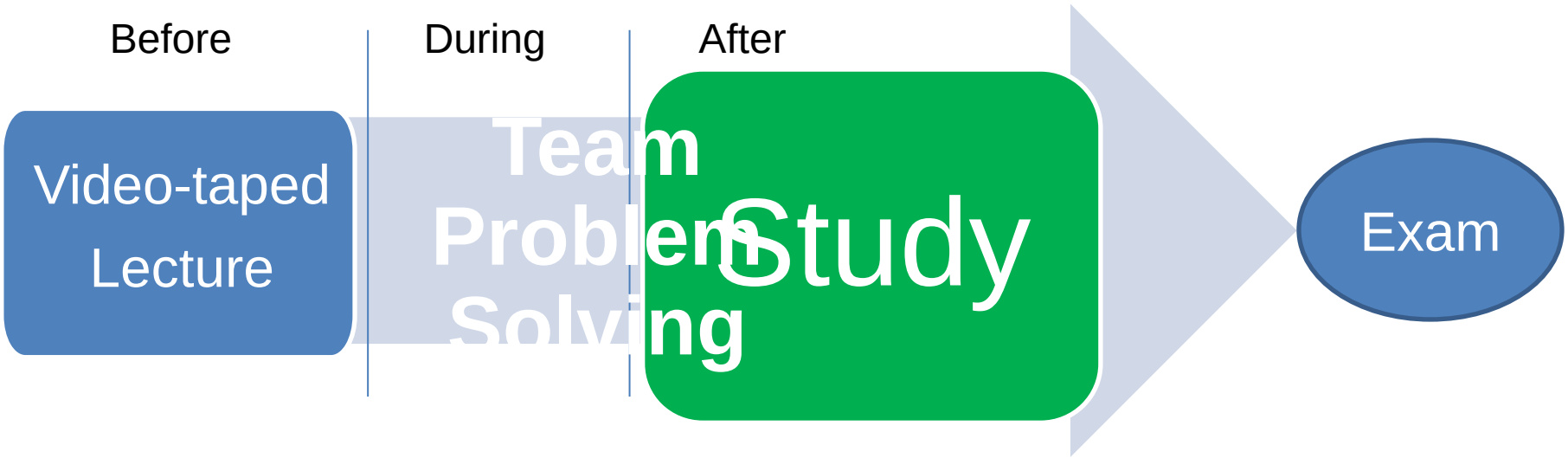
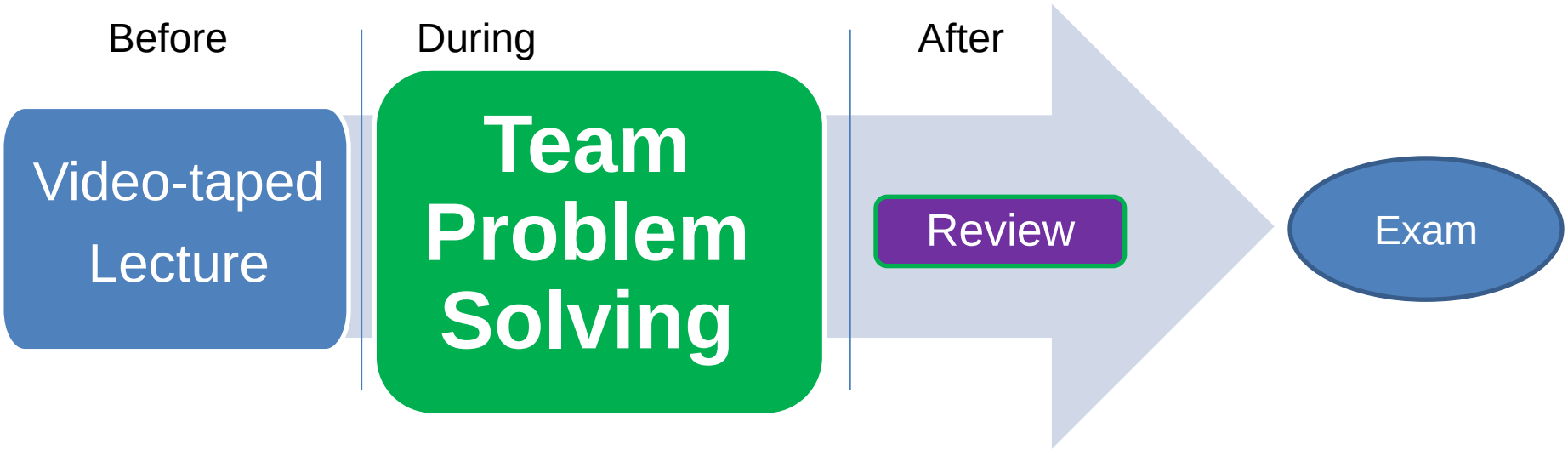
TeamLEAD:


Before
During
After
Video-taped Lecture
Team Problem Solving
Study
Exam

TeamLEAD:



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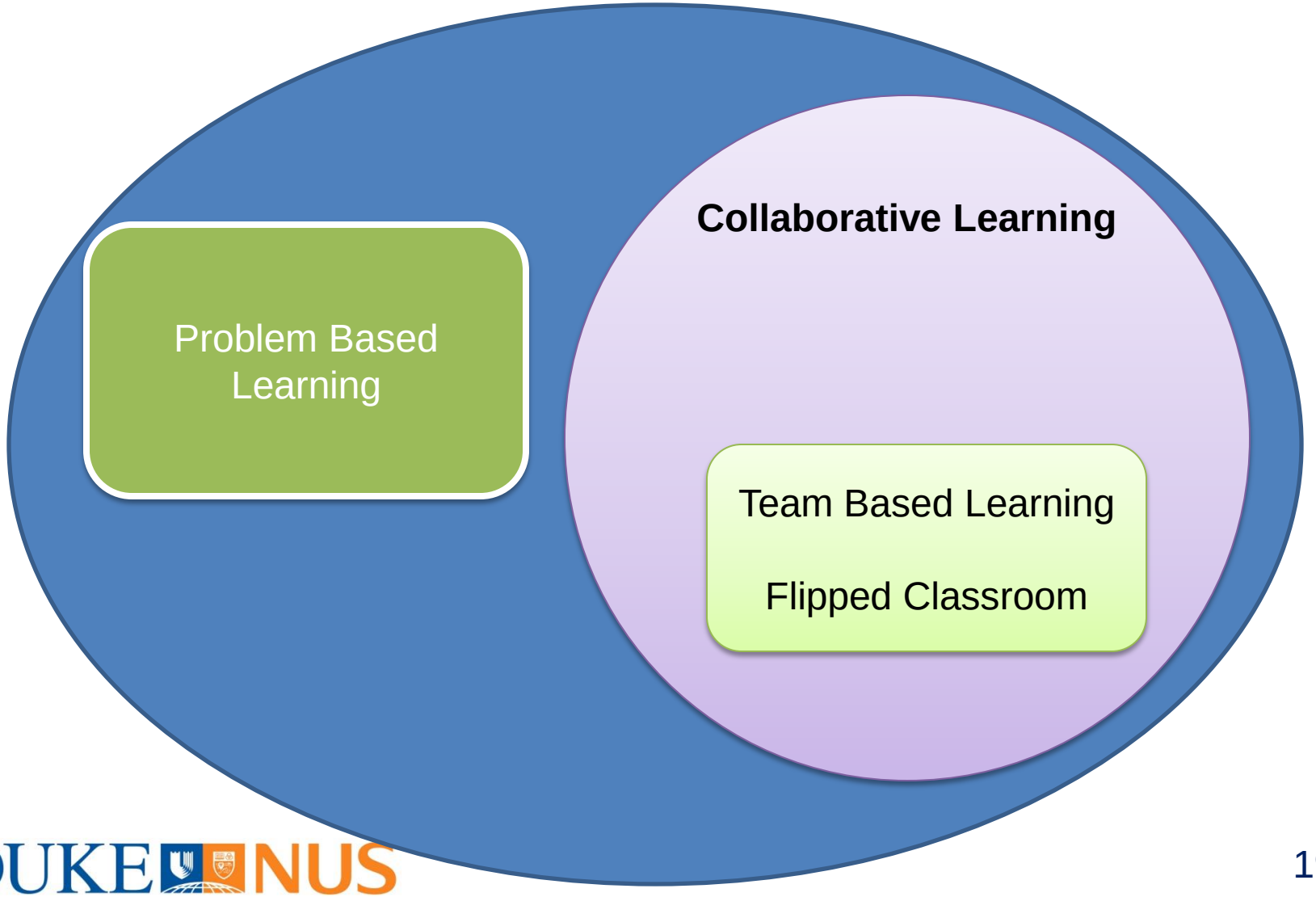
Group/Team Learning



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Definition

Team-Based Learning TBL© is a teacher-directed strategy for incorporating **small-group active participation in large-group educational settings**.

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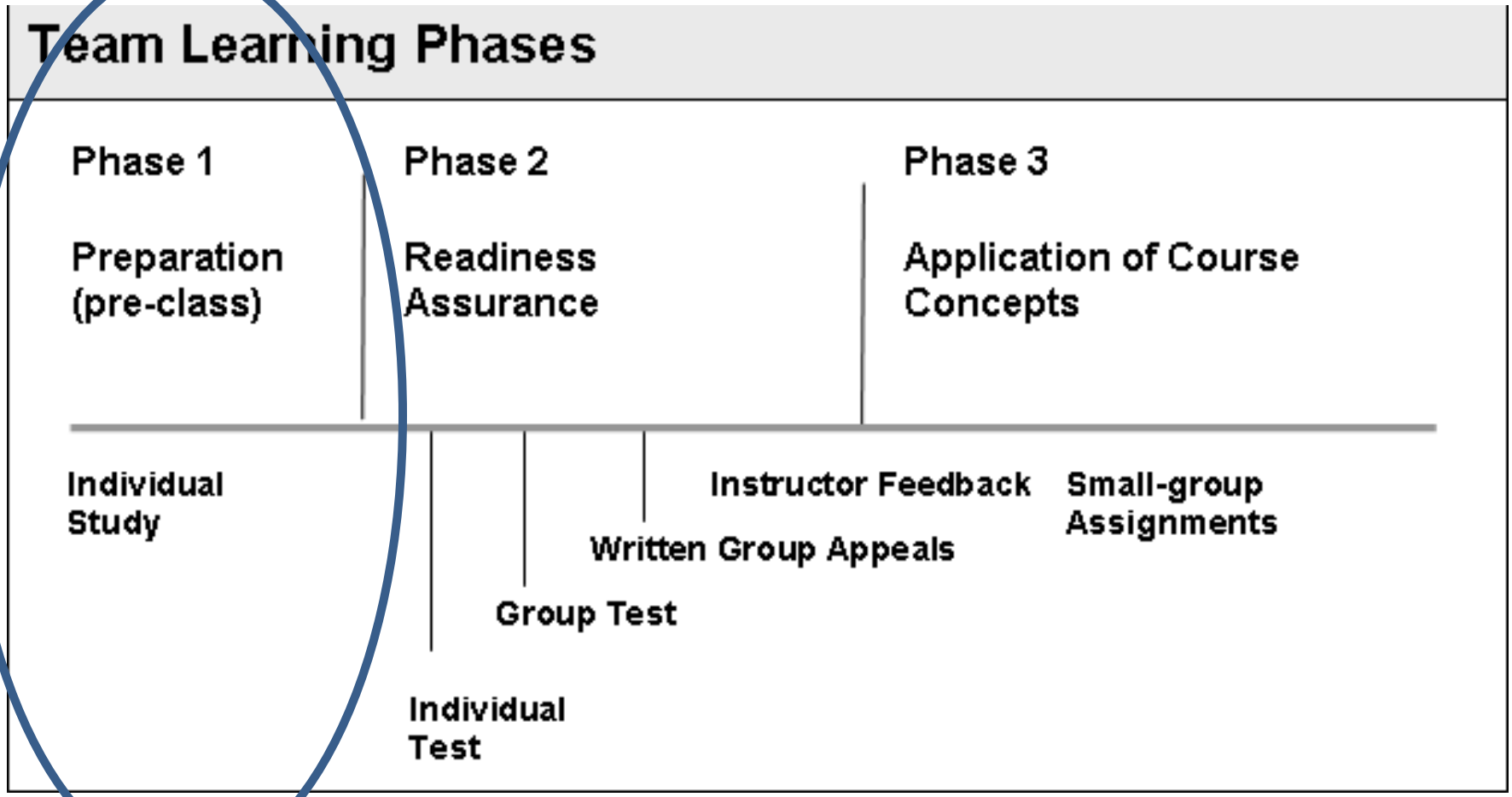
First Need to Form Teams…

