SOLO Taxonomy and Inquiry Learning

[Part 1]
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The Three Stages in Inquiry Talk:

"Our model of inquiry learning"

"The "right way" to do inquiry learning"

"Our student learning outcomes in inquiry learning"

Conversation shifts from ownership to righteousness to responsibility
Inquiry is an approach to learning that evokes a process exploration, and leads to asking questions and making discoveries in search of new understandings.

Ton de Jong, University of Twente, 2006
Inquiry

Enabling the learner since the end of the 19th Century

scientific discovery  constructivist
student research     self directed
experiential         problem based
exporatory           Dewey
inquiry              knowledge building

Bruner               project based

exploratory

Dewey

inquiry

knowledge building

collaborative
Commonalities

- Constructing knowledge
- Collaboration - social sharing
- Concrete realised experiences - real, situated, authentic.

VOL 312 SCIENCE pp532-533
Caveat ...

Learners have problems with ALL of the processes associated with inquiry
Inquiry learning is most effective when ...

The right kind of domain is used

Intuitive deep conceptual knowledge rather than operational factual procedural knowledge

Direct instruction and practice should be used for factual and procedural knowledge

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...and

Relevant cognitive processes are triggered and scaffolded for.

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Appropriate prior knowledge is available either with the co-learner or in the system.
...and

Learners have a clear goal to work to.
SOLO Taxonomy - Biggs and Collis 1982
The Structure of Observed Learning Outcomes

Process of learning is also process of inquiry
Stages in learning : Stages in inquiry
“If we inquire to learn, how should we learn to inquire?”
Negotiating Time Frames

Deliberate acts of teaching

- HOT Differentiated Curriculum Model

Student inquiry

- Supported
- Beginning
- Proficient
- Expert
- Autonomous
Deliberate acts of teaching: The HOT Differentiated Curriculum Model

A learning design curriculum model that uses SOLO Taxonomy to scaffold “deliberate acts of teaching” for building deep student learning outcomes prior to student inquiry.
Inquiry Learning Models based on Learning Outcomes in SOLO Taxonomy

Red Beach School

Vauxhall Primary School

Deliberate acts of teaching

Student inquiry

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Inquiry Model
Red Beach School
Get it: SOLO Multistructural LO
Sort it: SOLO Relational LO
Use it: SOLO Extended abstract LO

Inquiry Model
Vauxhall Primary School
Collect: SOLO Multistructural LO
Connect: SOLO Relational LO
Create: Communicate: SOLO Extended abstract LO

Deliberate acts of teaching
Student inquiry
St Mary’s School

PBL Inquiry Learning Model based on Learning Outcomes in SOLO Taxonomy

- Tautahi Define
- Whaakatu Present
- Whakatauhia Assess
- Rapua Locate
- Whakahaerehia Organise
- Tikanga Pakohia Select

Deliberate acts of teaching  Student inquiry
PBL Inquiry Model
St Mary’s School

Tautahi (Define): SOLO Multistructural LO
Rapua (Locate): SOLO Multistructural LO
Tikanga Pakohia (Select): SOLO Multistructural/Relational LO
Whakahaerehia (Organise): SOLO Relational LO
Whaakatu (Present): SOLO Extended abstract LO
Whakatauhia (Assess): SOLO Extended abstract LO
### Self Assessing Learning Outcomes at each stage of Student Inquiry

<table>
<thead>
<tr>
<th>STUDENT INQUIRY</th>
<th>Inquiry Question</th>
<th>Planning the Inquiry</th>
<th>Collecting the Information</th>
<th>Connect</th>
<th>Create and Communicate</th>
<th>Reflect on Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prestructural</strong></td>
<td>I need help to ask a question.</td>
<td>I need help to find resources.</td>
<td>I need help to identify relevant information.</td>
<td>I need help to be more than &quot;cut and paste&quot; what I found out.</td>
<td>I need help to look at the connected information in a new way.</td>
<td>I need help to know what I'm doing.</td>
</tr>
<tr>
<td><strong>Unistructural</strong></td>
<td>I can ask a simple question.</td>
<td>I can make an inquiry timeline.</td>
<td>I can identify relevant information from one source.</td>
<td>I can connect my information if I'm not sure what to do.</td>
<td>I can look at the connected information in a new way.</td>
<td>I know what I'm doing.</td>
</tr>
<tr>
<td><strong>Multistructural</strong></td>
<td>I can ask a question to collect information.</td>
<td>I can make an inquiry timeline with all relevant stages in the right order.</td>
<td>I can identify relevant information from several sources.</td>
<td>I can record information in more than one way.</td>
<td>I can share what I found out in several different ways.</td>
<td>I know what I'm doing.</td>
</tr>
<tr>
<td><strong>Relational</strong></td>
<td>I can ask a question to connect information.</td>
<td>I can make an inquiry timeline with relevant resources from different media.</td>
<td>I can record information in more than one way and explain why I have chosen these ways.</td>
<td>I can use HOT SOLO maps.</td>
<td>I can tell you what I am doing and describe it.</td>
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</tr>
<tr>
<td><strong>Extended Reflective</strong></td>
<td>I can ask a question to create and communicate information.</td>
<td>I can make an inquiry timeline with relevant stages in the right order and explain why the decisions were made and modify my timeline where necessary.</td>
<td>I can identify, relevant, reliable and valid information from a wide range of sources.</td>
<td>I can record information in more than one way and explain why I have chosen these ways and I can justify my decisions.</td>
<td>I can tell you what I am doing and describe it.</td>
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</tr>
</tbody>
</table>

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**Deliberate acts of teaching**

**Student inquiry**

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[www.hooked-on-thinking.com](http://www.hooked-on-thinking.com)
Learning interventions that support different stages in student inquiry.

[Supporting identified learning outcomes with HOT Maps and self assessment rubrics, thinking strategies and ICTs]

Learning interventions for “Collecting”

Learning interventions for “Creating” and “Communicating”

Learning interventions for “Connecting”

Deliberate acts of teaching

Student inquiry
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