Developing Structure-Based Construct-Valid Online Training; Olympic Level Learning

presenters

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Learning Goals:

(As a result of this workshop, you will;)

- understand the macro structure of learning \((PFC)\)
- understand one universal learning construct \((TORI)\)
- understand a framing technique for developing immersive branching \((AS)\)
- have a few good chuckles…\((chat \ it \ up \ in \ the \ chat)\)

Why can’t you explain puns to kleptomaniacs?
Block 01 (45 minutes)

- Project Overview; Initial Goal, Identified Problem Set-Ups, Planned Solution Set-Ups
- Designing Structure-Based Learning Tasks; Universal Learning Constructs
- Generating Interpretable, Relevant, and Comparable Online Formative Assessment
- Hands-On Activity; Construct Snapping
- Discussion & Questions

Block 02 (45 minutes)

- Project Review; Clarified Goal, Actual Problem Set-Ups, Implemented Solution Set-Ups
- Designing Structure-Based Templates; High Engagement Immersive Branching
- Generating Interpretable, Relevant, and Comparable Online Summative Assessment
- Hands-On Activity; Basic Simulation Storying Boarding
- Discussion & Questions
Project Overview

As a result of the LMI training module development process, the SU Teaching Assistant Orientation training program will:

1. have a fully articulated and cohesive training program for all Teaching Assistants
2. be able to fully deliver training in a face to face, hybrid, or online manner,
3. be able to monitor performance of participants,
4. be able to provide authenticated performance for certification purposes.
Syracuse University Connect Project; Academic Integrity Example

- **eLearning Training Modules** *(Articulate Rise 360)*
- **Immersive Branching Assessment** *(Articulate Storyline 360)*
- **LMS (Blackboard with Learn Ultra) & LxP (Instilled by PeopleFluent)*
Learning Context
Cognitive Anchors; Context

‘Working Knowledge’ Survey;

- Learning Technology; e.g., AI, LRS, xAPI, LMS, etc.
- Educational Topics; e.g., assessment, task analysis, neuroscience, etc.


time: 3 minutes
Cognitive Anchors; Context

Working Knowledge of Learning Technologies

- Artificial Intelligence (AI)
- Blockchain
- cmi5
- Coding (e.g., Java, Python, JSON)
- Content Management Systems (CMS)
- eAuthoring Tools (e.g., Captivate,)
- Learning Management Systems (LMS)
- Learning Record Stores (LRS)
- Learning Experience Platforms (LxP)
- SCORM
- Spreadsheets (e.g., Excel, Google Sheets)
- xAPI
Cognitive Anchors; Context

Working Knowledge of Educational Topics

- Analytics
- Assessment
- Cognitive Neuroscience
- Curriculum Design
- Evaluation
- Front End Analysis
- Instructional Design
- Learning Theory
- Psychometrics
- Statistical Analysis
- Systems Architecture
- Task Analysis
Cognitive Anchors; Context
“We are drowning in a sea of information while dying of thirst for knowledge.”

~ E.O. Wilson
Structure (PFC)
What is the underlying structure of the learning engagements you create?
Structure

Elements

Parts

Functions

Connections
Structure of Learning

Elements

P
Parts

F
Functions

C
Connections

Characteristics

A
Attributes

M
Manners

L
Levels
Structure of Learning

Elements

Parts

the things (objects), actions, and/or conditions being provided

Characteristics

Attributes

provides details of specified Parts (adj.)
Structure of Learning

<table>
<thead>
<tr>
<th>Elements</th>
<th>Functions</th>
<th>Characteristics</th>
<th>Manners</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>M</td>
<td></td>
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</tbody>
</table>

provides the purposeful role(s) of the defined Part

provides details of how specified Functions occur (adv.)
Structure of Learning

Elements

Connections

provides the relative and/or associative relationship of Parts

Characteristics

Levels

provides concrete (physical) to conditional (if/then) to abstract (conceptual) implication hierarchies
Structure of Learning

Educational Taxonomies

- SOLO ('82, Biggs & Collis)
- Depth of Knowledge ('97, Webb)
- New Learning Taxonomy ('98, Marzano & Kendall)
- Six Facets of Understanding ('98, Wiggins & McTighe)
- Significant Learning ('03, Fink)
# Periodic Table of Learning

## The Mosenthal Taxonomy

### Types of Processing

<table>
<thead>
<tr>
<th>Types of Requested Information</th>
<th>Types of Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Zone 6</strong> Generalized Conditions</td>
<td>Goal Set-Up, Main Idea/Theme/Lesson, Pattern/Predict, Process/Procedure, Equivalent, Indeterminate</td>
</tr>
<tr>
<td><strong>Zone 5</strong> Relational Conditions</td>
<td>Cause/Effect, Argument/Evidence, Reason/Outcome, (problem set-up), solution sought, Similarity/Difference</td>
</tr>
<tr>
<td><strong>Zone 4</strong> Status Conditions</td>
<td>Condition (goal, problem, solution) Criteria Fact/Rule</td>
</tr>
<tr>
<td><strong>Zone 3</strong> Action Qualifiers</td>
<td>Manner, Sequence, Purpose/Function</td>
</tr>
<tr>
<td><strong>Zone 2</strong> Actions &amp; Qualifiers</td>
<td>Location, Action, Attribute, Amount, Time, Type</td>
</tr>
<tr>
<td><strong>Zone 1</strong> Nouns</td>
<td>Person, Animal, Thing, Place, (group)</td>
</tr>
</tbody>
</table>

