Active learning in teams with technology

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Active learning in teams

• What is team-based learning (TBL)?
• How can technology help to deliver TBL?
• Can we make TBL more flexible?
• How do we ensure adaptations are pedagogically sound?
• What do we need to consider in terms of inclusivity?

• This will be an active session where you will experience the technique of learning in teams
Team-based Learning (TBL)

• A structured teaching strategy involving:
  – pre-study by students
  – testing to assess understanding individually and in teams
  – peer-to-peer learning via team and class discussion

• Widely used with evidence of success of the technique across many domains and educational levels

• Benefits – active engagement, scalability, consistent experience


Stages of TBL
Stages of TBL

- Pre-study
  - Reading a paper or textbook
  - Watching a video
  - Attending a lecture

- iRAT
- tRAT
- RAT review
- tAPP
- APP debate
- Appeals
- Peer review
Stages of TBL

- Individual MCQs on pre-study material
- Marks count for grade
- No marks or feedback till later
Stages of TBL

- **Team** answers same MCQs as iRAT – one entry per team
- **Immediate feedback** on answer
- Can answer again if incorrect
- Marks count for grade
Stages of TBL

- Pre-study
- iRAT
- tRAT
- RAT review
- tAPP
- APP debate
- Appeals
- Peer review

Lecturer reviews questions that caused problems for teams
Stages of TBL

- Pre-study
- iRAT
- tRAT
- RAT review
- tAPP
- APP debate
- Appeals
- Peer review

**Pre-study:**
- Team works together to answer questions, applying knowledge from RATs
  - Significant problem
  - Same problem
  - Specific choice
  - Simultaneous report

**tAPP:**
- One entry per team; marks count for grade
Stages of TBL

- **Pre-study**
- **iRAT**
- **tRAT**
- **RAT review**
- **tAPP**
- **APP debate**
- **Appeals**
- **Peer review**

- Teams called upon to justify their selection
- Debate between teams on which answer is correct
- Correct answer provided after debate
Stages of TBL

- **Pre-study**
- **iRAT**
- **tRAT**
- **RAT review**
- **tAPP**
- **APP debate**
- **Appeals**
- **Peer review**

- Teams can appeal if they disagree with the correct answer.
- If successful their score is adjusted.
Stages of TBL

Team members assess their peers’ contribution
Give comments and marks which count for grade
Stages of TBL

- Pre-study
- iRAT
- tRAT
- RAT review
- tAPP
- APP debate
- Appeals
- Peer review
Technology and TBL

- Recording of iRAT answers
- Instant marks and feedback in tRAT
Technology and TBL

- Recording of iRAT answers
- Instant marks and feedback in tRAT
- Simultaneous reporting of tAPP answers
Technology and TBL

- Recording of iRAT answers
- Instant marks and feedback in tRAT
- Simultaneous reporting of tAPP answers
- Large class data management
- Immediate reporting on results
Technology and TBL

• Recording of iRAT answers
• Instant marks and feedback in tRAT
• Simultaneous reporting of tAPP answers
• Large class data management
• Immediate reporting on results

• Other benefits?
• More flexibility?
• More inclusive or less?
Let’s try it out

- Is every person in a team?
- Does each team have a scribe?
- Use a mobile phone, tablet or PC
- And access via the QR code
- Or tiny URL

tinyurl.com/APT0107
Let’s try it out

• Login is your team number + a letter, e.g. 4C

• Scribes must use letter A, e.g. 19A

• Are we ready?
• Is everyone logged in?

• The password for the RAT tests is Bentham
Question 1
Which of these terms **does not** describe the traditional TBL approach?

A. An active learning approach
B. An inclusive experience for all
C. There is evidence that the approach benefits learning
D. Students learn about real world issues

Question 2
After which stage of a traditional TBL session would we expect all students to have a good understanding of the basic concepts?

A. Pre-study
B. iRAT test
C. tRAT test
D. tAPP test

tinyurl.com/APT0107r
TBL Report Summary
Sunday, June 23, 2019

### iRAT Summary

<table>
<thead>
<tr>
<th>Field</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Responses</th>
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<tbody>
<tr>
<td>iRAT</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>5</td>
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### Out of...

