Learning Design with Team Based Learning In Mind

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Education is not the filling of a pail but the lighting of a fire. 

WB Yeats
But first a little history
LAMS and I

2004-2014

A 10 year anniversary...
What is Team Based Learning?

Or

TBL
It is a Prescription

with these

Key Ingredients
1. **SELF-DIRECTED LEARNING (PRE-CLASS)**

2. **READINESS ASSESSMENT PHASE (INDIVIDUAL AND TEAM)**

3. **APPLICATION EXERCISE (PROBLEMS AND CASES)**
**Blended Learning:**

...is about the ‘magic of the mix’

*(Eliot Maise, 2006)*
Here is our ‘mix’.

(Paul Gagnon and Team)
1. Promote and build upon the 4Cs of learner engagement:
4Cs of learner engagement:

Curiosity
4Cs of learner engagement:

Context
4Cs
of learner engagement:

Challenge
4Cs
of learner engagement:

Control
Facilitate ‘cognitive rehearsal’

I learn
when
I share
what
I learn
Encourage the idea of the value of sorting learning materials

High value, Medium value and No-value categories;
4. Validate the value of longitudinal learning which is crucial to the medical profession (Maise 2006);

5. Support the presentation of multiple passes of material to promote deeper understanding;

6. Innovate around existing F2F and online pedagogical practices; (Brown 1989, Jonassen 1999)
Ingredients 7-9

7. Ensure 24-7 access to learning materials;

8. Embed flexibility with respect to curriculum development, delivery and evaluation of content;

9. Increase cost effectiveness related to content design, development, delivery and evaluation.
Why LAMS?

• Instructional Design Perspective

• It is like going from Dial-Up to Fibre
Why LAMS?

- Instructional Systems Perspective
- Easily and seamlessly integrates with most Learning Management Systems
Why LAMS?

• Visual Design Tool

• Supports Creative Expression
Why LAMS?

- Integrates with the tablet App narrative
Why LAMS?

• Monitors Time on Task
My Top 5 Rules for Learning Design
My Top 5 Rules for Learning Designers

• Know the Learner
LD Rule #2

- Know where they are expected to go
• Know how to best direct them there
• Know what tools can best carry them there
• Know what is expected of the learner upon arrival
My Top 5 Design Challenges
Design Challenge 1

- The Learner
• The Content Expert
Design Challenge 3

- The digital multi-tasking mind
• Managing Learner Feedback
Design Challenge 5

• What to leave in and
• What to leave out
And Now:

for a

Change of Pace
In your opinion what is the most important consideration in creating the Maise's 'magic of the mix? 

A. The 4Cs 
B. Supporting many passes at the material 
C. The value of cognitive rehearsal 
D. Innovate around existing F2F and online pedagogical practices. 
E. Validate the value of longitudinal learning which is crucial to the medical profession.
What is the most important consideration when designing the learning experience?

A. The destination  
B. The delivery tools  
C. The learner  
D. The content  
E. The outcome
• ...the appropriate mix of eLearning and F2F instructional design principles and processes:
  - to create the necessary ‘conditions of learning’, i.e., ‘...[whereby] certain observable changes in human behaviour take place.’ (Gagne 1997)
• we implemented the requisite technology to support the rollout of our Team Based Learning pedagogy.

and called it

• TERASA
Technology Enabled Learning Framework (TERASA)

Resources

Support

TERASA

Activities

Assessment
TERASA

Recorded Lectures
PPTs/PDFs/Word
Blogs
E-Modules
Simulations & Games

Learning Sequences
Relevant and Challenging Assignments
Flexibility in Delivery
Engaged Learners: 4Cs

Activities

Assessment

Support

Resources

24/7 Access
Integrated LMS
Hub: One Stop Access

Individual Readiness
Team Readiness
Application Exercises
Hurdle Exams
The 2D matrix model below represents a visualization of where the TBL learning activities fit within the Instructivist-Constructivist continuum, based on the application of the 4Cs of learning engagement.