### Types of Match

- **Elements**
  - P: Parts
  - F: Functions
  - C: Connections

- **Characteristics**
  - A: Attributes
  - M: Manners
  - L: Levels
## Structure of Learning

<table>
<thead>
<tr>
<th>Elements</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>P Parts</td>
<td>A Attributes</td>
</tr>
<tr>
<td>F Functions</td>
<td>M Manners</td>
</tr>
<tr>
<td>C Connections</td>
<td>L Levels</td>
</tr>
</tbody>
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(As a result of this workshop, you will;)

- understand the macro structure of learning (*PFC*)
- understand one universal learning construct (*TORI*)
- understand a framing technique for developing immersive branching (*AS*)
- have a few good chuckles…(*chat it up in the chat*)

*Which rock group has four guys who can’t sing or play instruments?*
Question Structure
How do currently control question difficulty?
How do you currently scaffold questions?
Periodic Table of Learning
The Mosenthal Taxonomy

Types of Processing

Types of Requested Information

<table>
<thead>
<tr>
<th>Zone</th>
<th>Generalized Conditions</th>
<th>Relational Conditions</th>
<th>Status Conditions</th>
<th>Action Qualifiers</th>
<th>Actions &amp; Qualifiers</th>
<th>Named</th>
</tr>
</thead>
</table>

Types of Match

- Elements
- Parts
- Functions
- Connections

- Characteristics
- Attributes
- Manners
- Levels
Task Constructs of Difficulty

Dials of Task Difficulty
<table>
<thead>
<tr>
<th>Type of Requested Information</th>
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</thead>
<tbody>
<tr>
<td><strong>Difficult</strong></td>
</tr>
<tr>
<td>Goal Set-Up,</td>
</tr>
<tr>
<td>Main Idea, Theme/Lesson</td>
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<tr>
<td>Pattern/Predict,</td>
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<tr>
<td>Process/Procedure</td>
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<tr>
<td>Equivalent,</td>
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<tr>
<td>Indeterminate</td>
</tr>
<tr>
<td>Cause/Effect,</td>
</tr>
<tr>
<td>Assertion/Evidence</td>
</tr>
<tr>
<td>Reason/Outcome</td>
</tr>
<tr>
<td>(problem set-up, solution set-up)</td>
</tr>
<tr>
<td>Similarity/Difference</td>
</tr>
<tr>
<td><strong>Moderate</strong></td>
</tr>
<tr>
<td>Condition</td>
</tr>
<tr>
<td>(goal, problem, solution),</td>
</tr>
<tr>
<td>Criteria,</td>
</tr>
<tr>
<td>Parts/Whole</td>
</tr>
<tr>
<td>Manner,</td>
</tr>
<tr>
<td>Sequence,</td>
</tr>
<tr>
<td>Purpose/Function</td>
</tr>
<tr>
<td><strong>Easy</strong></td>
</tr>
<tr>
<td>Location, Action</td>
</tr>
<tr>
<td>Attribute, Amount,</td>
</tr>
<tr>
<td>Time, Type</td>
</tr>
<tr>
<td>Person, Animal,</td>
</tr>
<tr>
<td>Thing, Place,</td>
</tr>
<tr>
<td>(group)</td>
</tr>
</tbody>
</table>

TORI
TORI Question Construct

**Requested**
- to “request” specific information for task completion

**Given**
- to “give” specific information for task comprehension

**Question:**

**Given:**

**Requested:**

**Answer:**

How many animals of each sex did Moses take on the ark?

There is an amount of animals of each sex Moses took on the ark.

What is that amount?

0
Context:
A clerk in a butcher shop is 5’10 inches tall.

Question:

Given:

Requested:

Answer:

meat
Context:
A bat and ball cost $1.10. The bat costs one dollar more than the ball.

