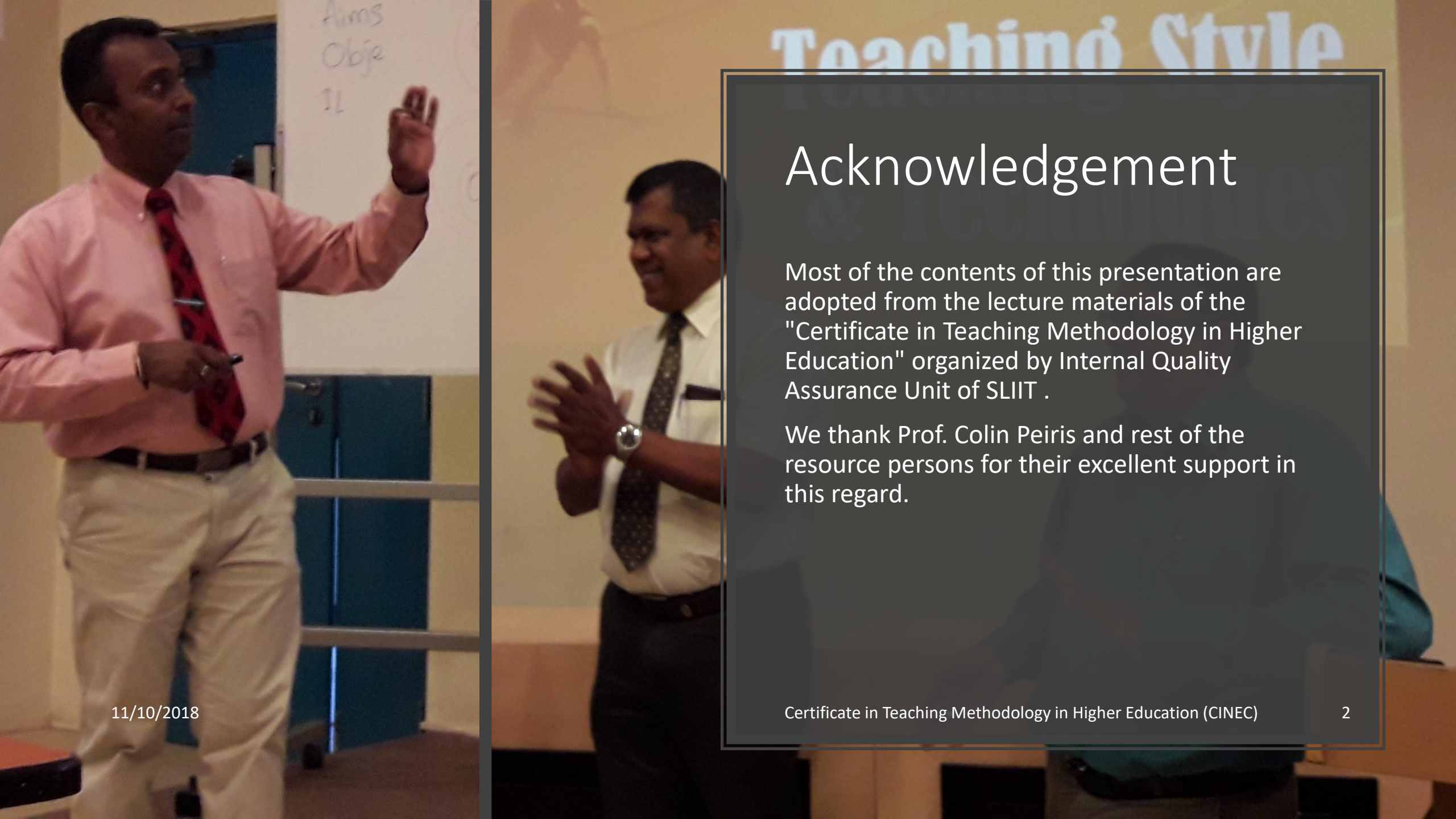
Certificate in Teaching Methodology in Higher Education

Shadow Program conducted by participants of SLIIT Program to share their experience while learning