Terms Defined

iRA: Individual Readiness Assurance
tRA: Team Readiness Assurance
AE: Application Exercise

Work Place Performance

Note: When assigning values of 1-4 for each of the 4Cs, in relation to each of the Learning Activities, simply sum the total and divide by 4. The resulting number placed within the 1-4 range on the Engagement axis corresponds to the likely level of Active/Passive learning on the Pedagogy axis.
Pedagogy Informs Design Or Design Supports Pedagogy?
• The tRAs provide a powerful representation of the discovery-based learning experience. (Dewey 1940)

• They model the precepts of Activity Theory:
  – as first articulated by Vygostky (1920),
  – and later promoted by Leont’ev (1978) and Engestrom (1987)

• i.e., learning activities require intense engagement as students must actively collaborate, reflect, articulate, challenge and seek consensus with respect to the questions under study.
The LAMS sequence also supports deep learning (Dwyer and al 1985-1998)

- long associated with learning environments which enable the presentation of **authentic**, **complex** and **dynamic** problems (Jonassen, 2000)
requires individual and shared construction of knowledge to achieve understanding. (Jonassen, 1999)

– The Application Exercises (AEs), for instance, build upon the foundational knowledge covered in the iRAT and tRAT activities, and feature a problem (Savery & Duffy, 1995) or case based approach to learning.

– the AEs also reflect the key principles of constructivist and learning activity theory.
<table>
<thead>
<tr>
<th>Theorist</th>
<th>Learning Activity</th>
<th>Engagement Continuum (Passive - Active)</th>
<th>Technology Applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dewey</td>
<td>Pre-class Activities</td>
<td>Passive/Self-Directed/Discovery</td>
<td>iPad/iLKC/iLecture</td>
</tr>
<tr>
<td>Dewey</td>
<td>iRA</td>
<td>Active/Self-Directed</td>
<td>iPad/iLKC/</td>
</tr>
<tr>
<td>Vygotsky/Jonassen/Leontev/Engestrom Savery &amp; Duffy</td>
<td>tRA AE</td>
<td>Collaborative/Deep Learning</td>
<td>iPad/iLKC/iLAMS</td>
</tr>
<tr>
<td>Dwyer/Dewey</td>
<td>TBL Burning Questions</td>
<td>Active/Deep Learning/Reflection</td>
<td>iPad/iLKC/iLAMS</td>
</tr>
<tr>
<td>Vygotsky/Jonassen/Leontev/Engestrom Savery &amp; Duffy</td>
<td>Application Exercise</td>
<td>Deep Learning</td>
<td>iPad/iLKC/iLAMS</td>
</tr>
</tbody>
</table>
The TBL Template

Pre-class

In-class
ELEVATOR SPEECH

Getting Started

9 Elevator Speech 8 Sept
## Instructions

### Resources to view

<table>
<thead>
<tr>
<th>Resource</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver structure</td>
<td>-</td>
</tr>
<tr>
<td>Liver function</td>
<td>-</td>
</tr>
<tr>
<td>Bile and jaundice</td>
<td>-</td>
</tr>
<tr>
<td>Liver disease</td>
<td>-</td>
</tr>
</tbody>
</table>

**Check for new**
Team Setup

Some of your following tasks require a group. You cannot continue until the groups have been selected. Click Next if you are told that the groups have been created. This page will refresh automatically in 5 minutes.

As this is a preview, clicking Next will do an automatic grouping. Normally the learner would have to wait until the grouping is done.
# Team Setup

## Learners in group

<table>
<thead>
<tr>
<th>Groups</th>
<th>Learners in group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team 1</td>
<td></td>
</tr>
<tr>
<td>Team 2</td>
<td></td>
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<tr>
<td>Team 3</td>
<td></td>
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<tr>
<td>Team 4</td>
<td></td>
</tr>
<tr>
<td>Team 5</td>
<td></td>
</tr>
<tr>
<td>Team 6</td>
<td>Paul Gagnon</td>
</tr>
<tr>
<td>Team 7</td>
<td></td>
</tr>
<tr>
<td>Team 8</td>
<td></td>
</tr>
<tr>
<td>Team 9</td>
<td></td>
</tr>
</tbody>
</table>

[Next Activity]
You have stopped at a gate. You cannot continue until the gate is opened in Monitoring.