- Principle: When forming teams, you want to ensure a distribution of resources and maximize participation of all members
- Operationalized:
  - Aim to identify important resources available to individuals (background, degrees, experience) and equally distribute those individuals
  - The teacher forms the teams – not students
  - 5-7 individuals per team

Components of TBL
Sequence of Learning



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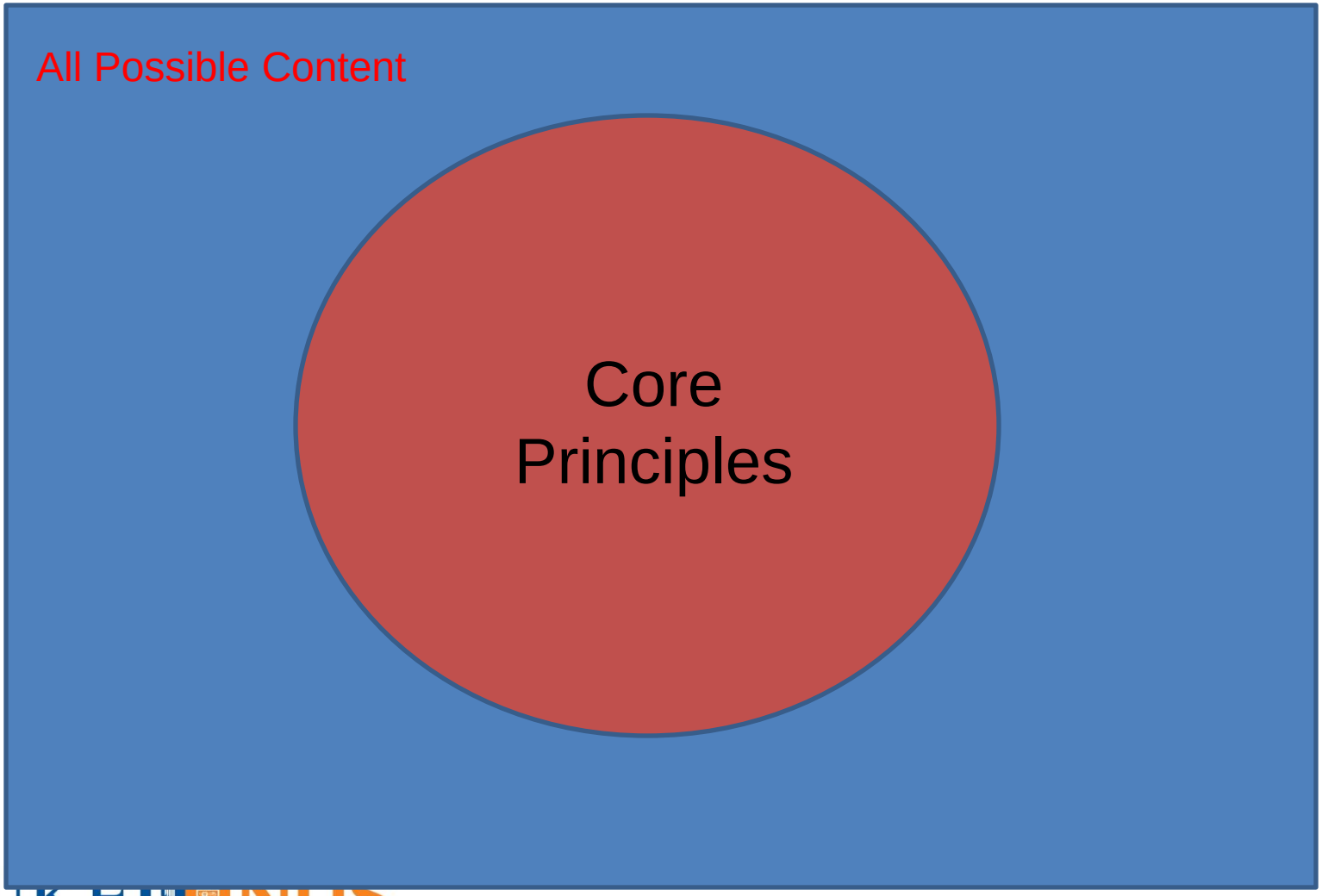
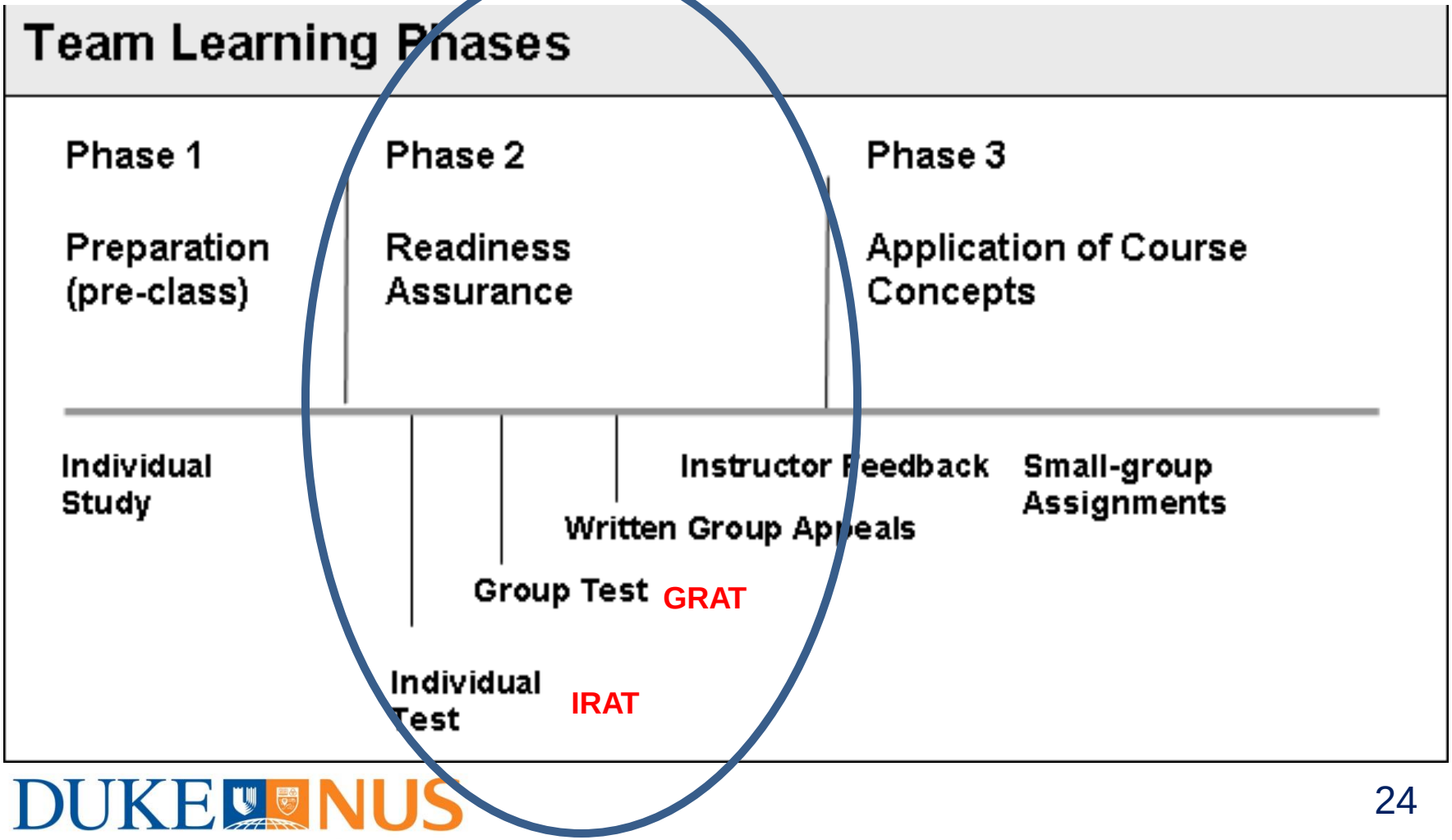
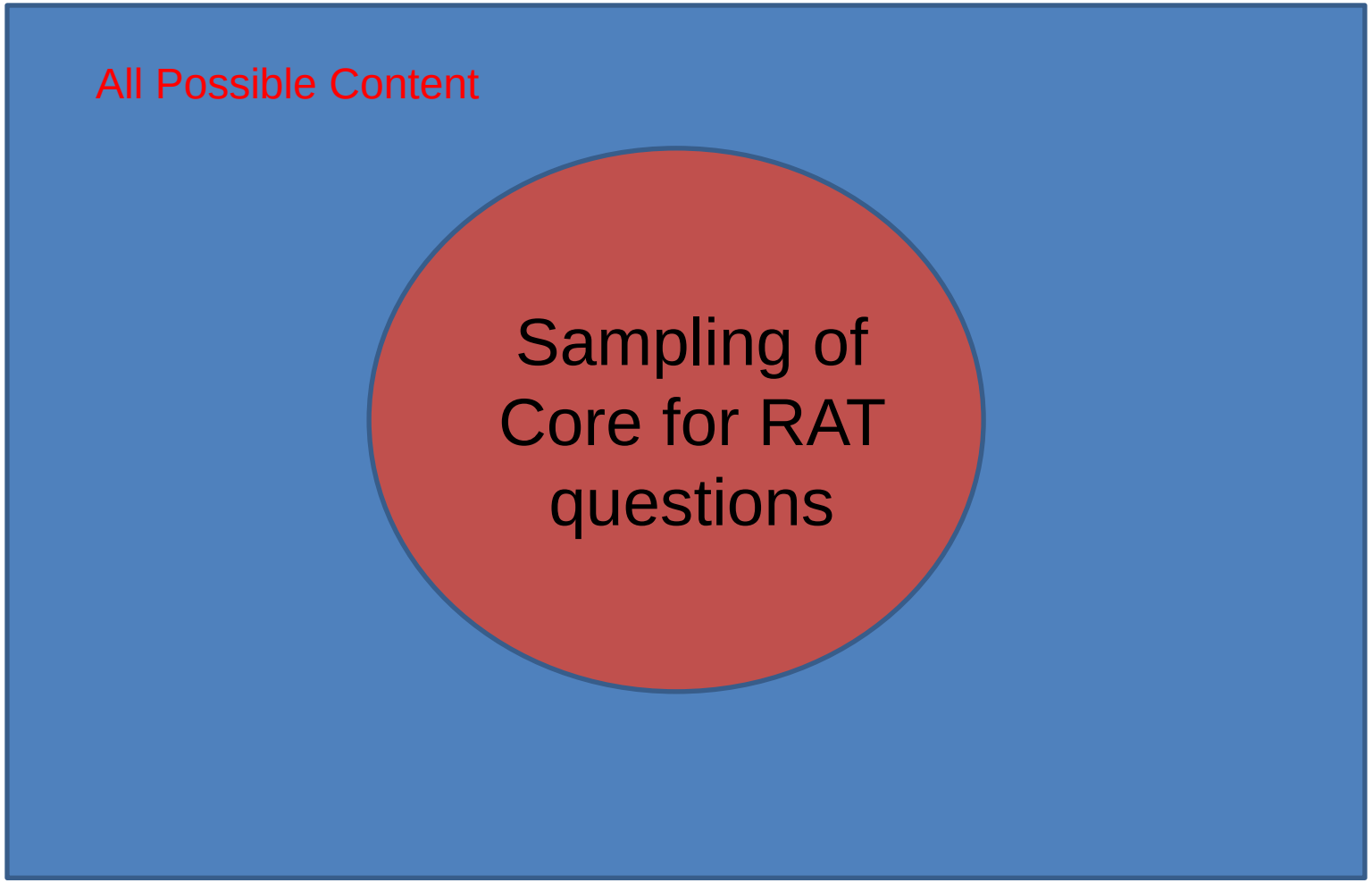
Preparation Phase



