Rebuilding the First-Year Seminar with New Science of Learning Principles

Caroline Twachtman
Kevin Yee
University of South Florida
Learning Styles? Learning Pyramid?

[Diagram of学习风格与学习金字塔]
Random Controlled Trials
Guess!

• distributed practice
• elaborative interrogation
• highlighting (or underlining)
• imagery use for text learning
• interleaved practice
• keyword mnemonic
• rereading
• practice testing
• self-explanation
• summarization
<table>
<thead>
<tr>
<th>Technique</th>
<th>Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elaborative interrogation</td>
<td>Moderate</td>
</tr>
<tr>
<td>Self-explanation</td>
<td>Moderate</td>
</tr>
<tr>
<td>Summarization</td>
<td>Low</td>
</tr>
<tr>
<td>Highlighting</td>
<td>Low</td>
</tr>
<tr>
<td>The keyword mnemonic</td>
<td>Low</td>
</tr>
<tr>
<td>Imagery use for text learning</td>
<td>Low</td>
</tr>
<tr>
<td>Rereading</td>
<td>Low</td>
</tr>
<tr>
<td>Practice testing</td>
<td>High</td>
</tr>
<tr>
<td>Distributed practice</td>
<td>High</td>
</tr>
<tr>
<td>Interleaved practice</td>
<td>Moderate</td>
</tr>
</tbody>
</table>
Improving Students’ Learning With Effective Learning Techniques: Promising Directions From Cognitive and Educational Psychology


Psychological Science in the Public Interest
January 2013 vol. 14 no. 1 4-58
Practice Testing
Distributed Practice
Interleaving
“Brain Based” Publications

• Todd Zakrajsec, *The New Science of Learning*
• David A. Sousa, *How the Brain Learns*
• Daniel Willingham, *Why Don’t Students Like School?*
• Peter Brown, *Make it Stick: The Science of Successful Learning*
• Benedict Carey: *How We Learn*
Principles – Guess Them!

- A
- N
- S
- W
- E
- R
Principles

• Attention
• N
• S
• W
• E
• R
Principles

- Attention
- N
- S
- W
- E
- R
Principles

- Attention
- N
- S
- W
- E
- R

Multi-tasking
Principles

- Attention
- Novelty
- S
- W
- E
- R
Principles

• **Attention**
• **Novelty**
• S
• W
• E
• R
Principles

- **Attention**
- **Novelty**
- **S**
- **W**
- **E**
- **R**
Principles

• **Attention**
• **Novelty**
• **Spacing**
• **W**
• **E**
• **R**
Principles

• **Attention**
• **Novelty**
• **Spacing**
• **W**
• **E**
• **R**
Principles

- Attention
- Novelty
- Spacing
- Why (= “context”)

- E
- R
Principles

• Attention
• Novelty
• Spacing
• Why
• E
• R

“fire together, wire together”
Principles

- Attention
- Novelty
- Spacing
- Why
- Emotions
- R
Principles

• Attention
• Novelty
• Spacing
• Why
• Emotions
• R

Medial Temporal Lobe
Principles

• Attention
• Novelty
• Spacing
• Why
• Emotions
• Residue
Principles

- **Attention**
- **Novelty**
- **Spacing**
- **Why**
- **Emotions**
- **Residue**
Interrupting the Forgetting Process

LEARNING IS EFFORTFUL!
Nicholas Carr, *The Shallows* (2011)
Our job in class?
Principles

• A
• N
• S
• W
• E
• R
Implications for Teaching

• Course Design
• Lesson Planning
• Classroom Management
• PowerPoint/Handouts
• Testing/Assessment Strategy
• Use of Quizzes
• Purpose (and Focus) of Lecture
• Interactivity and Active Engagement
• Online Materials
## Assignment

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Point Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photo Collage/Student Profile</td>
<td>3</td>
</tr>
<tr>
<td>Campus Resource Assignment</td>
<td>4</td>
</tr>
<tr>
<td>Academic Biography</td>
<td>10</td>
</tr>
<tr>
<td>Assessments</td>
<td>3</td>
</tr>
<tr>
<td>Career Exploration Project</td>
<td>12</td>
</tr>
<tr>
<td>Course Reflection Essay</td>
<td>10</td>
</tr>
<tr>
<td>Journals (6 @ 3 pts. each)</td>
<td>18</td>
</tr>
<tr>
<td>Blackboard Discussions (3 @ 4 pts each)</td>
<td>12</td>
</tr>
<tr>
<td>Attendance/Participation</td>
<td>28</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

### Activity/Topic

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity/Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>August 26</strong></td>
<td>Course Overview</td>
</tr>
<tr>
<td></td>
<td>Getting to Know USF</td>
</tr>
<tr>
<td><strong>September 2</strong></td>
<td>USF Technology</td>
</tr>
<tr>
<td><strong>September 9</strong></td>
<td>Time Management</td>
</tr>
<tr>
<td><strong>September 16</strong></td>
<td>Study Strategies</td>
</tr>
<tr>
<td><strong>September 23</strong></td>
<td>Researching the World’s Information</td>
</tr>
<tr>
<td><strong>September 30</strong></td>
<td>Academic Advising/Planning</td>
</tr>
<tr>
<td><strong>October 7</strong></td>
<td>Understanding Yourself</td>
</tr>
<tr>
<td><strong>October 14</strong></td>
<td>Career Exploration</td>
</tr>
<tr>
<td><strong>October 21</strong></td>
<td>Career Exploration (continued)</td>
</tr>
<tr>
<td><strong>October 28</strong></td>
<td>Health and Wellness</td>
</tr>
<tr>
<td><strong>November 4</strong></td>
<td>Managing Your Money in College</td>
</tr>
<tr>
<td><strong>November 11</strong></td>
<td>VETERAN’S DAY HOLIDAY – No class</td>
</tr>
<tr>
<td><strong>November 18</strong></td>
<td>Service Learning Discussion</td>
</tr>
<tr>
<td><strong>November 25</strong></td>
<td>Diversity</td>
</tr>
<tr>
<td><strong>December 2</strong></td>
<td>Wrap Up</td>
</tr>
</tbody>
</table>
Academic Foundations (2017)

Major Assignments and Grading Categories

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Percent of Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Citizens Assignment: Persuasive Essay</td>
<td>10%</td>
</tr>
<tr>
<td>Global Citizens Research</td>
<td>10%</td>
</tr>
<tr>
<td>E-Portfolio</td>
<td>10%</td>
</tr>
<tr>
<td>Online Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Homework</td>
<td>15%</td>
</tr>
<tr>
<td>Classroom Quizzes</td>
<td>15%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>15%</td>
</tr>
<tr>
<td>Attendance and Participation</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

Homework (Online Module Topic - Finish BEFORE class)
(no homework is due before the first class)

Module 1 - Purpose of College and Bloom's Taxonomy
Module 2 - Note-Taking and Transparency
Module 3 - How Learning and Memory Work
Labor Day - no class
Module 4 - Study Techniques
Module 5 - Test-Taking and Active Reading
Module 6 - College Transition and Relationships
Module 7 - Time Management and Productivity
Module 8 - Research Skills
Module 9 - Plagiarism/Originality
Module 10 - USF Policies and Deadlines
Module 11 - Critical Thinking and Problem Solving
Module 12 - Disciplinary Thinking
Module 13 - Google Sites: Starting Your Career Portfolio
Module 14 - Growth Mindset and Motivation
Module 15 - Argumentation
Module 16 - Logical Fallacies
Module 17 - Effective Writing
Module 18 - Career Satisfaction and Competencies
Module 19 - Career Development Process
# Mapping Principles

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<thead>
<tr>
<th>Innovations</th>
<th>Learning Science Principle</th>
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<td>Syllabus</td>
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<tr>
<td>Curriculum</td>
<td></td>
</tr>
<tr>
<td>Flipped Classroom</td>
<td></td>
</tr>
<tr>
<td>Activities</td>
<td></td>
</tr>
<tr>
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Thank you!

Questions?

Kevin Yee - Caroline Twachtman - University of South Florida - 37th Annual Conference on The First-Year Experience • San Antonio, Texas
MyPoint Connector

- Install **software** (didonai.com) onto computer
- Install **app** onto phone
- Join **SAME** wifi network
- Run computer program, right click for **IP address**
- Open app, type **IP address**
Rebuilding the First-Year Seminar with New Learning Science Principles in Mind

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Caroline Twachtman • Assistant Director, Academic Foundations First Year Seminar, Undergraduate Studies • University of South Florida • caroline@usf.edu

Notes for putting Learning Science Principles into practice:

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Recommended Reading:

37th Annual Conference on The First-Year Experience • San Antonio, Texas