Session 4 2018.10.11

Presented by Lalith Edirisinghe, PhD



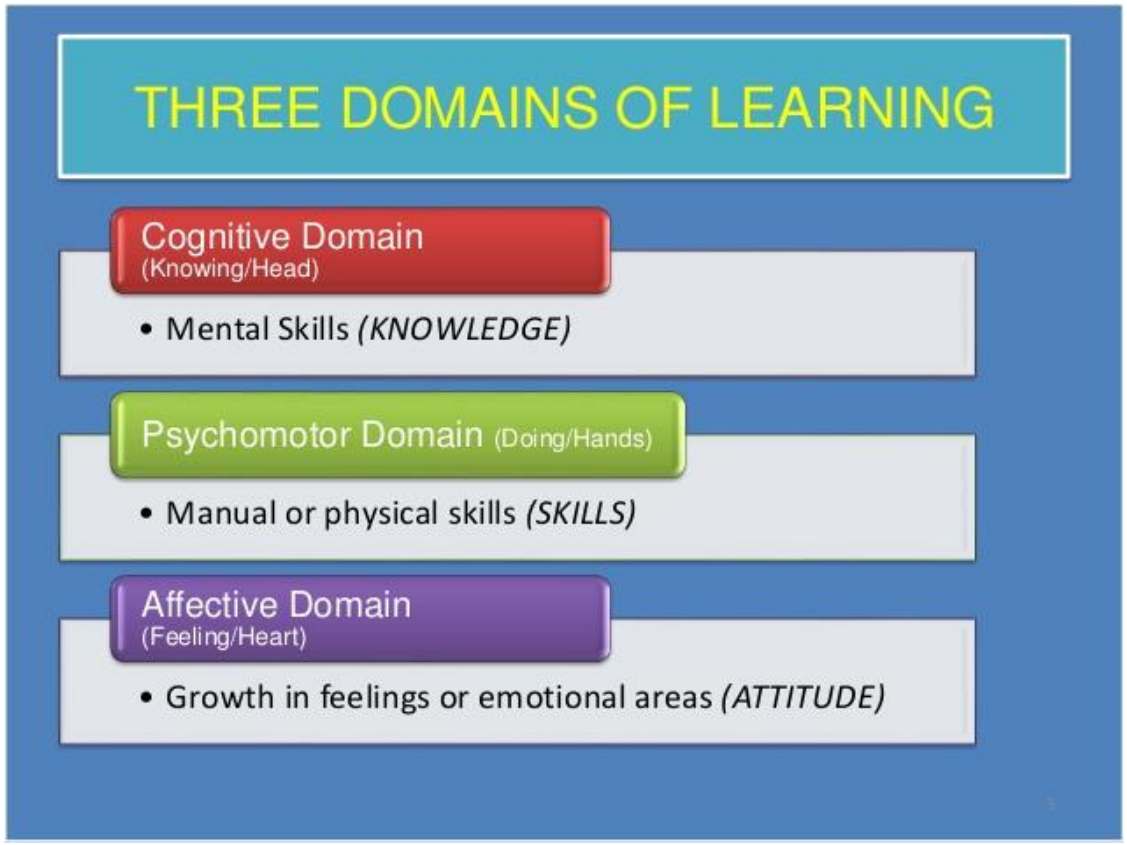
Acknowledgement

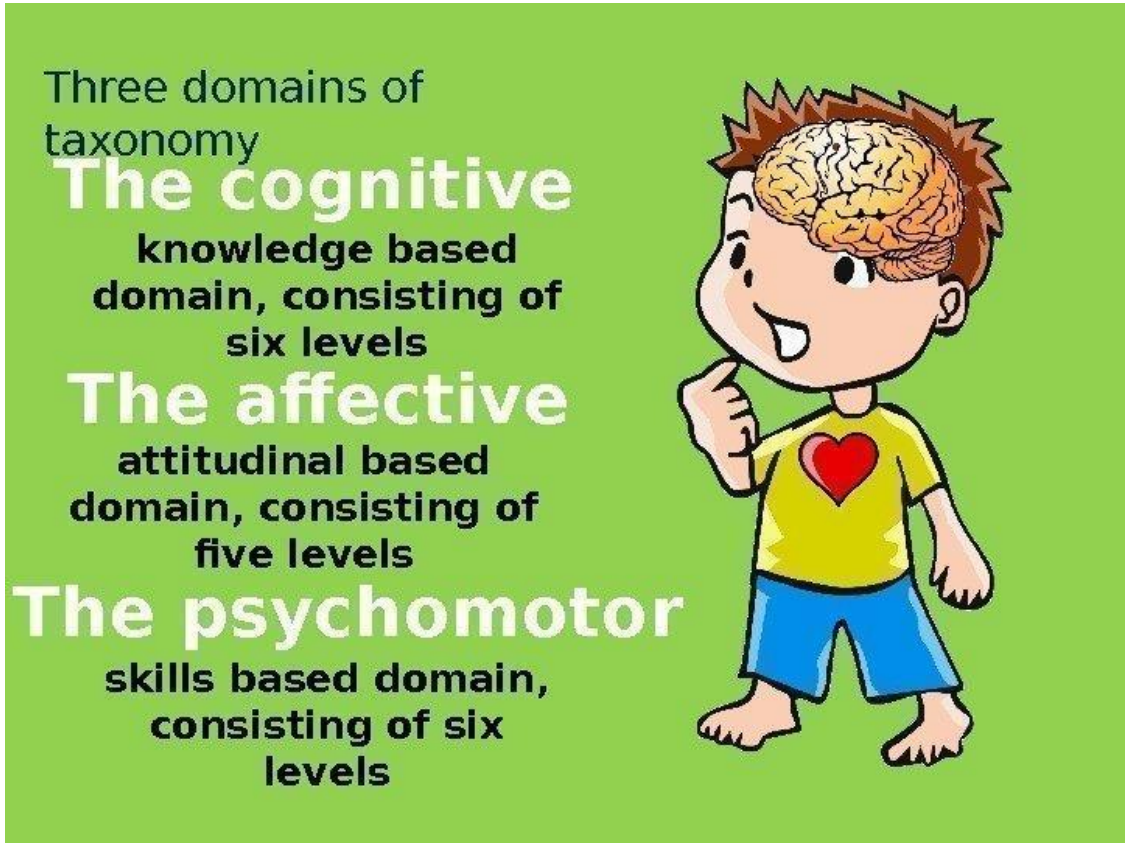
Most of the contents of this presentation are adopted from the lecture materials of the "Certificate in Teaching Methodology in Higher Education" organized by Internal Quality Assurance Unit of SLIIT .