Components of TBL
Sequence of Learning



Readiness Assurance Phase



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Group Readiness Assessment

Readiness Assurance Phase

Transform Groups to Teams

- **Individual accountability promotes preparation**
- **Group accountability promotes effective participation**
- **Controversy stimulates discussion**

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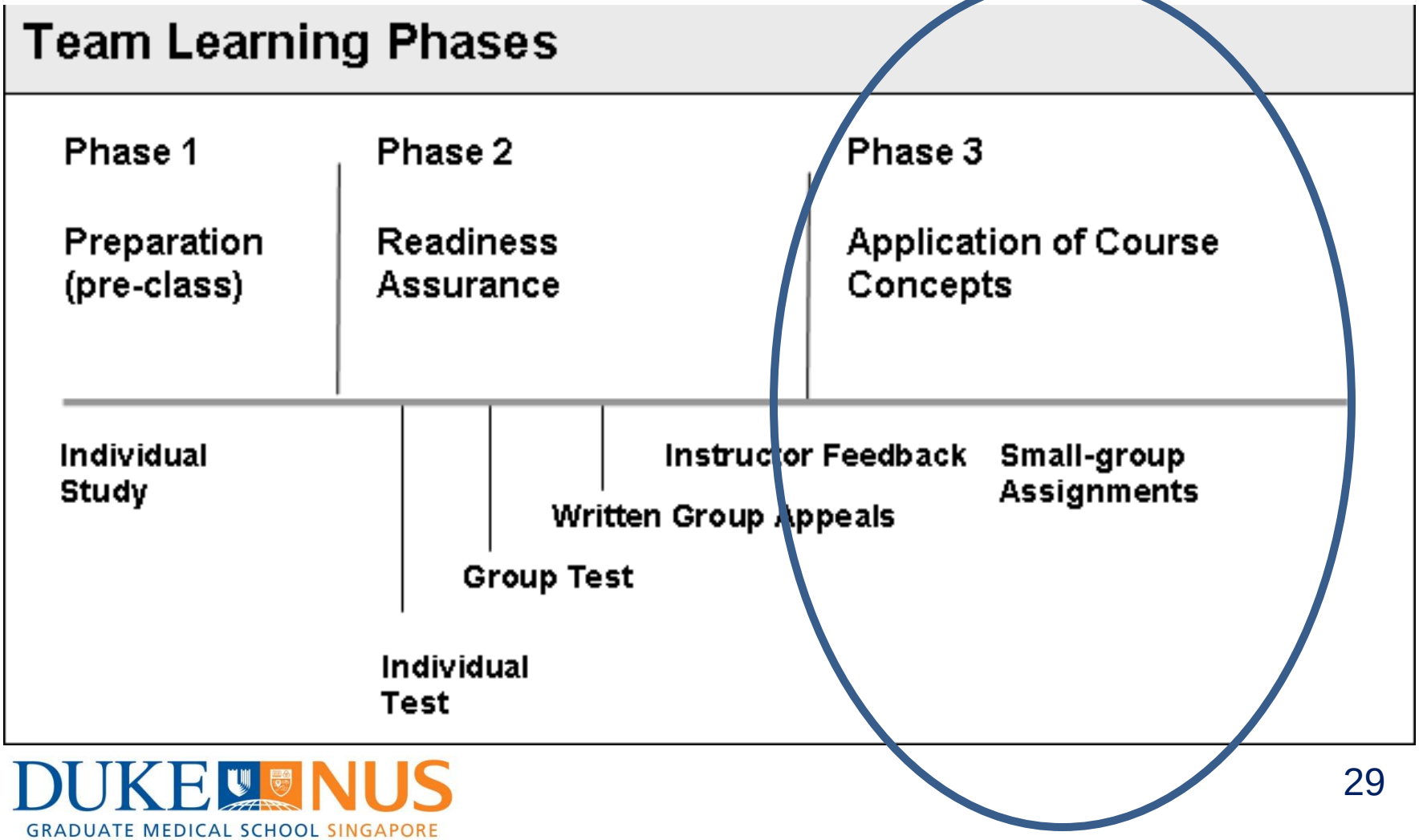
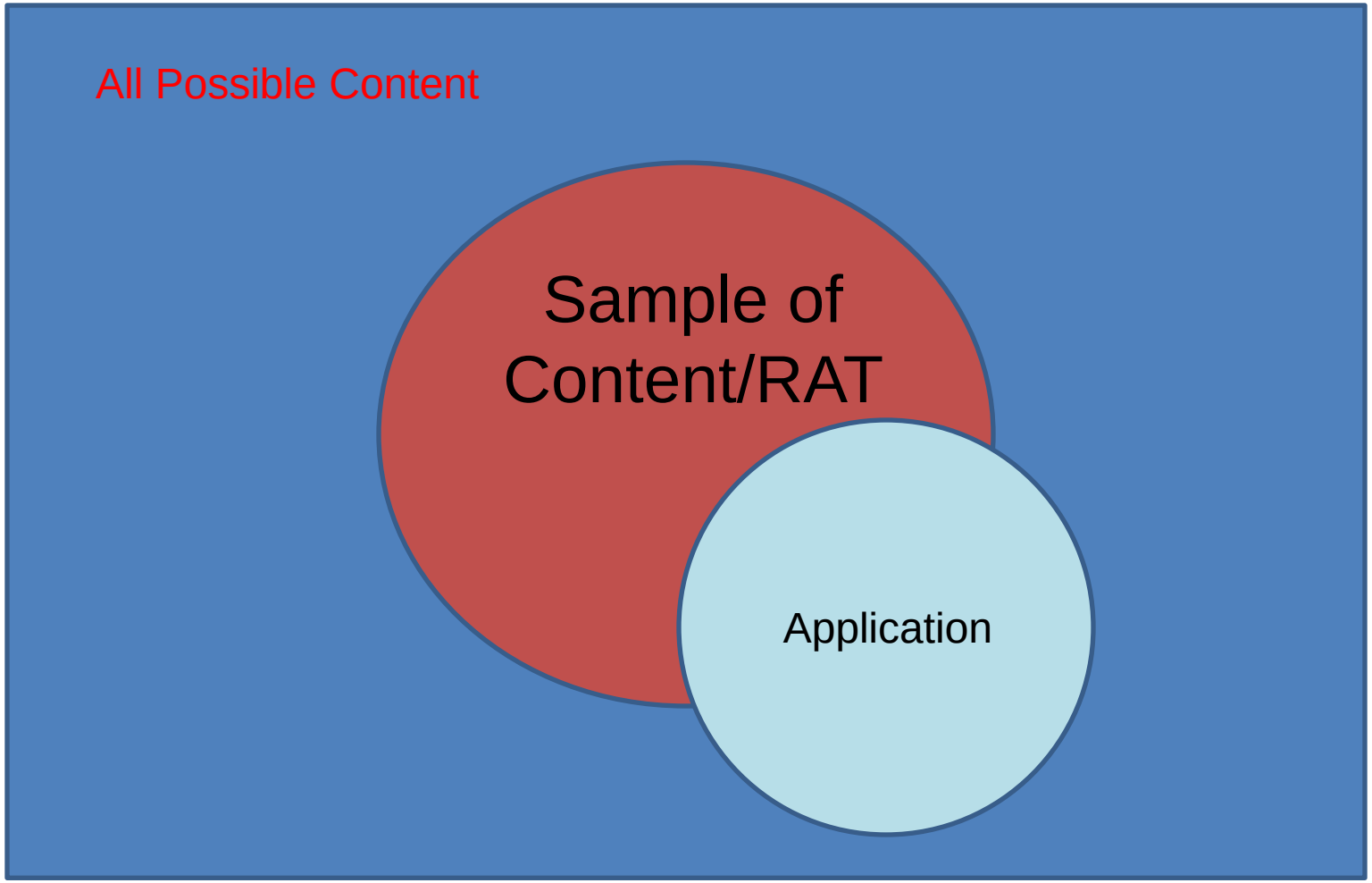
Components
Sequence of Learning