Click Next if you are told that the gate is open. This page will refresh automatically in 1 minute.

As this is a preview, clicking Next will go to the next activity. Normally the learner would have to wait until the gate is opened.
1) What anatomical feature of the liver assists its function in detoxifying substances absorbed by the gut?

- A) Division into 8 functionally independent segments
- B) Destination of the portal blood supply
- C) Low systemic arterial supply
- D) Biliary connection to the pancreas
- E) Proximity to the spleen

2) What is included in a portal triad?

- A) Branch of central vein, lobule and cord
- B) Branch of central vein, bile duct and hepatic artery
- C) Branch of portal vein, bile duct and arteriole
- D) Branch of portal vein, central vein and hepatic artery
- E) Branch of central vein, bile duct and arteriole
Summary of Multiple Choice Responses

Learner's Answers:

1) Question:
What anatomical feature of the liver assists its function in detoxifying substances absorbed by the gut?

C) Low systemic arterial supply

2) Question:
What is included in a portal triad?

C) Branch of portal vein, bile duct and arteriole

3) Question:
What histological feature of the liver is a functional unit of hepatocytes aligned around a portal triad?

C) Canaliculus

4) Question:
You see a patient with an acute portal vein thrombosis. What percentage of the blood supply to the liver has this patient lost?
iRA: What it looks like
Leader Selection

Leader Selection

Are you going to be a leader of this group?

Learners participating in current group:

Paul Gagnon

Yes, I want to become a leader

No
Obvious Yes?

Leader Selection

**Group leader: Paul Gagnon**

Learners participating in current group:

- Paul Gagnon
Question 3
What histological feature of the liver is a functional unit of hepatocytes aligned around a portal triad?

A) Lobule
B) Segment
C) Canaliculus
D) Cord
E) Acinus

Question 4
You see a patient with an acute portal vein thrombosis. What percentage of the blood supply to the liver has this patient lost?

A) 20%
**Question 4**
You see a patient with an acute portal vein thrombosis. What percentage of the blood supply to the liver has this patient lost?

A) 20%
B) 40%
C) 50%
D) 60%
E) 80%

**Question 5**
What is a function of a Kupffer Cell?

A) Production and secretion of bile
Question 4
You see a patient with an acute portal vein thrombosis. What percentage of the blood supply to the liver has this patient lost?

A) 20%
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E) 80%

Question 5
What is a function of a Kupffer Cell?

A) Production and secretion of bile
tRA: What it looks like
Scratchie / TRA

Have a burning question? Ask it here!

What if a colleague is acting ....
You’ve got 95%

**Notebook instructions:**

Have a burning question? Ask it here!

Your answer:

9. The transfusion lecture mentioned that blood products should only be used when iron replacement has been done and found to be ineffective. Is oral iron replacement a more appropriate first option?

18. Acute splenic sequestration is only a concern when beta haemoglobin production commences around 3-6 months post-natally. Since the baby is only 10 days old, is this an immediate concern?

<table>
<thead>
<tr>
<th>Other groups:</th>
<th>Learner’s feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Team 02</strong></td>
<td>8) Isn’t actin a vital part of anchoring the cytoskeleton to the phospholipid membrane, compared to option c which categorizes all these molecules as cell membrane proteins, although some don’t seem to interact with the cell membrane 14) How is AIHA acquired and triggered? Is how do we arrive at answer d?</td>
</tr>
<tr>
<td><strong>Team 03</strong></td>
<td>Q3) Isn’t a grand total of 50 subjects too small a number to establish a normal range? 16) Can hereditary spherocytosis lead to stunted growth?</td>
</tr>
<tr>
<td><strong>Team 04</strong></td>
<td>9) In general, what guides the therapy for iron-deficiency anemia? 14) Please explain the difference between an intrinsic and inherited hemolytic anemia? GQ1) Is hemoglobin h disease (3 deleted alpha genes) asymptomatic in uterus? Why/why not? GQ2) Which of the micro cystic anemias produce hypochromasia and which produce target cells and why? Is this a good differentiating characteristic? GQ3) Does anemia of chronic disease cause widened red cell distribution width?</td>
</tr>
<tr>
<td><strong>Team 05</strong></td>
<td>No burning question.</td>
</tr>
<tr>
<td><strong>Team 06</strong></td>
<td>9. Why blood transfusion? Would intravenous iron be possible? 18. Why do we not recommend stem cell transplant? GQ. Would we see bone marrow expansion in other congenital anemias besides thalassemia?</td>
</tr>
<tr>
<td><strong>Team 07</strong></td>
<td>No burning questions</td>
</tr>
<tr>
<td><strong>Team 08</strong></td>
<td>3. Is 50 people enough to create a normal range? What is the criteria for minimal sample size for a reference/normal range? 14. How is AIHA “acquired”? Many sources say its cause is poorly understood, how did we classify it as acquired? GQ. How do Howell jolly bodies reflect a hyposplen state? Is it because the spleen would remove the basophilic nuclear remnants of the RBC, as in the case for Heinz bodies (hemoglobin residue) in G6PD? (If not imp’t then its k don’t waste time on it) GQ. Lecture mentions that RBC count would be higher in beta thalassemia trait. Why? Does this always happen?</td>
</tr>
<tr>
<td><strong>Team 09</strong></td>
<td>On 9. Why give blood transfusion over iron replacement if there is no evidence of recent bleeding?</td>
</tr>
</tbody>
</table>
**AEGate**

You have stopped at a gate. You cannot continue until the gate is opened in Monitoring.

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Assessment / AE

Group Leader: Paul Gagnon

Instructions

Head, Department of Medicine, received the following letter of complaint from a patient:

"Dear Sir,
I wish to inform you that I am very dissatisfied with the standards of care at your clinic. I arrived punctually at 9 am and waited 2 hours to see your doctor. When I told the nurse about the long wait, she was rude and said nothing could be done and that the doctors were busy. When I finally went into the clinic, the doctor was most unprofessional. He was drinking his coffee and was more interested in looking at the computer then listening to me. I told him I needed antibiotics for my cough but he was reluctant. When he finally agreed to give me the antibiotics I wanted he did not know the dose and had to check his book. He also refused to give me an MC (medical certificate) even though I was obviously sick. I am disappointed with his care and with all your staff at the clinic. I ask that you look into this and I expect an apology from the doctor. (Signed, Mr X)."

Consider the following statements: which one is incorrect in this situation?

Choose one of the following answers.

- A) The complaint should also be copied to the Clinic Manager to review waiting times.
- B) Lack of eye contact with patients may give the impression that the doctor is not listening.
- C) The doctor should not give a patient what he wants just to prevent a complaint.
- D) The fact that the doctor had to check his book for the dose of antibiotic suggests a lack of professional competence.
- E) Receptionists and nurses can play a role in preventing complaints against doctors.

QUESTION 2

Madam Chan is a 60 year old lady who presented with weight loss and was diagnosed to have cancer of the colon. She underwent surgery successfully by Surgeon A, who told her she had a good chance of being cured. Six months later, she had abdominal pain and saw her General Practitioner (Dr B) who found that she had an enlarged liver. Investigations showed cancer spread to liver. She was seen by another specialist (Specialist C) who told her that the surgeon should have referred her to an oncologist for chemotherapy after surgery. She went to see another specialist (Specialist D) who remarked "you mean your surgeon didn’t refer you to an oncologist?" Madam Chan’s family is now very upset and wants to take legal action against the surgeon for mismanaging her.

You happen to be Madam Chan’s neighbour. Seeing that you are a medical student, the family asks for your opinion as to what they should do. Which one of these options would you choose?
AE: What it looks like


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