มหาวิทยาลัยมหิดล
สถาบันนวัตกรรมการเรียนรู้

Outcome-Based Education (OBE)

OLE & How to write lesson plan

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Agenda

Outcome Based Education

- OBE Framework
- Why OBE ?
- Principle of OBE
- From OBE to curriculum and course design

Learning Objective & Learning Outcome

- The differences
- Writing learning outcomes
  - ABCD method
  - SMART model
- Taxonomy for learning, teaching, and assessing

OLE & Lesson Plan

- Important
- OLE
- Backward design
- Consideration for writing a lesson plan

Part 1/3
Outcome-Based Education (OBE)

Traditional Curriculum VS Outcome Based Curriculum

Content Framework

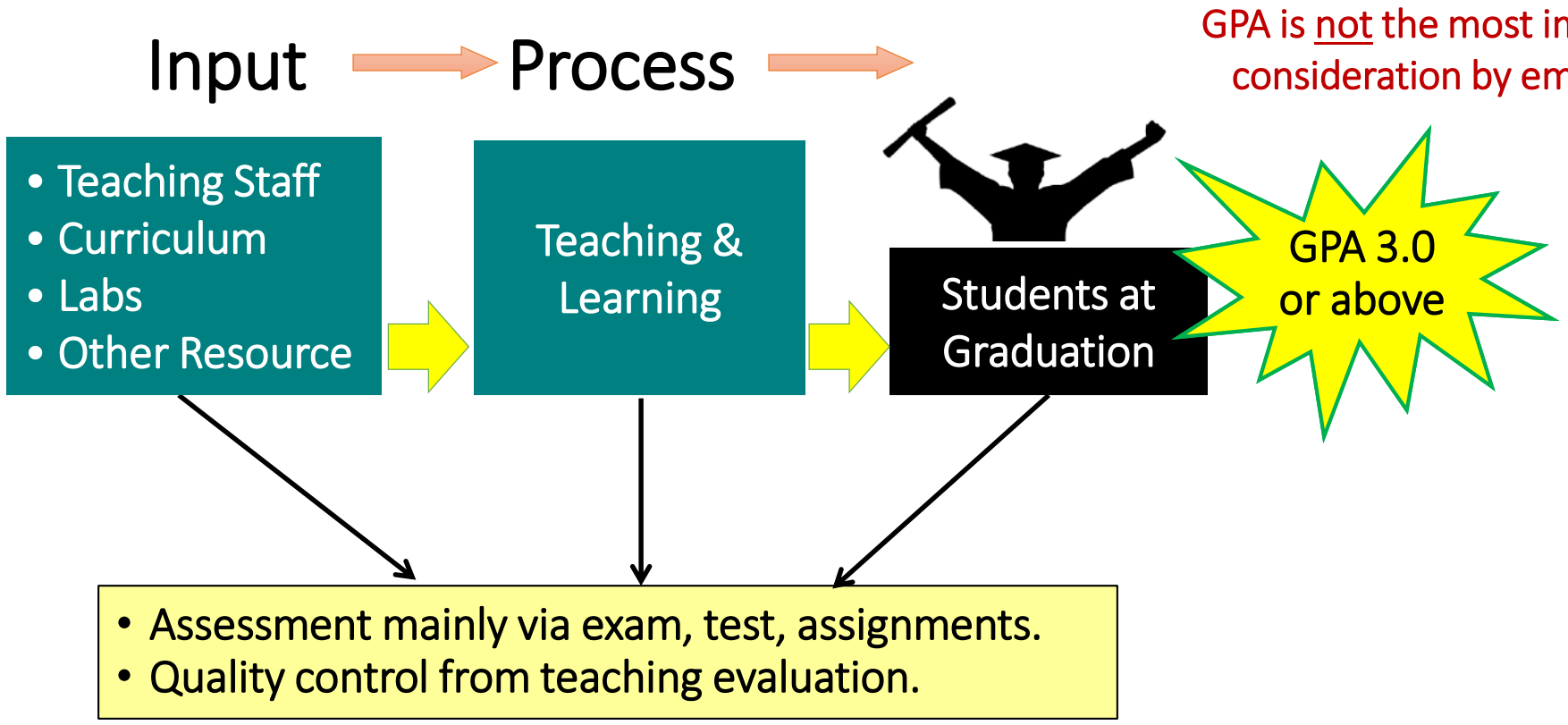
1. **Topic:** Which topic be included in the curriculum?
2. **Textbooks:** Which textbook should be used?
3. **Test:** Which topic should be assessed, how many time for examining?
4. **Task:** Which task would fulfill the learner' s achievement and grading?