Application Phase



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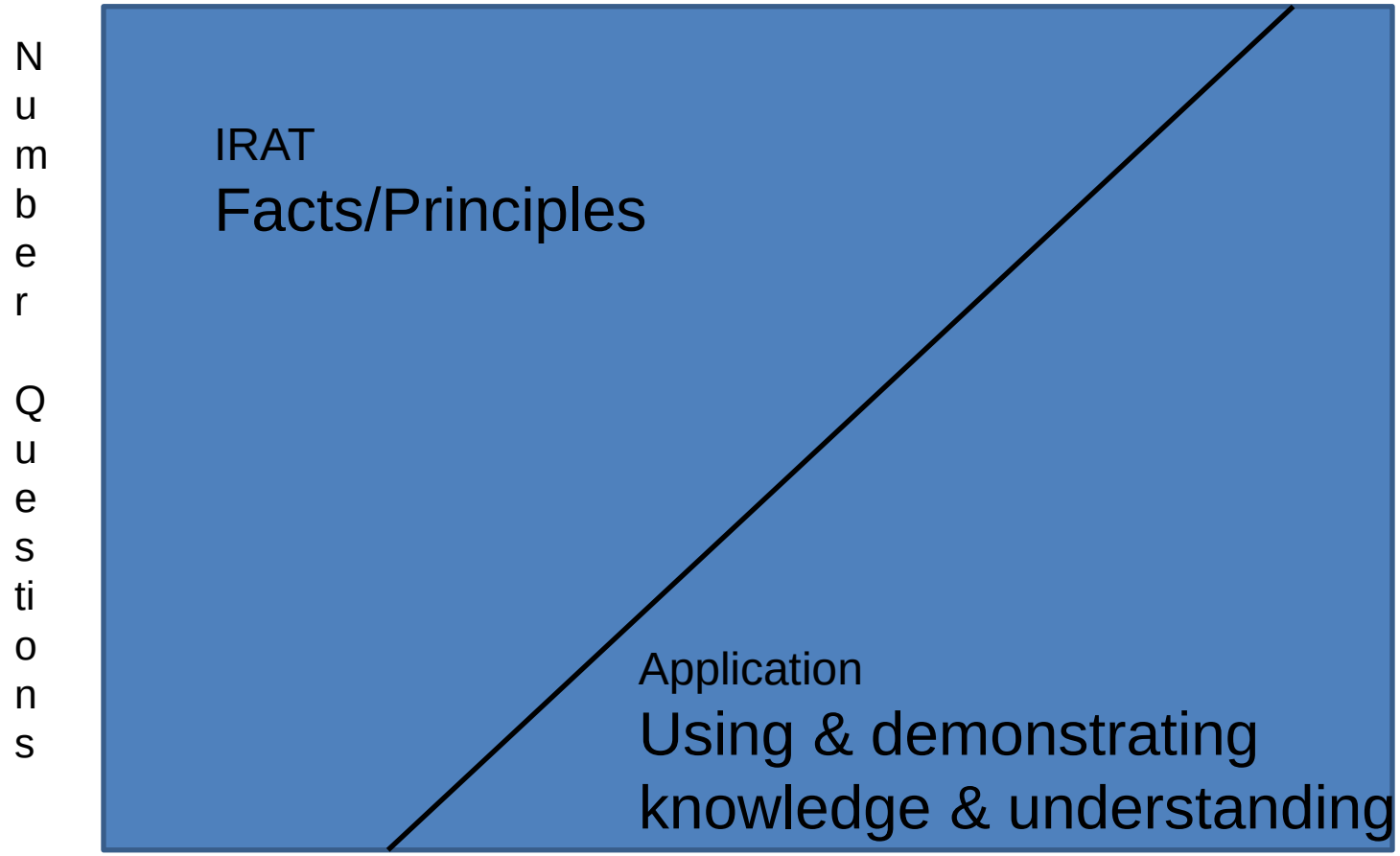
Elements of Effective Application

- **S**ignificant Problem
- **S**ame Problem
- **S**pecific Answer
- **S**imultaneous Reporting

The 4 S's

- Problems that require the brainpower of the whole Team to solve
- You want the 'why' for their answers
- Teams teaching Teams

Difference between Application and Readiness Assurance Questions



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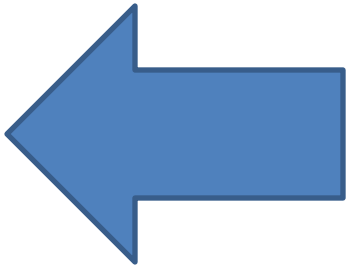
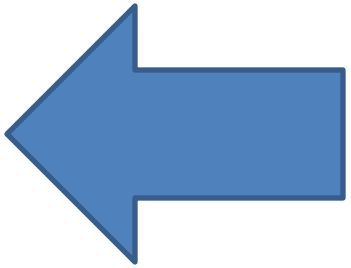
Application Phase

Backward Design

Where would they find the information – resources, content?



What key principles or facts do they need to know – in order to solve the problem? – how do you know they know it?



Problem to Solve, Principle to Apply in significant situation.