We thank Prof. Colin Peiris and rest of the resource persons for their excellent support in this regard.

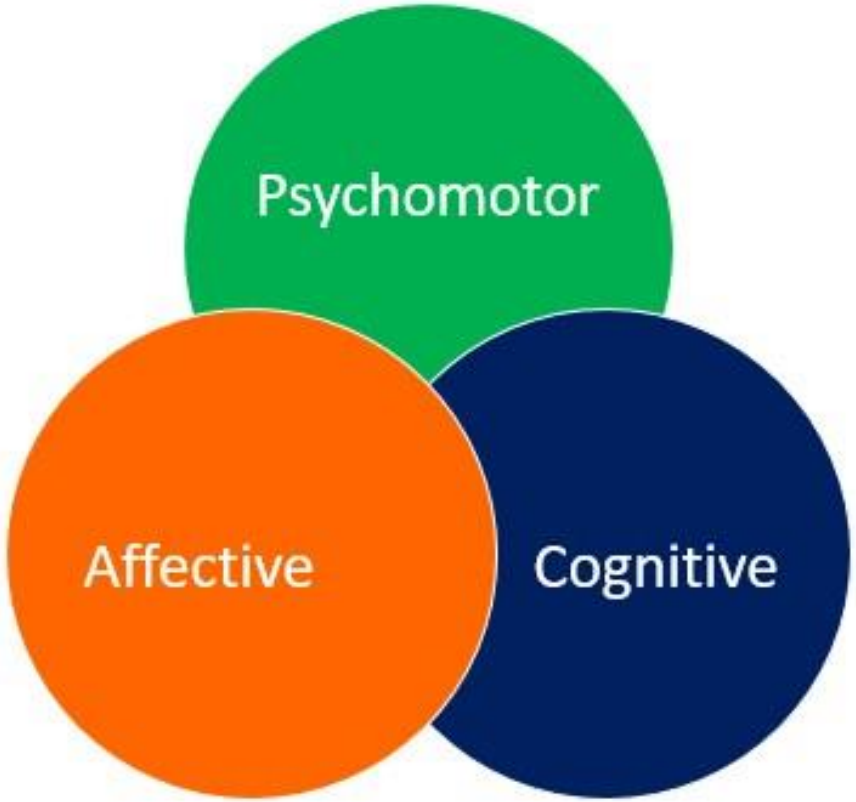
Our discussion today....

- Learning Domains
- Neuroscientific Context in Teaching
- Blooms Taxonomy
- K SAM model in Sri Lanka Qualification Framework
- More on Intended Learning Outcome





The Learning Domains



Three Domains of Blooms Taxonomy

Bloom's Levels of Understanding - Actions

6. Creating: Assemble, Construct, Create, Develop

What students really need to learn how to do!

