SOLO Taxonomy and Thinking Skills

Matching Thinking Strategies with Learning Outcomes in SOLO Taxonomy

Pam Hook
www.pamhook.com
SOLO Taxonomy - Biggs and Collis 1982

The Structure of Observed Learning Outcomes

Classifying Thinking

“Thinking Toolbox” Focus
Skills and dispositions for the
“knowing” of thinking.
(All that focus on critical, creative, caring stuff)

“Learning Outcomes” Focus
Skills and dispositions for the
“understanding” of learning.
(All that focus on learning outcomes stuff)
“To teach for understanding, we must create learning environments where thinking can be analysed and improved, and where pedagogies for reflection, pattern recognition, and connection, are encouraged.”
Classifying thinking interventions against learning outcomes in SOLO Taxonomy creates just such a learning environment.

<table>
<thead>
<tr>
<th>Go to the Download Centre for templates and examples</th>
<th>Unistructural</th>
<th>Multistructural</th>
<th>Relational</th>
<th>Extended Abstract</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOLO</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hooked on Thinking (HOT) Maps</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Thinking Tools and Maps</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr. Bome &amp; Hats</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DATT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metacognition</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curriculum &amp; Learning Based Thinking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Where these tools fit depends on the type of questions asked)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tools for Gathering Information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Question Matrix</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Questioning Strategies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Analysis (Data Chart)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Who/What/Where/When</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete/Count/Define/Describe/Identify/List/Match/Name</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compare Contrast/Classify/Sort/Distinguish</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluate/Generate/Imagine/Judge</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parts/Whole/Compare &amp; Contrast/Classify/Identify/Go/Value/Change/Final</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog/Modelling/Complex Categorise &amp; Compare &amp; Contrast</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yellow Hat/Black Hat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blue Hat/Green Hat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C &amp; S (Consistency &amp; Sequel)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADD (Alternatives, Possibilities, Choices)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PADI (First Important Dietary Items)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mrs. Potter's Questions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brainstorm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White Hat/Rad Hat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dano</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lincoln High School
As does co-constructing assessment rubrics for outcomes when using different thinking interventions

“So just what is a shallow learning outcome when using a PMI? – and what is a deep learning outcome?”
SOLO PRESTRUCTURAL:
Learning outcomes show unconnected information, no organisation.

“I need help to ...”
Where to next ...
SOLO UNISTRUCTURAL:
Learning outcomes show simple connections but importance not noted.

“I have one relevant idea about …”
What thinking interventions would enhance the conditions of value for unistructural learning outcomes?

- Target Map
- Matching items
- de Bono Red Hat
- Y Chart
- 5W’s
- and ....
Thinking interventions and SOLO Taxonomy

de Bono Red Hat
Target Map
Matching items
5W’s
Y Chart
...

hooked
thinking

www.hooked-on-thinking.com
Where to next ...
SOLO MULTISTRUCTURAL:
Learning outcomes show connections are made, but significance to overall meaning is missing.

“I have several ideas about ...”
What thinking interventions would enhance the conditions of value for multistructural learning outcomes?

- Circle Maps
- See Think Wonder
- Alphabet Key
- Brainstorming
- de Bono CAF
- de Bono White Hat
- Spider Diagrams
- Picture Key

and ....
Thinking interventions and SOLO Taxonomy

e.g. de Bono Red Hat
Target Map
Matching items
5W’s

e.g. de Bono White Hat
Circle Maps
Spider Diagrams
de Bono CAF
Brainstorming
Alphabet Key
Picture Key
See Think Wonder

www.hooked-on-thinking.com
Where to next ...
SOLO RELATIONAL:
Learning outcomes show full connections made, and synthesis of parts to the overall meaning

“I have several ideas about ...and can link these ideas to the whole.”
What thinking interventions would enhance the conditions of value for relational learning outcomes?

- Venn Diagram
- SWOT Analysis
- de Bono Black Hat
- de Bono Yellow Hat
- GANTT Charts
- de Bono PMI
- See Think Wonder
- Continuum Lines
- Ryan’s Disadvantages Key
- Ryan’s Commonality Key
- and ....
Thinking interventions and SOLO Taxonomy

- e.g. de Bono Red Hat
  - Target Map
  - Matching items
  - 5W's

- e.g. de Bono White Hat
  - Circle Maps
  - Spider Diagrams
  - de Bono CAF
  - Brainstorming
  - Alphabet Key
  - Picture Key
  - See Think Wonder

- e.g. de Bono Yellow Hat
  - de Bono Black Hat
  - Venn Diagram
  - SWOT Analysis
  - de Bono PMI
  - See Think Wonder
  - Continuum Lines
  - Story Board
  - Gantt Charts
  - Disadvantages Key
  - Commonality Key

www.hooked-on-thinking.com
Where to next:
SOLO EXTENDED ABSTRACT:
Learning outcomes go beyond subject and makes links to other concepts - generalises

“I have several ideas about ... I can link these ideas to the whole .... and look at these linked ideas in a new way.”
What thinking interventions would enhance the conditions of value for extended abstract learning outcomes?

de Bono Green Hat  Critical Path Analysis

de Bono C&S  Ryan’s Invention Key  What if ...

See Think Wonder  de Bono Blue Hat

Ryan’s Prediction Key  Systems Diagram

and ....
Thinking interventions and SOLO Taxonomy

Target Map
Matching items
5W’s
de Bono Red Hat
...

de Bono White Hat
Circle Maps
Spider Diagrams
de Bono CAF
Brainstorming
Alphabet Key
Picture Key
See Think Wonder
...

Venn Diagram
SWOT Analysis
de Bono PMI
See Think Wonder
Continuum Lines
Story Board
de Bono Yellow Hat
de Bono Black Hat
GANTT Charts
Disadvantages Key
Commonality Key
...

de Bono C&S
See Think Wonder
Fishbone Diagram
What if ...
de Bono Green Hat
de Bono Blue Hat
Critical Path Analysis
Prediction Key
Invention Key
...

hooked
thinking
www.hooked-on-thinking.com
Contact

Pam Hook
pam (DOT) hook (AT) gmail.com

Julie Mills
jack-mills (AT) xtra (DOT) co (DOT) nz