<table>
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<td>4</td>
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</table>

### tRAT Summary

<table>
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<tr>
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<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>5</td>
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</table>

### tRAT total

- iRAT total
- tRAT total

### tRAT scores

- 2 = Right first time
- 1 = Right second time
- 0 = No right answer

<table>
<thead>
<tr>
<th>tQ1</th>
<th>tQ2</th>
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<tbody>
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<table>
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</table>
Which of these terms does not describe the traditional TBL approach?

A. An active learning approach
B. An inclusive experience for all
C. There is evidence that the approach benefits learning
D. Students learn about real world issues

Incorrect Attempt 1 choices:

- A: 0 1 0 1 0 0
- B: 0 0 0 0 0 0
- C: 1 0 0 0 0 0
- D: 0 0 1 0 0 1

Incorrect Attempt 2 choices:

- A: 0
- B: 0
- C: 1
- D: 0

Correct answer: B
Adapting TBL?

Pre-study iRAT tRAT RAT review tAPP APP debate Appeals Peer review

- Pre-class pre-study
- Summative
- Pre-set teams
- Includes all stages
- Teacher sets the pace

- In-class pre-study
- Formative
- Ad-hoc/self-selected teams
- Includes only certain stages
- Students set the pace

Take care not to

From TBL → Flexible Active In-team Learning
The pedagogy of TBL

- Underpinning educational theory
- Methodological framework
- Practical application of the theoretical framework
The pedagogy of TBL

Table 1. Summary of the main elements in constructivist learning (Kaufman 2003).

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<table>
<thead>
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<tbody>
<tr>
<td>1</td>
<td>The teacher is a guide to facilitate learning.</td>
</tr>
<tr>
<td>2</td>
<td>Teaching involves providing opportunities to expose inconsistencies between learners’ current understandings and new experiences therefore providing the opportunity to develop new schemes.</td>
</tr>
<tr>
<td>3</td>
<td>Learning should be active using relevant problems and group interaction.</td>
</tr>
<tr>
<td>4</td>
<td>Time is needed for reflection on new experiences.</td>
</tr>
</tbody>
</table>

The conversational framework of TBL

Student feedback on earlier version of software

“Due to the fact that we were able to see the results we picked after the iRAT helped at solving the tRAT as a team.”

“...it would be even better if the scribe would be able to do that as well.”

1. For which of these students is it **most difficult** to make an inclusive team-learning experience? Consider the issues they each face and the mitigations possible.

A. Dyslexic student who is allowed extra time in exams.
B. Student with low vision who uses a screen reader.
C. Student with English as an additional language.
D. Student with autistic spectrum disorder.

2. Think of a possible change that could be made to the traditional TBL format to make the session time shorter, but without a significant negative impact on learning.

For example, you may think about omitting a particular stage, providing feedback at a different time or in a different way, or adopting a different approach to the tAPP test.

Consider the time taken and pedagogic importance of each stage.
For which of these students is it **most difficult** to make an inclusive team-learning experience? Consider the issues they each face and the mitigations possible.

A. Student A  
Dyslexic student who is allowed extra time in exams.  

B. Student B  
Student with low vision who uses a screen reader. 

C. Student C  
Student with English as an additional language.  

D. Student D  
Student with autistic spectrum disorder.
Think of a possible change that could be made to the traditional TBL format to make the session time shorter, but without a significant negative impact on learning.

For example, you may think about omitting a particular stage, providing feedback at a different time or in a different way, or adopting a different approach to the tAPP test.

Consider the time taken and pedagogic importance of each stage.
What is team-based learning (TBL)?

How can technology help to deliver TBL?

Can we make TBL more flexible?

How do we ensure adaptations are pedagogically sound?

What do we need to consider in terms of inclusivity?

Active learning in teams

• In-class pre-study
• Formative testing
• Ad-hoc/self-selected teams
• Included all stages apart from appeals and peer review
• Included one non-traditional question in the tAPP
Active learning in teams

Any Questions?