Pre-work

RATs

Application

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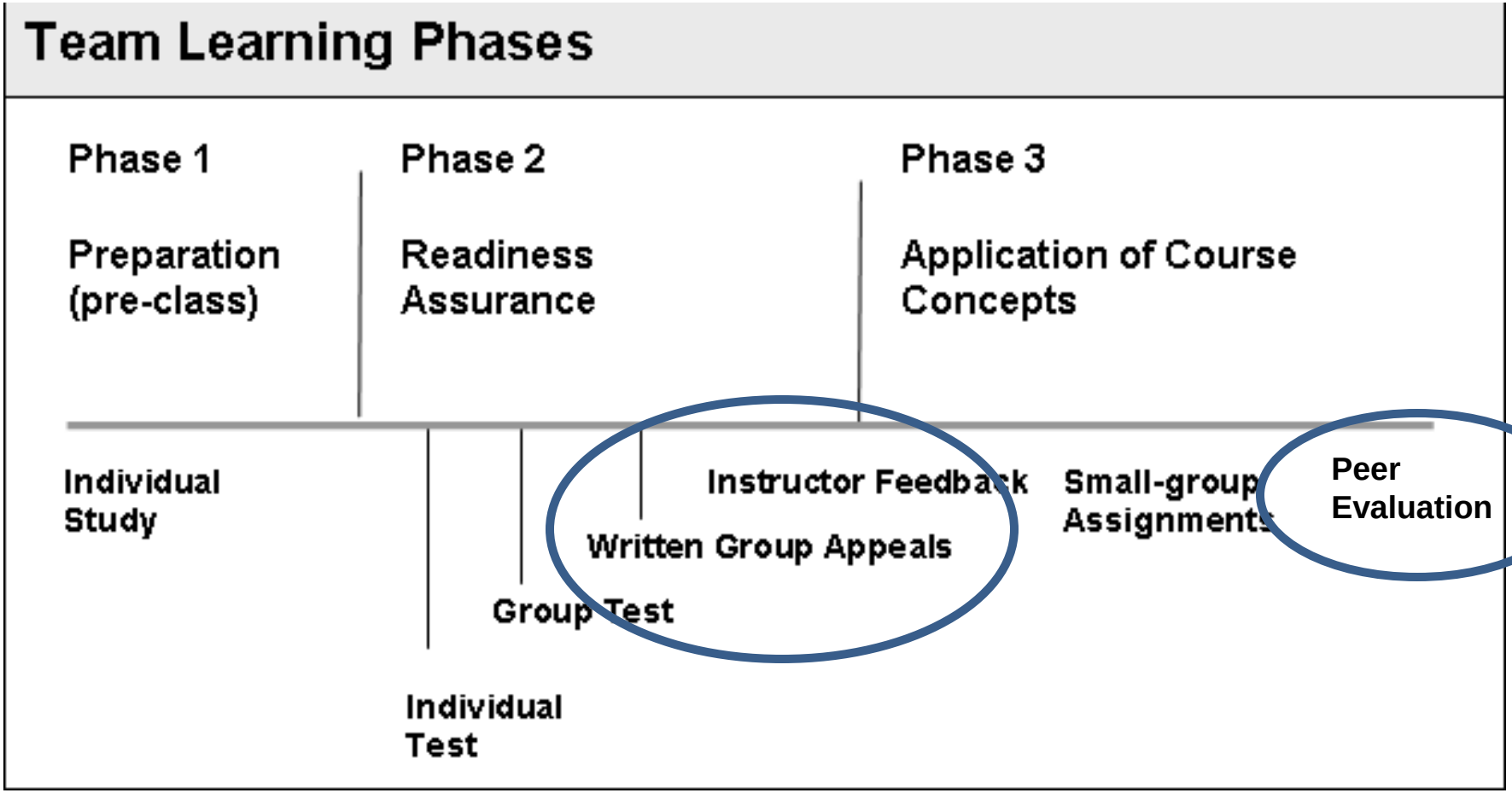
Components
Sequence of Learning



“Guide on Side”

BUT….

- There is up-front work to do. Faculty :
  - Need to really understand what you want students to be able to do with this information.
  - Need to define the appropriate pre class learning activities
  - Faculty need to design appropriate RAT and Application Questions (which is hard work)
  - Focus on what drives learning behavior
- Plus Faculty have to be willing to say “I don’t know” (there is nothing more scary than well prepared student).

And…..

- Some students will still prefer passive learning (it is hard work for them too). Faculty need to:
  - Prepare them for the experience
  - Provide sufficient time to do pre-work
  - Make sure the RATs and Applications are meaningful and engaging – and they will appreciate the work
- Students do prefer this type of group work over typical small group activities – because everyone is involved.

When would you NOT use TBL?

- When you:
  - Don't expect people to actually need to apply or use the information you are giving them
  - Need individual assessments (like papers) and not promoting team collaborations.
  - Don't need everyone to be at the same level of knowledge
  - Are giving inspiration talks, general info
  - Do not have sufficient time
  - Or the Faculty are not willing/prepared to do upfront work

Experience it

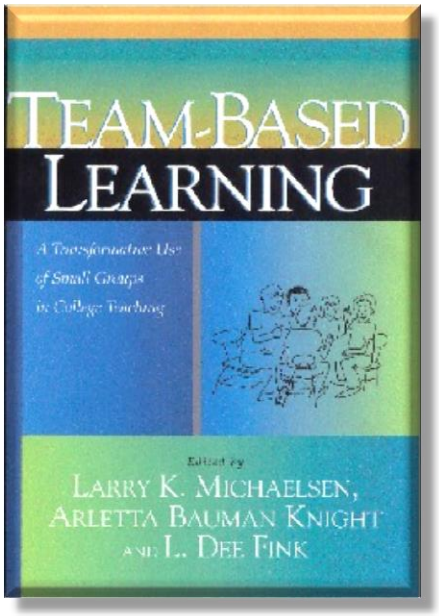
- IRAT
  - Based on this presentation – I have 4 question test. 5 min to look at it individually.
- GRAT
  - In teams – using IF-AT forms – come to consensus about the correct answer.
- Discussion - Clarification

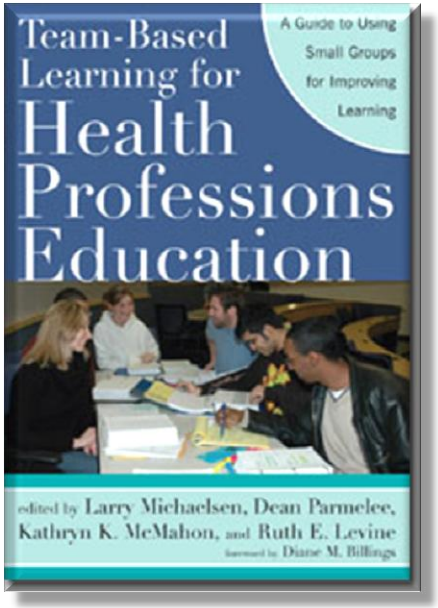
Application

- 2 questions –
  - In teams come to consensus regarding answers.
- Discussion

For more info:

- www.youtube.com/insidedukenus
- http://www.tblcollaborative.org





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