5. Evaluating: Appraise, Defend, Judge, Support, Value

4. Analyzing:: Compare, Contrast, Distinguish, Examine

A few questions on the GRE, MCAT exams

3. Applying: Demonstrate, Illustrate, Interpret, Solve

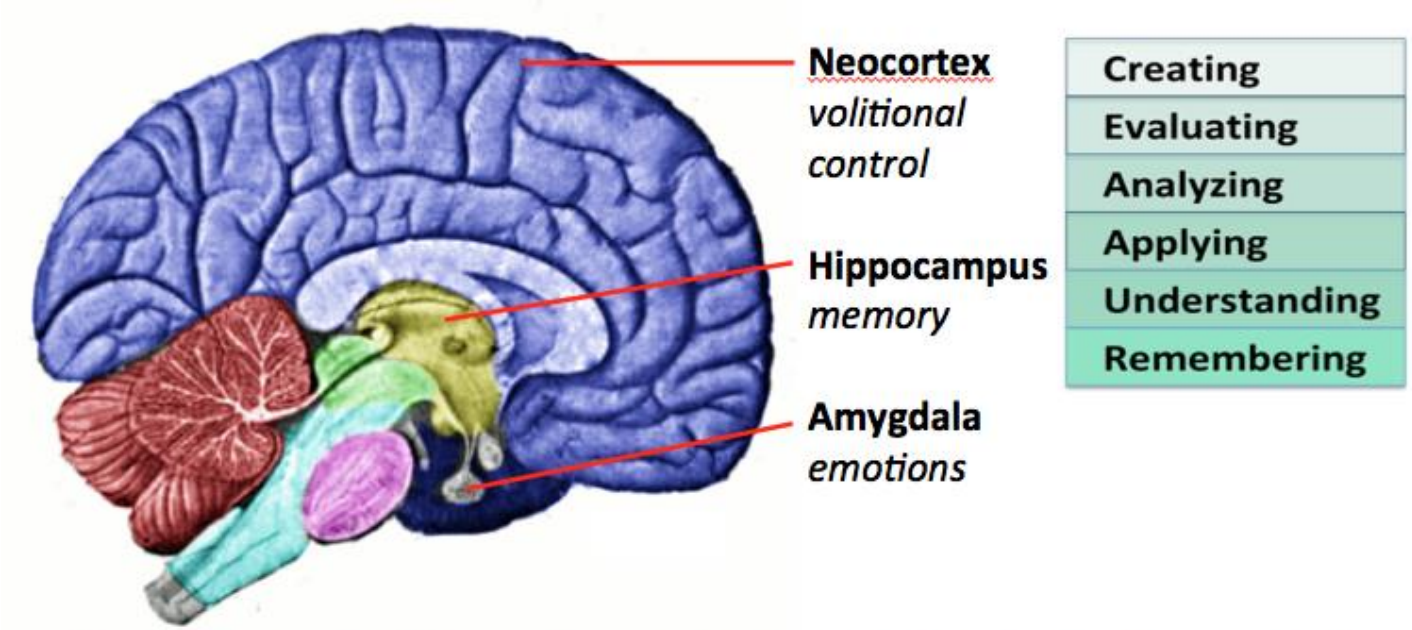
2. Understanding: Describe, Explain, Identify, Summarize

~95% of questions on introductory level exams

1. Remembering: Cite, Define, List, Name, Recall, State

Neuroscientific Approach in Teaching

- Active learning through scientific approach
- Complex cognitive tasks are describe in the Blooms Taxonomy in the order of complexity



Bloom's taxonomy, which describes cognitive tasks in ascending orders of complexity, appears to be supported by neuroscience research. Recruiting volitional control, memory, and emotions through active learning techniques increases performance.

Brain image by Looie496 [Public domain], via Wikimedia Commons.
Verbs from Bloom's Revised Taxonomy of Learning Objectives in the Cognitive Domain, in Anderson, L. W. and David R. Krathwohl, D. R., et al. eds. *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. Boston: Allyn & Bacon, 2001.

