When SOLO Met Bloom Taxonomy

If you are interested in the thinking (thinking might be too strong a term for what I was actually doing) that brought me to explore this relationship you might want to look at a previous post, “Posts Move, Goals Don’t.”

Bloom’s Taxonomy

Many of us are familiar with Bloom’s Taxonomy (1956) – or at least we think we are! The standard list that I was given during teacher training consisted of:

- Knowledge
- Comprehension
- Application
- Analysis
- Synthesis
- Evaluation

Did you know it was revised in 2000 or that it consisted of a set of four knowledge dimensions? In Bloom’s original work the knowledge dimensions consisted of factual, conceptual and procedural knowledge. Later the metacognitive knowledge dimension was added and the nouns changed to verbs with the last two cognitive processes switched in the order.

- Remember
- Understand
- Apply
- Analyze
- Evaluate
- Create
You can find a full summary of Bloom’s Taxonomy and the changes by Dr. Leslie Owen Wilson on her website from where this table is taken.

**SOLO Taxonomy**


The SOLO Taxonomy was devised by Collis & Biggs (1982) and looked at the Structure of the Observed Learning Outcomes produced by students in terms of their complexity. The SOLO Taxonomy is divided into a number of levels. The following is taken from Pam Hook’s wiki “The Learning Process – How Do You Know You are Learning?”
- At the **pre-structural level** of understanding, the student response shows they have missed the point of the new learning.
- At the **uni-structural level**, the learning outcome shows understanding of one aspect of the task, but this understanding is limited. For example, the student can label, name, define, identify or follow a simple procedure.
- At the **multi-structural level**, several aspects of the task are understood but their relationship to each other, and the whole is missed. For example the student can list, define, describe, combine, match, or do algorithms.
- At the **relational level**, the ideas are linked, and provide a coherent understanding of the whole. Student learning outcomes show evidence of comparison, causal thinking, classification, sequencing, analysis, part whole thinking, analogy, application and the formulation of questions.
- At the **extended abstract level**, understanding at the relational level is re-thought at a higher level of abstraction, it is transferred to another context. Student learning outcomes at the extended abstract level show prediction, generalisation, evaluation, theorising, hypothesising, creation, and or reflection.

There are lots of great blogs available about the SOLO Taxonomy, my own contributions are:

*Redesigning Classrooms: Using SOLO to Increase Challenge*

*Redesigning Classrooms: Spreading & Embedding the SOLO Taxonomy*

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I don’t tend to look at theories in terms of good and bad but rather useful and not so useful. Bloom’s Cognitive Taxonomy is based on a theory about knowledge and I find the four different knowledge dimensions very useful. Please note in the table above I have combined the factual
and conceptual dimensions into one row. A great education should include and have an appropriate balance between each of these knowledge dimensions; it’s why I find the “knowledge versus skills” debate in absolute terms a waste of time and effort, it’s whether we have the right balance. I also worry that we simply don’t develop the learner enough in our classrooms. However the nouns and verbs used by Bloom to describe the cognitive processes I find less helpful in developing deep understanding.

This is where I feel the SOLO Taxonomy has a real advantage in moving students from the foundations provided by factual knowledge to the deeper conceptual understanding required. This forms the theoretical underpinning required by teachers to construct knowledge first of all in their own minds – in a way that is explicit to them before helping students to learn within their subject. Remember if you want it in the classroom you need it in the staffroom first.

“It is critical to note that the claim is not that surface knowledge is necessarily bad and that deep knowledge is essentially good. Instead, the claim is that it is important to have the right balance: you need to have surface to have deep; and you need to have surface and deep knowledge and understanding in a context or set of domain knowledge. The journey from ideas to understanding to constructing and onwards ... When students can move from idea to ideas and then relate and elaborate on them we have learning – and when they can regulate and monitor (read “metacognition” here) this journey then they are teachers of their own learning.”

(Hattie, 2009, p. 29)

Here’s an example of using SOLO with one of Bloom’s Knowledge dimensions, I’ve deliberately chosen to focus on the metacognitive dimension as this is the one found least often in most lessons: