Kicking Lecture to the Curb!

Even Large Lecture Classes Can Experience Deeper Learning Using Gamified, Active, Project-Based Learning Strategies

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Twitter: @adaptivechat

#deeperlearning #activelearning #gamifiedlearning #projectbasedlearning #technologyenhancedlearning
Access to Presentation

www.nikibray.com/resources
Your Presenters:

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University of Memphis
@adaptivechat

Dr. Tina Rettler-Pagel
Madison College
@TinaRPagel
In The Spring of 2017…
Since 2007 - 1st Attempt

- **Kinesiology**
  - Fail: 43
  - Pass: 57

- **Exercise Physiology**
  - Fail: 50
  - Pass: 50
Since 2007 - 2nd Attempt

- Kinesiology
  - Fail: 50
  - Pass: 50

- Exercise Physiology
  - Fail: 50
  - Pass: 50
CHANGE
DEEPER LEARNING COMPETENCIES

- Master core academic content
- Think critically and solve complex problems
- Communicate effectively
- Work collaboratively
- Learn how to learn
- Develop academic mindsets

Image Credit: http://hdsb-theshift.blogspot.com/2018/03/deeper-learning-is.html
5 Goals

1. Master core content
2. Think critically
3. Work collaboratively
4. Communicate effectively
5. Be self-reflective
Gamified Learning
- Kahoot!
  - Unlimited Quizzes

Active Learning
- Concept Mapping
  - Nearpod Activities
  - Diagrams & Tables
  - Animated Videos

Project-Based Learning
- Situated Learning
  - Group Collaboration
Describes the ability of muscle to respond to a stimulus.
Describes the ability of muscle to respond to a stimulus.

- Excitability
- Contractility
- Extensibility
- Elasticity
Podium

Get Results

1st place
The stuff legends are made of!

nb
0 points
0 out of 1

Find out more
# Joint Structure

Played on: 26 Sep 2017
Hosted by: nikibray
Played with: 21 players
Played: 66 of 72 questions

## Overall Performance

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total correct answers (%)</td>
<td>74.19%</td>
</tr>
<tr>
<td>Total incorrect answers (%)</td>
<td>25.81%</td>
</tr>
<tr>
<td>Average score (points)</td>
<td>51169.05 points</td>
</tr>
</tbody>
</table>

## Feedback

<table>
<thead>
<tr>
<th>Question</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>How fun was it? (out of 5)</td>
<td>0.00 out of 5</td>
</tr>
<tr>
<td>Did you learn something?</td>
<td>0.00% Yes</td>
</tr>
<tr>
<td>Do you recommend it?</td>
<td>0.00% Yes</td>
</tr>
<tr>
<td>How do you feel?</td>
<td>0.00% Positive</td>
</tr>
<tr>
<td></td>
<td>0.00% Neutral</td>
</tr>
<tr>
<td></td>
<td>0.00% Negative</td>
</tr>
</tbody>
</table>
## Joint Structure

### Final Scores

<table>
<thead>
<tr>
<th>Rank</th>
<th>Players</th>
<th>Total Score (points)</th>
<th>Correct Answers</th>
<th>Incorrect Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Carlton</td>
<td>73178</td>
<td>60</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Ashley</td>
<td>69043</td>
<td>56</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>Bishop</td>
<td>65731</td>
<td>56</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>John</td>
<td>65448</td>
<td>57</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>Gavin</td>
<td>60237</td>
<td>50</td>
<td>15</td>
</tr>
<tr>
<td>6</td>
<td>Adam G</td>
<td>59012</td>
<td>54</td>
<td>12</td>
</tr>
<tr>
<td>7</td>
<td>Ryan G</td>
<td>56834</td>
<td>50</td>
<td>9</td>
</tr>
<tr>
<td>8</td>
<td>Greyson</td>
<td>54137</td>
<td>47</td>
<td>19</td>
</tr>
<tr>
<td>9</td>
<td>Lanie</td>
<td>50768</td>
<td>48</td>
<td>17</td>
</tr>
<tr>
<td>10</td>
<td>Conner</td>
<td>49548</td>
<td>42</td>
<td>6</td>
</tr>
<tr>
<td>11</td>
<td>Li</td>
<td>49360</td>
<td>48</td>
<td>16</td>
</tr>
<tr>
<td>Q4</td>
<td>Articulations that allow considerable range of motion.</td>
<td>Q5</td>
<td>Articulations that vigorously resist movement.</td>
<td>Q6</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------------------</td>
<td>------------------</td>
<td>-----------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>1060 Joint Mobility</td>
<td>1143 Joint Stability</td>
<td>1310 Range of Motion (ROM)</td>
<td>1083 Joint Mobility</td>
<td>0 Suture Joints</td>
</tr>
<tr>
<td>0</td>
<td>0 Suture Joints</td>
<td>713 Range of Motion (ROM)</td>
<td>0</td>
<td>0 Suture Joints</td>
</tr>
<tr>
<td>0</td>
<td>0 Suture Joints</td>
<td>1011 Range of Motion (ROM)</td>
<td>1037 Joint Mobility</td>
<td>1163 Joint Stability</td>
</tr>
<tr>
<td>0</td>
<td>0 Suture Joints</td>
<td>702 Range of Motion (ROM)</td>
<td>0</td>
<td>0 Suture Joints</td>
</tr>
</tbody>
</table>
**Question 1**

Our infinite capacity for movement depends on a musculoskeletal design & articulations.

<table>
<thead>
<tr>
<th>Correct answers</th>
<th>True</th>
</tr>
</thead>
<tbody>
<tr>
<td>Players correct (%)</td>
<td>100.00%</td>
</tr>
<tr>
<td>Question duration</td>
<td>10 seconds</td>
</tr>
</tbody>
</table>

**Answer Summary**

<table>
<thead>
<tr>
<th>Answer options</th>
<th>&quot;True&quot;</th>
<th>&quot;False&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is answer correct?</td>
<td>✔️</td>
<td>🔴</td>
</tr>
<tr>
<td>Number of answers received</td>
<td>✔️</td>
<td>🔴 21</td>
</tr>
<tr>
<td>Average time taken to answer (seconds)</td>
<td>✔️</td>
<td>🔴 3.12</td>
</tr>
</tbody>
</table>

**Answer Details**

<table>
<thead>
<tr>
<th>Players</th>
<th>Answer</th>
<th>Score (points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adam G</td>
<td>✔️ True</td>
<td>749</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Gamified Learning

Kahoot!
Unlimited Quizzes

Active Learning

Concept Mapping
Nearpod Activities
Diagrams & Tables
Animated Videos

Project-Based Learning

Situated Learning
Group Collaboration
<table>
<thead>
<tr>
<th>Past Quizzes</th>
<th>Published</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How Do Muscles Work?</strong></td>
<td>426/426</td>
</tr>
<tr>
<td>Available on Jan 17, 2018 9:30 AM until Apr 25, 2018 11:59 PM</td>
<td></td>
</tr>
<tr>
<td><strong>The Basics of Program Design</strong></td>
<td>313/313</td>
</tr>
<tr>
<td>Available on Jan 24, 2018 9:30 AM until Apr 25, 2018 11:59 PM</td>
<td></td>
</tr>
<tr>
<td><strong>Midterm Exam</strong> [🔒]</td>
<td>122/122</td>
</tr>
<tr>
<td>Available on Feb 26, 2018 12:00 AM until Mar 11, 2018 11:59 PM</td>
<td></td>
</tr>
<tr>
<td><strong>Final Exam</strong> [🔒]</td>
<td>120/120</td>
</tr>
<tr>
<td>Available on Apr 16, 2018 1:10 PM until May 3, 2018 11:59 PM</td>
<td></td>
</tr>
<tr>
<td><strong>Training Terms</strong></td>
<td>281/281</td>
</tr>
<tr>
<td>Available on Jan 31, 2018 9:30 AM until Apr 25, 2018 11:59 PM</td>
<td></td>
</tr>
<tr>
<td><strong>How Do Muscles Adapt to Training?</strong> [🔒]</td>
<td>241/241</td>
</tr>
<tr>
<td>Available on Feb 5, 2018 9:30 AM until Apr 25, 2018 11:59 PM</td>
<td></td>
</tr>
<tr>
<td><strong>How Do Muscle Cells Get Bigger &amp; Stronger?</strong> [🔒]</td>
<td>297/297</td>
</tr>
<tr>
<td>Available on Feb 7, 2018 9:30 AM until Apr 25, 2018 11:59 PM</td>
<td></td>
</tr>
<tr>
<td>Title</td>
<td>Due Date</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Water is a Nutrient, Too!</td>
<td>Feb 19, 2018 9:30 AM</td>
</tr>
<tr>
<td>Why Does Maximal Heart Rate Decline With Age?</td>
<td>Mar 18, 2018 11:59 PM</td>
</tr>
<tr>
<td>How Does Training Help The Body Use More Oxygen?</td>
<td>Apr 9, 2018 11:59 PM</td>
</tr>
</tbody>
</table>
Spring 2018

A – 101
B – 18
C – 1
D – 0
F – 1
Drop – 1 (Before class began)
Withdrawal – 0

Final Exam Results:

75 randomly pulled questions from 479 questions

A – 35
B – 53
C – 28
D – 3
F – 0
Did Not Attempt – 2

Fall 2018

Midterm Exam Grades:

A – 25
B – 33
C – 21
D – 3
F – 4 (DNA)

Current Averages:

A – 55
B – 15
C – 7
D – 6
F – 3
Let’s Play Kahoot!
Gamified Learning

Kahoot!
Unlimited Quizzes

Active Learning

Concept Mapping
Nearpod Activities
Diagrams & Tables
Animated Videos

Project-Based Learning

Situated Learning
Group Collaboration
Concept Mapping Chapter 3

Using the following terms and your large poster paper, complete the following tasks:

1. Create the larger concept map using each term below (4 minutes);
2. Next, draw lines that show the relationship between all terms as appropriate (4 minutes);
3. Next, describe the relationship between two terms above and/or below the relationship lines (4 minutes);
4. Add as much supporting information that you can remember from memory to the map (10 minutes);
5. When you’ve brain-dumped all you know, use your notes/text to fill in any missing content/knowledge (10 minutes);
6. Add up the number of pieces of information;
7. Write that number and circle it in an open space on your paper;
8. Put all members of the group on the back of the paper.
9. When prompted, one member of the group bring your paper to the front of the class and place in the stack.
Terms:

1. Exercise Physiology
2. Muscles
3. Oxygen
4. Exchange of Oxygen & Carbon Dioxide
5. Hemoglobin
6. Metabolic Rate
   a. Rest
   b. During Exercise
7. VO$_{2\text{max}}$
8. RER

https://docs.google.com/document/d/1nMoSw5Ve7vytnE3VA8qqU2VJxm9tLBf_MvlrMYd18oA/edit?usp=sharing
Concept Mapping - Chapters 1, 2 and 5

1. Muscles
   a. Function
   b. Adaptations
   c. Growth

2. Food
   a. Energy
   b. Nutrients
   c. Vitamins
   d. Minerals
   e. Water

3. Program Design
   a. Basics
   b. Effective Training Programs
   c. Training Terms
Nearpod Lesson - Electrical Connection

https://share.nearpod.com/NeAm8ozoOR
## Properties of Skeletal Muscle

<table>
<thead>
<tr>
<th>Property</th>
<th>Also Known As</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Link to Google Docs document]
Structure of Skeletal Muscle

In the space below, draw a model of the structure of a skeletal muscle. Be sure to include and label the following structures:

1. Fascicle
2. Muscle Fiber
3. Myofibril
4. Endomysium
5. Epimysium
6. Perimysium
7. Sarcolemma
8. T-Tubules
9. Myosin
10. Actin

https://docs.google.com/document/d/1XjQRT3XAOcXfSAcC2gBpVdt0KJSCFFrMfY4AbqWVU_4/edit?usp=sharing
Powtoon Animated Instructional Videos

https://www.powtoon.com/c/c1vvogxC8h5/0/m

https://www.powtoon.com/c/cllGoCnhXxP/0/m
Gamified Learning
Kahoot! Unlimited Quizzes

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Animated Videos

Project-Based Learning
Situated Learning
Group Collaboration
Situated Project-Based Learning

Project Guidelines: https://docs.google.com/document/d/1biV1-wef-yZ7-dSN4cS21ehkzkDF3fm4ZOLUEXA6RL4/edit?usp=sharing

Examples:
https://alphiamcbride.wixsite.com/umhealthstudents
https://sites.google.com/view/rads-wellness-center/home?authuser=0
https://docs.google.com/document/d/12znGHR6DTnouoj_aCq2w4pSVx8Q_kBCjb2dv7ClrP8/edit?usp=sharing
Feedback From Students:

Survey I
https://docs.google.com/spreadsheets/d/16VMg71MMm0G6bRNHgN4sQ2teyl-Rify1_FfmbN9gY_0/edit?usp=sharing (101 Responses)

Survey II
https://docs.google.com/spreadsheets/d/143BjMv2VLsZTi35GHaEXHVk8zbROWBX7M66viuMH80Y/edit?usp=sharing (98 Responses)

Survey III
https://docs.google.com/spreadsheets/d/1D09Ok65LyKnOkq7PgEvv1RFZvLSJXWUoV5J1x8d6OYQ/edit?usp=sharing (56 Responses) *New Questions Added
5 Goals

1. Master core content
2. Think critically
3. Work collaboratively
4. Communicate effectively
5. Be self-reflective
<table>
<thead>
<tr>
<th>Deep Learning</th>
<th>Traditional Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep learning requires that learners relate new ideas and concepts to previous knowledge and experience.</td>
<td>Learners treat course material as unrelated to what they already know.</td>
</tr>
<tr>
<td>Deep learning requires that learners integrate their knowledge into interrelated conceptual systems.</td>
<td>Learners treat course materials as disconnected bits of knowledge.</td>
</tr>
<tr>
<td>Deep learning requires that learners look for patterns and underlying principles.</td>
<td>Learners memorize facts and carry out procedures without understanding how or why.</td>
</tr>
<tr>
<td>Deep learning requires that learners evaluate new ideas and relate them to conclusions.</td>
<td>Learners have difficulty making sense of new ideas that are different from what they encountered in the textbook.</td>
</tr>
<tr>
<td>Deep learning requires that learners understand the process of dialogue through which knowledge was created, and that they examine the logic of an argument critically.</td>
<td>Learners treat facts and procedures as static knowledge handed down from an all-knowing authority.</td>
</tr>
<tr>
<td>Deep learning requires that learners reflect on their own understanding and their own process of learning.</td>
<td>Learners memorize without reflecting on the purpose or on their own learning strategies.</td>
</tr>
</tbody>
</table>

7 Research-Based Principles

1. Students’ prior knowledge can help or hinder learning;
2. How students organize knowledge influences how they learn and apply what they know;
3. Students’ motivation determines, directs, and sustains what they do to learn;
4. To develop mastery, students must acquire component skills, practice integrating them, and know when to apply what they have learned;
5. Goal-directed practice coupled with targeted feedback enhances the quality of students’ learning;
6. Students’ current level of development interacts with the social, emotional, and intellectual climate of the course to impact learning;
7. To become self-directed learners, students must learn to monitor and adjust their approaches to learning.
small TEACHING

Everyday Lessons from the Science of Learning
Write and Organize for Deeper Learning

28 evidence-based and easy-to-apply tactics that will make your instruction better for learning.
Session Evaluation

http://bit.ly/2DEkOt1