The SOLO Taxonomy:

A framework for analysing a student's depth of knowledge

Prof. Eliathamby Ambikairajah, School of EE&T

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What is the SOLO Taxonomy of Learning?

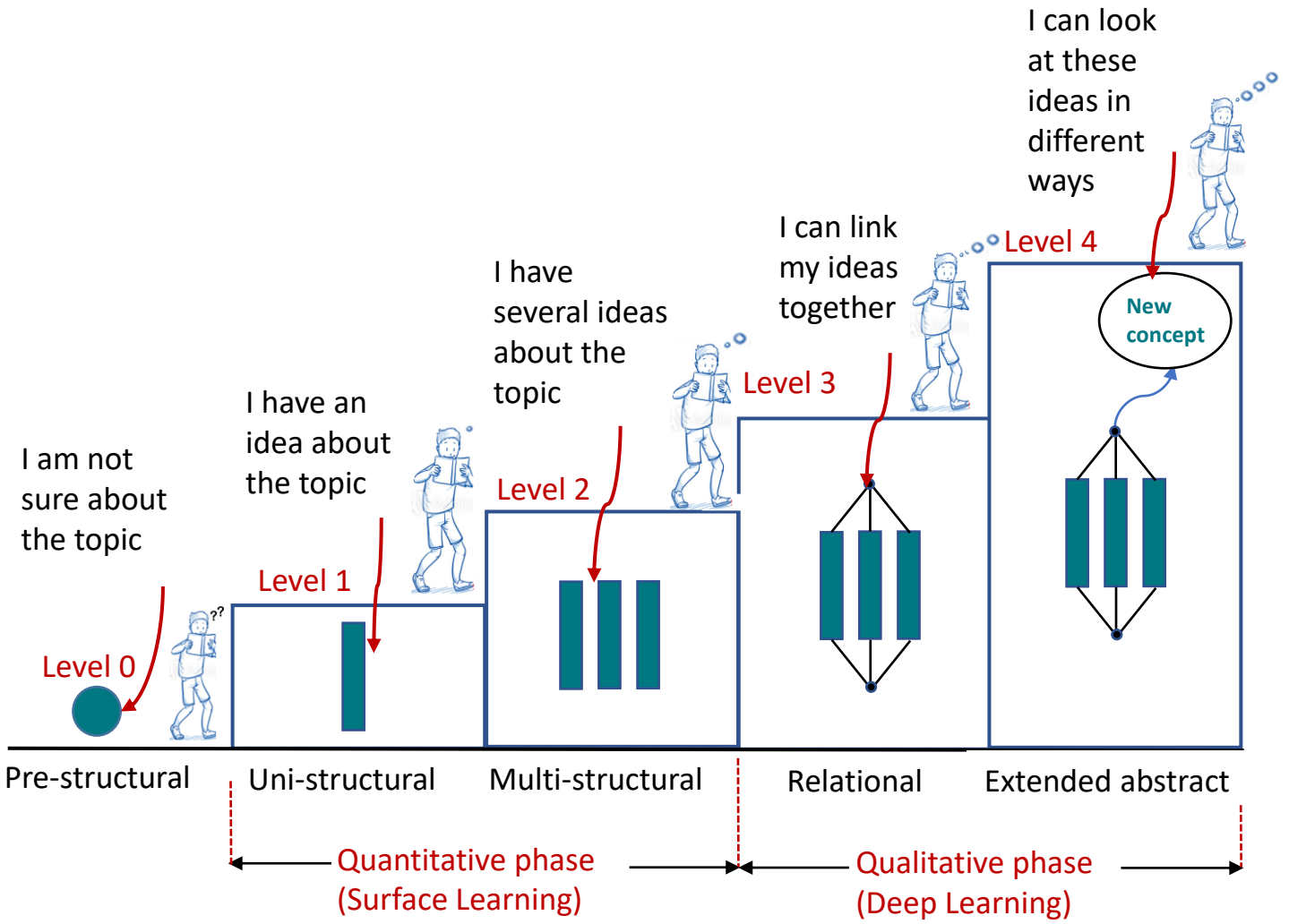
SOLO Taxonomy of Learning

- ✓ The **S**tructure of **O**bserved **L**earning **O**utcomes (SOLO) taxonomy is a tool for measuring how well a student understands a topic.
- ✓ SOLO taxonomy describes 5 Hierarchical levels of understanding from simple to complex [Pre-structural, Uni-structural, Multi-structural, Relational, Extended abstract]
- ✓ SOLO taxonomy is a model that describes levels of increasing complexity in student's understanding of a topic.
- ✓ The taxonomy encourages students to think about where they are currently with their learning and what they need to do in order to progress to the next level.
- ✓ When using the SOLO Taxonomy, assessments must be aligned with the desired learning outcomes and eventual student needs.