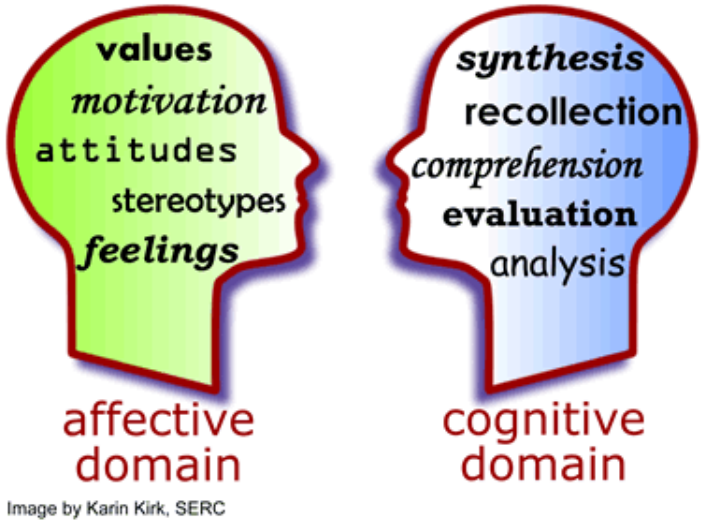


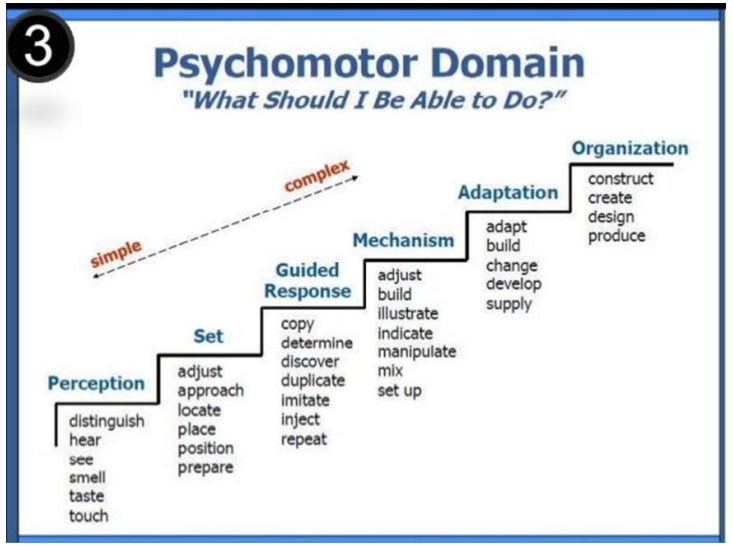
Image by Karin Kirk, SERC

Bloom's Domains of Learning

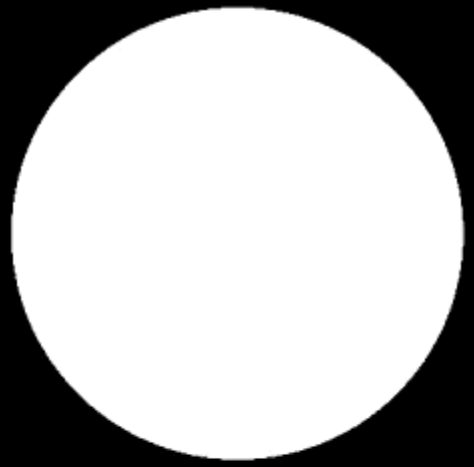
(higher order skills are on top)

Psychomotor	Cognitive	Affective
• Origination	• Evaluation	• Characterizing
• Adaptation	• Synthesis	• Organizing
• Complex Overt Response	• Analysis	• Valuing
• Mechanism	• Application	• Responding
• Guided Response	• Comprehension	• Receiving
• Set	• Knowledge	
• Perception		

Sources: Bloom 1984; Krathwohl, Bloom and Masia 1990; Simpson 1972.



Blooms Domains in Learning



Education

Bloom's Taxonomy

Bloom's taxonomy is a set of three hierarchical models used to classify educational learning objectives into levels of complexity and specificity.

The three lists cover the learning objectives in cognitive, affective and sensory domains.

Bloom's taxonomy is a powerful tool to help develop learning objectives because it explains the process of learning

