STRUCTURE OF OBJECTIVE LEARNING OUTCOMES (SOLO) TAXONOMY
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Assessment of fulfillment of learning outcomes is central to the focus of any learning outcome. Theexaminer needs to know that the learning outcomes have been reached by the student, in orderto give a pass.Also the student needs to know exactly how to answer a question based on what the teacher expects out of a question.

In the format of evaluation whether it is formative or summative, short or long answer essay questions form an integral part and usually has the most proportion of theory marks allotted. Based on the answers given by the students, it is important for the teachers to be able to assess how much of the learning outcomes have been reached. Once having done that there calls for a scope for improvement in the performance of the student.

SOLO stands for the Structure of Observed Learning Outcomes. It was developed by Biggs and Collis (1982). Biggs describes SOLO as "a framework for understanding".

SOLO identifies five stages of understanding. Each stage embraces the previous level but adds something more.

• **Prestructural**– the student acquires bits of unconnected information that have no organisation and make no sense.

• **Unistructural** – students make simple and obvious connections between pieces of informationsimple and obvious connections are made, but their significance is not grasped.

• **Multistructural** – a number of connections are made, but not the meta-connections between them

• **Relational** – the students sees the significance of how the various pieces of information relate to one another

• **Extended abstract** – at this level students can make connections beyond the scope of the problem or question, to generalise or transfer learning into a new situation

Unistructural and multistructural questions test students' surface thinking (lower-order thinking skills). Relational and extended abstract questions test deep thinking (higher-order thinking skills)

SOLO describes level of increasing complexity in a student's understanding of a subject, through five stages, and it is claimed to be applicable to any subject area. However, not all students get through all five stages, of course, and indeed not all teaching (and even less "training") is designed to take them all the way. However it is an attempt to understand, in a more objective way, whether the learning outcomes and how much of the learning outcomes have been fulfilled.

If students were oriented to SOLO taxonomy using prototypical examples, then it would provide them an opportunity to understand the hierarchy of cognitive competence and some of the factors that teachers consider while marking descriptive responses. Consequently, students may be motivated to take this into consideration when preparing for tests and in composing descriptive responses.

The students who receivethe grade pass, or pass with distinction, or anything in between are said to have reached the learning outcomes. But is it necessarily so? In order to know whether the student really has fulfilled the outcomes, the outcomes have to be possible to assess. SOLO allows one to balance the cognitive demand of the questions asked

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and to scaffold students into deeper thinking and metacognition.SOLO is a true hierarchic taxonomy – increasing in quantity and quality of thought.SOLO allows teachers and learners to ask deeper questions without creating new ones. SOLO can be used as a true a powerful metacognitive tool.Since bulk of the evaluation in medical education is done by short or long essay type questions, SOLO assessment can be utilised by all of us in accurate and a more objective assessment of individual answers.

Suggested Reading:

1. Biggs JB and Collis KF. Evaluating the Quality of Learning. New York & Sydney: Academic Press, 1982

2. Hattie JAC, Brown GTL. Assessment Tools for Teaching and Learning Technical Report #43. Cognitive Process in asTTle: the SOLO Taxonomy (online). http://www.tki.org.nz/r/asttle/pdf/technical-reports/techreport43.pdf [2 August 2010].

3. Brabrand B, Dahl B.Using the SOLO taxonomy to analyze competenceprogression of university science curricula. Higher Educ58: 531–549,2009.

4. E. S. Prakash, K. A. Narayan, and K. R. SethuramanStudent perceptions regarding the usefulness of explicit discussion ofStructure of the Observed Learning Outcome" taxonomyAdvPhysiolEduc34: 145–149, 2010