Question:

Given:

Requested:

Answer: five cents
Snapping TORI

1. Who will be the next Prime Minister of Canada?

2. When was the Periodic Table of Elements published?

3. Why are there negative numbers?

4. How is water created?
<table>
<thead>
<tr>
<th>Zone 6</th>
<th>Goal Set-Up, Main idea/Theme/Lesson, Pattern/Predict, Process/Procedure Equivalent, Indeterminate</th>
</tr>
</thead>
<tbody>
<tr>
<td>What lesson will you take away from this session?</td>
<td></td>
</tr>
<tr>
<td>Zone 5</td>
<td>Cause/Effect, Assertion/Evidence Reason/Outcome, (Problem Set-Up, Solution Set-Up) Similarity/Difference</td>
</tr>
<tr>
<td>Why are there so few educational taxonomies?</td>
<td></td>
</tr>
<tr>
<td>Zone 4</td>
<td>Condition (Goal, Problem, Solution) Criteria, Parts/Whole</td>
</tr>
<tr>
<td>Which joke was the best?</td>
<td></td>
</tr>
<tr>
<td>Zone 3</td>
<td>Manner, Sequence, Purpose/Function</td>
</tr>
<tr>
<td>How can question difficulty be controlled?</td>
<td></td>
</tr>
<tr>
<td>Zone 2</td>
<td>Location, Action, Attribute, Amount, Time, Type</td>
</tr>
<tr>
<td>Where do the session presenters live?</td>
<td></td>
</tr>
<tr>
<td>Zone 1</td>
<td>Person, Animal, Thing, Place, (group)</td>
</tr>
<tr>
<td>Who loves the wonderful world of assessment?</td>
<td></td>
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### Periodic Table of Learning
#### The Mosenthal Taxonomy

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<tr>
<td><strong>Zone 5</strong> Relational Conditions</td>
<td>Causal/Effect, Supporting/Inverse, Reason/Outcome, (problem set-up, solution set-up) Similarity/Difference</td>
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<tr>
<td><strong>Zone 4</strong> Status Conditions</td>
<td>Condition (goal, problem, solution) Criteria Facts/Minute</td>
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<td><strong>Zone 3</strong> Action Qualifiers</td>
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- have a few good chuckles…*(chat it up in the chat)*

*What is red and bad for your teeth?*
Learning Agendas
How do you keep all the content provided in your learning engagements connected?
## Periodic Table of Learning

### The Mosenthal Taxonomy

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<th>Sort</th>
<th>Define/Describe</th>
<th>Narrate</th>
<th>Summarize</th>
<th>Compare/Contrast</th>
<th>Explain</th>
<th>Justify</th>
<th>Persuade</th>
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Syracuse University Connect Project; Immersive Branching
Academic Integrity; Immersive Branching Assessment

SU TA Orientation
Academic Integrity Interactive Scenario

Begin

Choose the scenario:

- Scenario 1: Peer Review
- Scenario 2: Online Assignment
- Scenario 3: Group Project

Scenario 1:
- You are a peer reviewer assessing a group project. You notice a discrepancy in the work submitted by the group. What will you do?
  - Option A: Report the discrepancy to your instructor.
  - Option B: Ignore the discrepancy, as it might not be significant.

Scenario 2:
- You are working on an online assignment. You come across a question you believe is incorrect. What will you do?
  - Option A: Report the question to your instructor.
  - Option B: Ignore the question, as it is unlikely to affect your grade.

Scenario 3:
- You are in a group project meeting. One of the group members is not participating. What will you do?
  - Option A: Encourage the member to participate.
  - Option B: Continue without the member, as the project is on track.

Choose your decision:
- Decision 1: Proceed with the assignment.
- Decision 2: Stop and report the issue.

What should I do?
- Choose the option that best fits the situation.

Continue scenario 2

End
Academic Integrity; Immersive Branching Assessment
Academic Integrity; Immersive Branching Assessment
## Periodic Table of Learning

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<tr>
<td>Status Conditions</td>
<td>Condition (goal, problem, solution) Criteria Factors/Influence</td>
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### Types of Match

- **Elements**
- **P Parts**
- **F Functions**
- **M Manners**
- **L Levels**
Learning Agendas

Universal
Relational
Conditional
Actional
We develop and anchor our prescribed ‘actions’ and ‘conditions’ within an explicit understanding of valued psychological, sociological, and cultural conditions.
## Learning Agendas

<table>
<thead>
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<td>~ condition</td>
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</tbody>
</table>

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**When**

**Where**
### Learning Agendas

<table>
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<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>traits? 26, nervous, passionate, overloaded, studying: mechanical bioengineering</td>
<td>Lily</td>
<td>be a great educator, be fair, be professional</td>
<td>wants to correctly implement AI policy as a TA</td>
<td>a) minor plagiarism b) plagiarism cover-up c) blatant plagiarism</td>
<td>AI policy #1 AI policy #2 AI policy #3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19, struggling, disinterested, current grade C-, studying: family studies</td>
<td>Chad</td>
<td>be free to socialize, be seen as smart, be able to graduate</td>
<td>wants easy high marks in the class</td>
<td>AI policy #1 AI policy #2 AI policy #3</td>
<td>a) minor plagiarism b) plagiarism cover-up c) blatant plagiarism</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**When**
- third week of a new semester

**Where**
- online, in class, after class
Learning Goals:
(As a result of this workshop, you will;)

- understand the macro structure of learning *(PFC)*
- understand one universal learning construct *(TORI)*
- understand a framing technique for developing immersive branching *(AS)*
- have a few good chuckles…*(chat it up in the chat)*

What do you call a boomerang that doesn’t come back?
Thank You!

presenters

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