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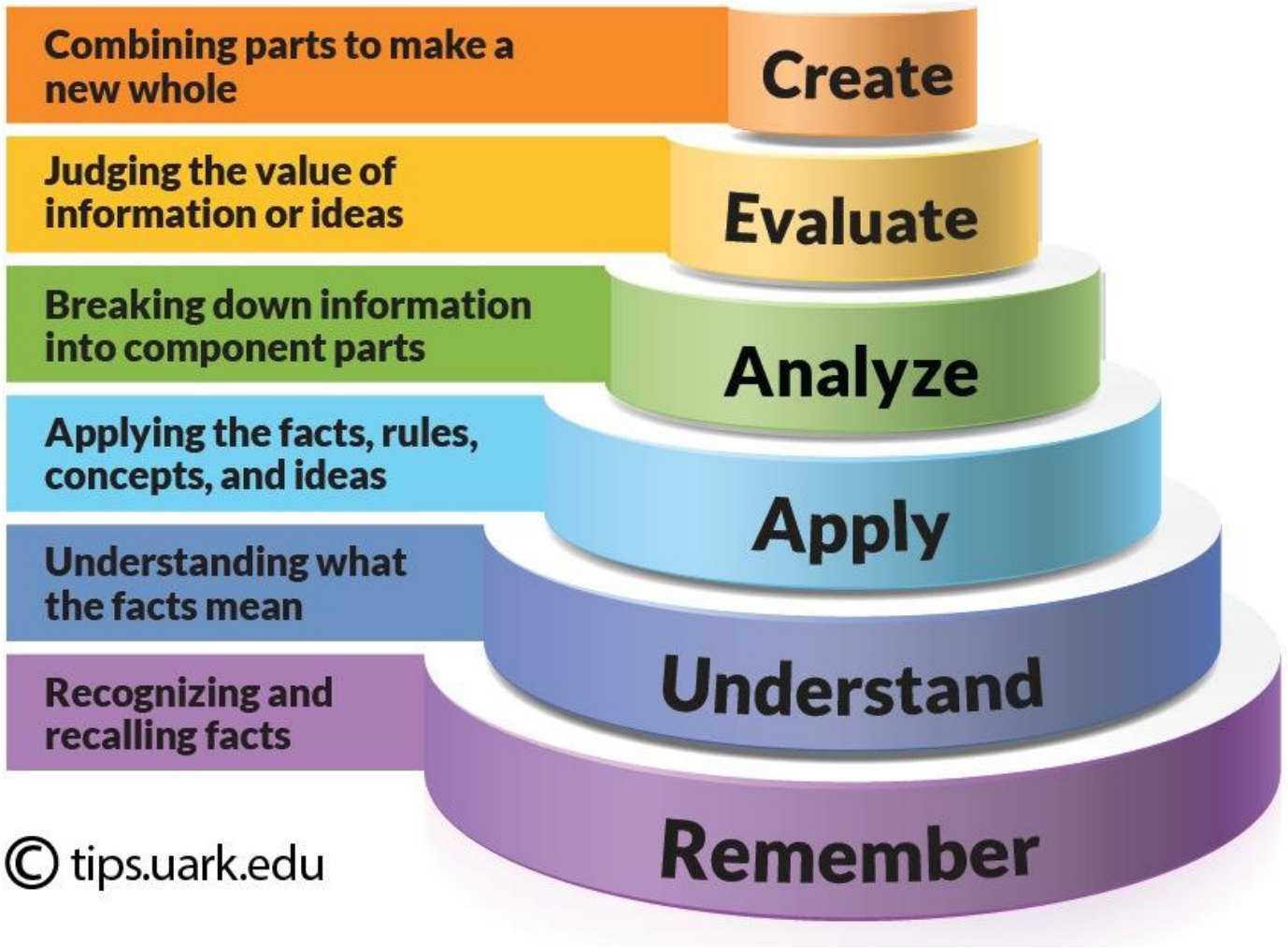
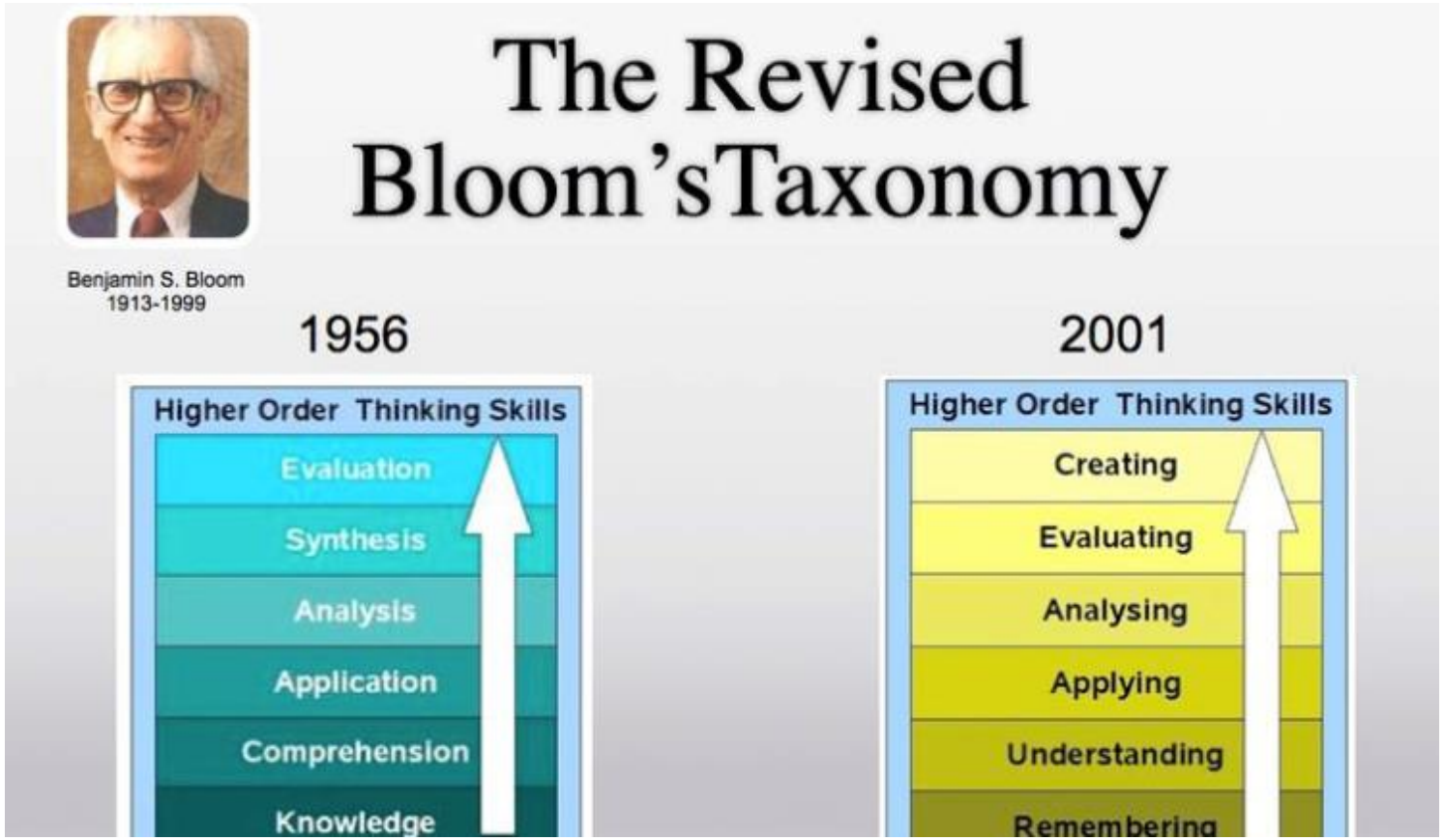




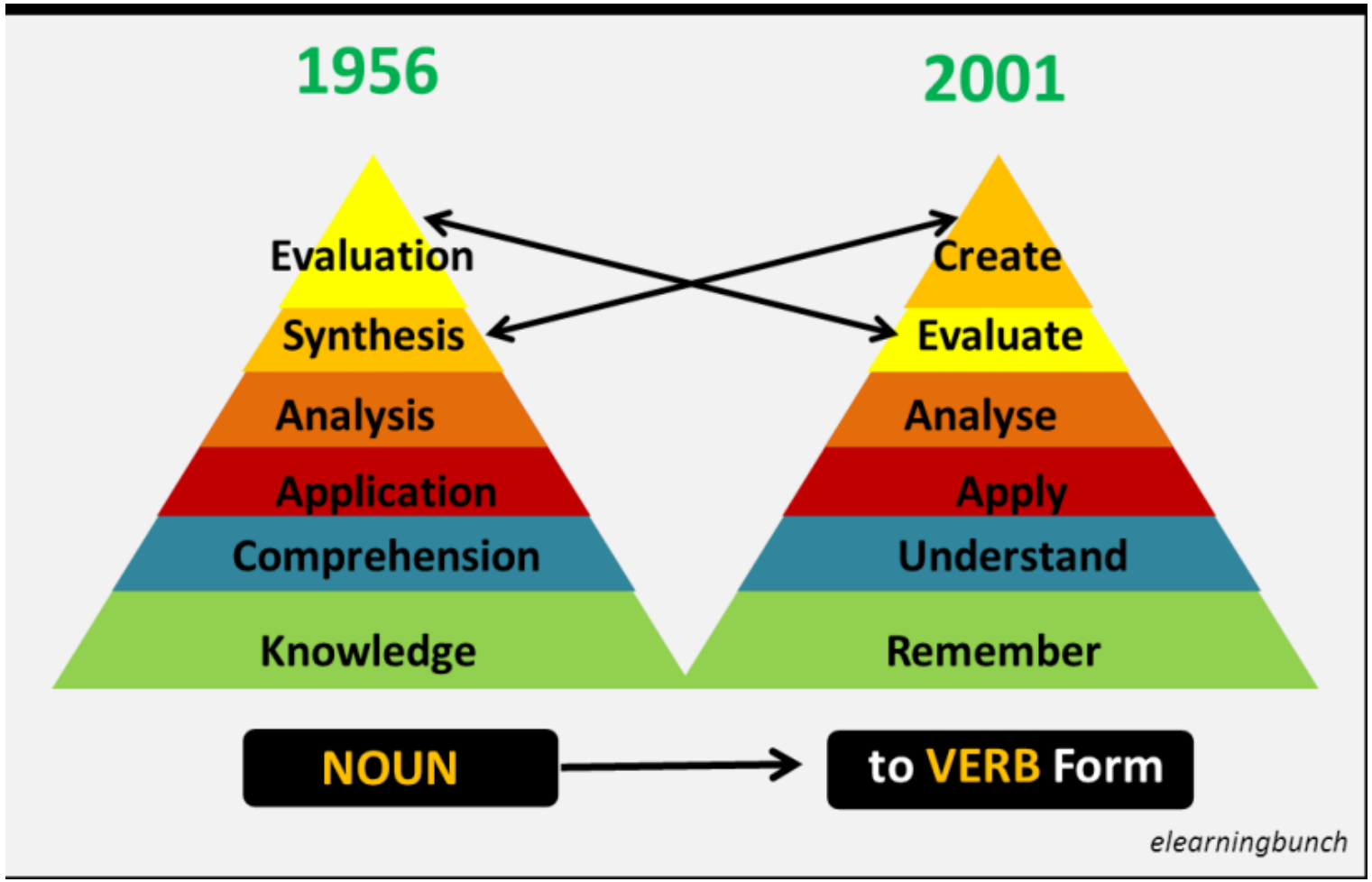
History and Development of Bloom's Taxonomy

Bloom's Taxonomy is a model that describes the cognitive processes of learning and developing mastery of subject.