SOLO Taxonomy - Biggs and Collis 1982

The **S**tructured **O**verview of **L**earning **O**utcomes

Different Stages of the SOLO Taxonomy?



Level 0: The student does not have any kind of understanding about the topic.

Levels 1 & 2: Levels of surface understanding (knowledge) in which knowledge accrues in greater quantity .

Levels 3 & 4: No increase in quantity in the number of facts or ideas known, but deep understanding (knowledge) comes with a qualitative change in how ideas are understood in connection with other ideas. **Surface knowledge is required in order to develop deep knowledge.**

Examples of suggested SOLO's action verbs

SOLO Taxonomy	Measurable Action Verbs or Words
Level 0: Pre-structural [Students don't have any knowledge of the topic]	Unsuccessful, failed, learner missed the point
Level 1: Uni-structural [Students have limited knowledge of the topic – may be one isolated fact about the topic]	List, name, memorise, define, identify, recognise, arrange, find, note, sketch, do a simple procedure
Level 2: Multi-structural [Students know a few facts about the topic – but unable to link them]	Describe, classify, combine, execute, formulate, solve, conduct, prove, complete, illustrate, do algorithms
Level 3: Relational Students are able to link together and explain several ideas around a related topic]	Analyse, explain, integrate, sequence, relate, apply theory, compare, contrast, argue, implement, construct, derive, conclude, structure, adapt, interpret
Level 4: Extended Abstract [Students are able to link lots of related ideas together, but also able to link these to other bigger ideas and concepts]	Reflect, evaluate, theorise, hypothesise, predict, create, imagine, generalise, transfer theory to new domain, assess, critically reflect, criticise, reason

Surface Learning

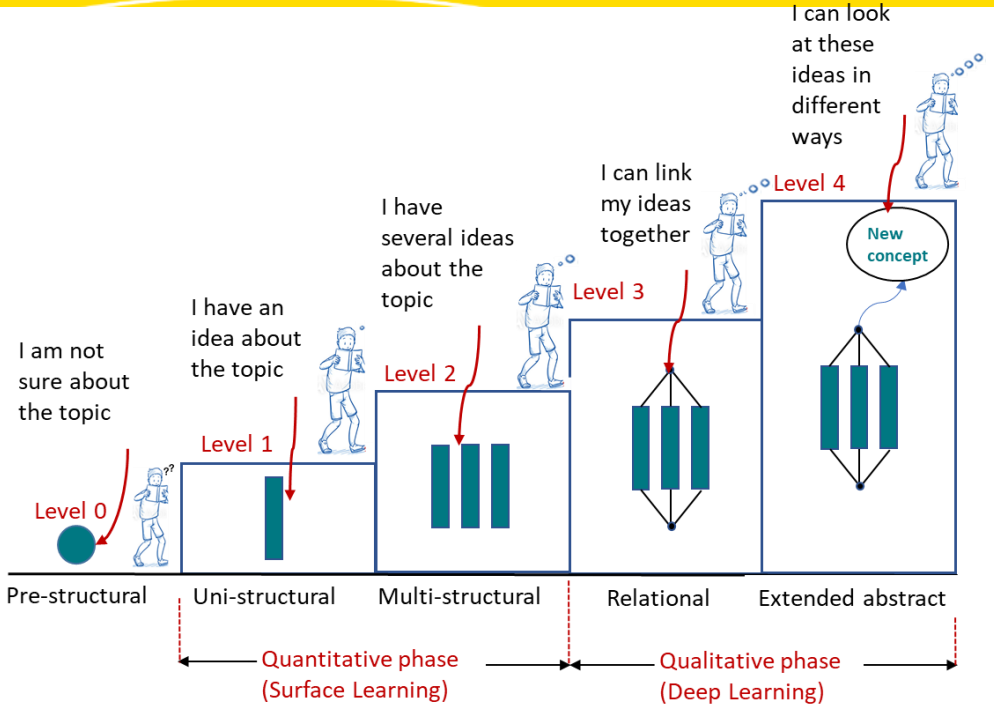
Deep Learning

Multiple-Choice and Short Answer Questions

Learning outcomes (ELEC4122/GSOE9510):

At the end of the course students should be able to:

1. Identify ethical problems in the context of engineering practice and understand ethical decision model
2. Apply the concepts embodied in codes of ethical conduct to professional situations
3. Demonstrate critical thinking skills and attitudes for engaging in respectful and inclusive dialogue with their peers and assess conflicting views of ethical issues.
4. Understand effective leadership roles and strategies and apply them in a variety of workplace settings
5. Exhibit persuasive verbal communication skills, and effective teamwork evidenced by strong and sustained contributions from every member



Multiple Choice Question [SOLO - Level 1 and LO4]:
Which of the following will be the most *effective* for technical leaders (select one only):

1. An energetic hard-driver who expects 110% from everyone
2. One who believes people are the only important resource ✓
3. A technical expert in the field being pursued
4. A big-picture charismatic person, who wins over everyone at meetings
5. None of the above.

Short Answer Question [SOLO – Level 2 and LO 3 & 4]:
In the lecture notes, there are 8 attributes of an active listener:

1. Reflect on the 8 attributes of active listening and write down which ones of them are strengths of yours, and which ones require improvement.
2. Describe why the two attributes you have chosen are a strength or an area of improvement for you (support your answer with an example of where you demonstrated each attribute you mentioned).

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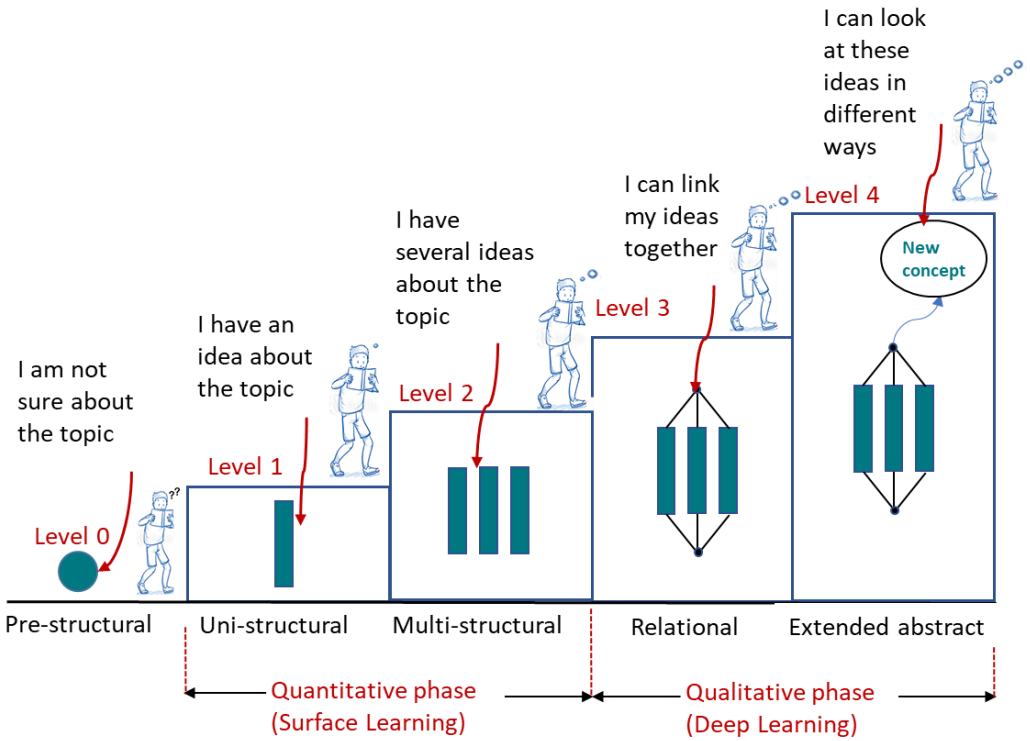

Short Answer Question [SOLO – Level 3 and LO 3 & 4] :
A decision must be made regarding the purchase of a new electronic equipment for your department. The department members are split regarding which manufacturer and model should be ordered, and the discussions have become extremely heated and emotional.
As a team leader, how do you make this decision, and how do you deal with the individuals whose recommendation you did not take?

Seminar Question [SOLO – Level 2 and LOs 4 & 5] :
Look at the UNSW Values in Action:

http://www.mycareer.unsw.edu.au/wp-content/uploads/2018/05/Values-in-Action-Our-UNSW-Behaviours-2018-Summary.pdf

How does these Values in Action help academics and students? Discuss the UNSW Values in Action framework in your group and present your understanding to the tutor(s).