Revised Blooms Taxonomy

Original work of **Cognitive Taxonomy** by Benjamin Bloom attempted in 1956

Anderson and Krathwohl's Taxonomy 2001



Blooms Taxonomy and Education

3 Hs in Teaching and Learning

Cognitive Domain: Knowledge = think — **Head**

Affective Domain: Attitude = feel — **Heart**

Psychomotor Domain: Skills = do — **Hand**

- Bloom's Taxonomy has since become a standard tool for developing educational objectives, assessments, and activities.

How Bloom's can aid in course design

Before you can ***understand*** a concept, you must ***remember*** it.

To ***apply*** a concept you must first ***understand*** it.

In order to ***evaluate*** a process, you must have ***analyzed*** it.

To ***create*** an accurate conclusion, you must have completed a thorough ***evaluation***.

Bloom's Level	Key Verbs (keywords)	Example Learning Objective
Create	design, formulate, build, invent, create, compose, generate, derive, modify, develop.	*By the end of this lesson, the student will be able to design an original homework problem dealing with the principle of conservation of energy.*
Evaluate	choose, support, relate, determine, defend, judge, grade, compare, contrast, argue, justify, support, convince, select, evaluate.	By the end of this lesson, the student will be able to determine whether using conservation of energy or conservation of momentum would be more appropriate for solving a dynamics problem.
Analyze	classify, break down, categorize, analyze, diagram, illustrate, criticize, simplify, associate.	*By the end of this lesson, the student will be able to* differentiate between potential and kinetic energy.
Apply	calculate, predict, apply, solve, illustrate, use, demonstrate, determine, model, perform, present.	*By the end of this lesson, the student will be able to* calculate the kinetic energy of a projectile.
Understand	describe, explain, paraphrase, restate, give original examples of, summarize, contrast, interpret, discuss.	*By the end of this lesson, the student will be able to* describe Newton's three laws of motion to in her/his own words
Remember	list, recite, outline, define, name, match, quote, recall, identify, label, recognize.	*By the end of this lesson, the student will be able to* recite Newton's three laws of motion.

Learning objective examples adapted from, Nelson Baker at Georgia Tech: nelson.baker@pe.gatech.edu

Our Application Paradox

1. Some of us are teaching without a clear focus of ILOs
2. ILOs in some courses are not scientifically correct
3. It is more dangerous to follow baseless ILOs than teaching by experience
4. Therefore, we need to work reverse direction and test our existing ILOs
5. If you feel they lack the fundamental scientific background please revise in consultation with experts

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Developing Intended Learning Outcomes (ILO) using the Blooms Taxonomy

Group Activity (Time 10 minutes)

Group Name: .....

•Select a course familiar to the group

•Write ILOs covering six levels of Blooms Taxonomy for a lesson in a course of your own choice

Course Name: .....

Note: You may refer to the guidelines on the other side of the page

2018.10.04

Blooms Level	ILO for the course of your own choice
Remember	
Understand	
Apply	
Analyse	
Evaluate	
Create	

Make sure you write ILOs for each lesson so that you teach objectively and students learn objectively

K-SAM Model in SLQF

Knowledge
Skills
Attitudes, Values, Professionalism and Vision for life
Mind-set and Paradigm

Relevance of K-SAM Model in Sr Lanka

The SLQF recognizes a given learning outcome as a blend of more than one domain (in most cases all the domains) in the K-SAM model

The following twelve learning outcomes identified by the Ministry of Higher Education in Sri Lanka as of national importance have been customized as level descriptors to suit each level of qualification.

The categorization of the learning outcomes is done according to the principal K-SAM components

Categories of Learning Outcomes	Core Area
1. Subject / Theoretical Knowledge	Knowledge
2. Practical Knowledge and Application	
3. Communication	Skills
4. Teamwork and Leadership	
5. Creativity and Problem Solving	
6. Managerial and Entrepreneurship	
7. Information Usage and Management	
8. Networking and Social Skills	
9. Adaptability and Flexibility	Attitudes, Values, Professionalism and Vision for life
10. Attitudes, Values and Professionalism	
11. Vision for Life	
12. Updating Self / Lifelong Learning	Mind-set and Paradigm

Domain of Learning: K-SAM Model (Page 14 of SLQF)

Level Descriptors

- The level descriptors may be used as a guideline to develop course materials of a particular study programme having several course units or modules
- This is to make sure that the learners' could progressively meet the expected attributes of the relevant qualification type at the end of the course.

Summary and take home for the day

Neuroscientific Context in Teaching

Blooms Taxonomy

- Evolution
- Relevance to Education
- Use in writing ILO
- Revers approach

Sri Lanka Qualification Framework

- K-SAM Model
- Level Descriptors

Next session.....

How to use Revised Blooms Taxonomy and K SAM model for Assessments

18th October 2018 @ 3.30pm