Learning Outcome Framework

1. **Outcome statements:** What learners should have for implementing in real life?
2. **Content:** Main concept, key ideas and issue for implementation.
3. **Skill:** Skills in which students should be instructed.
4. **Task** What can students do to demonstrate their level of skill as a result of the course?
5. **Assessment Criteria** Criteria of performance that could be incorporated into instruction

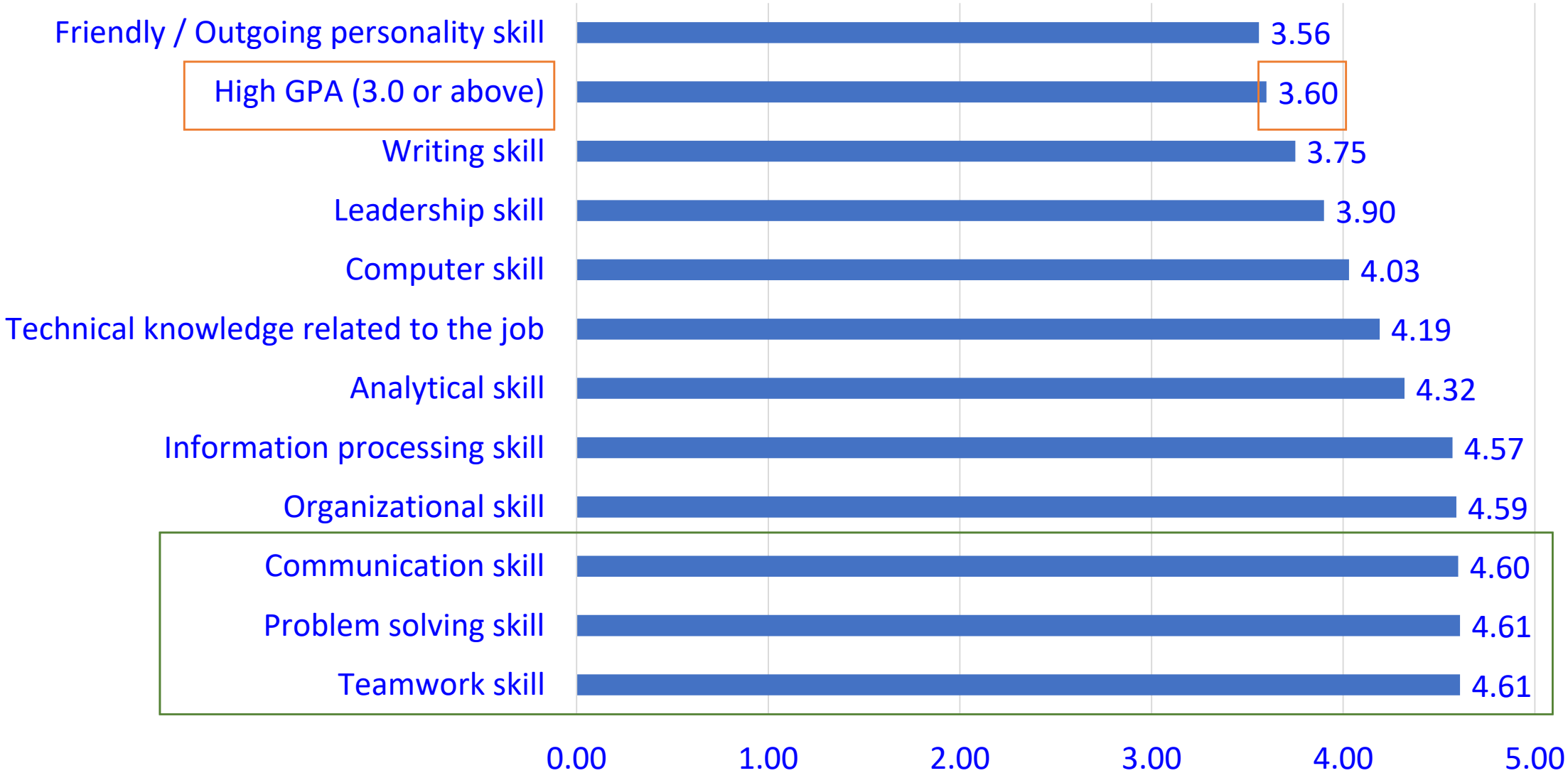
Traditional Education Process

❖ Traditional education process focus on the in put.



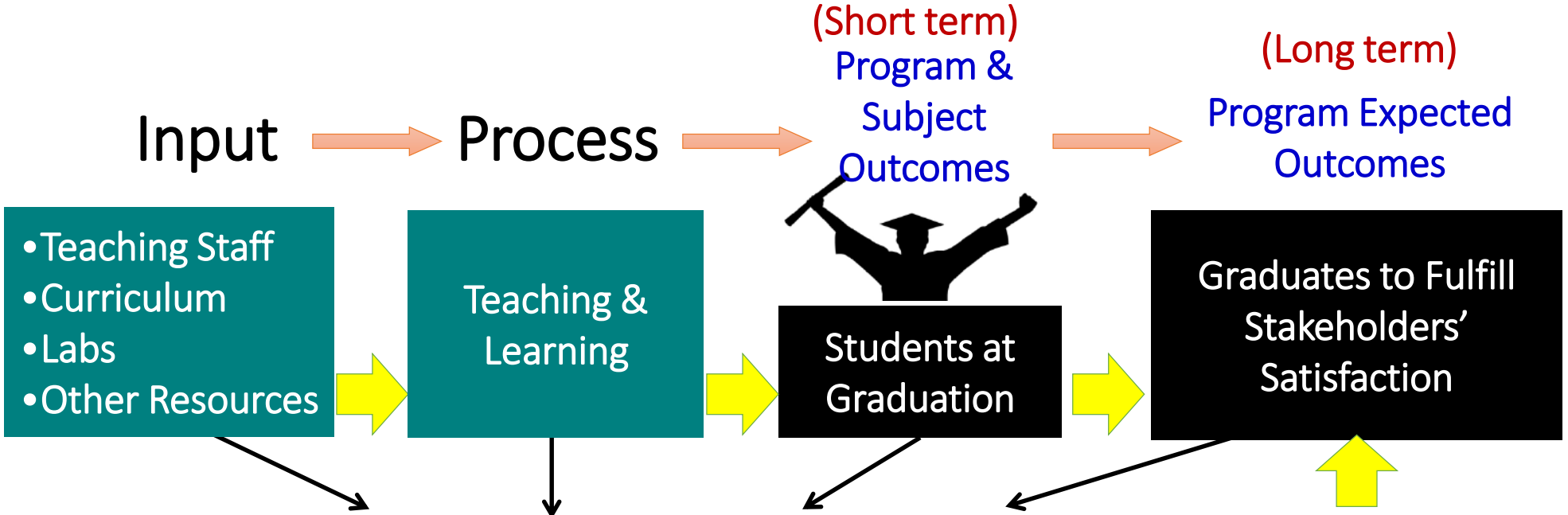
Employers rating the importance of skills / qualities

(Job Outlook 2015)



Outcome-Based Education Process

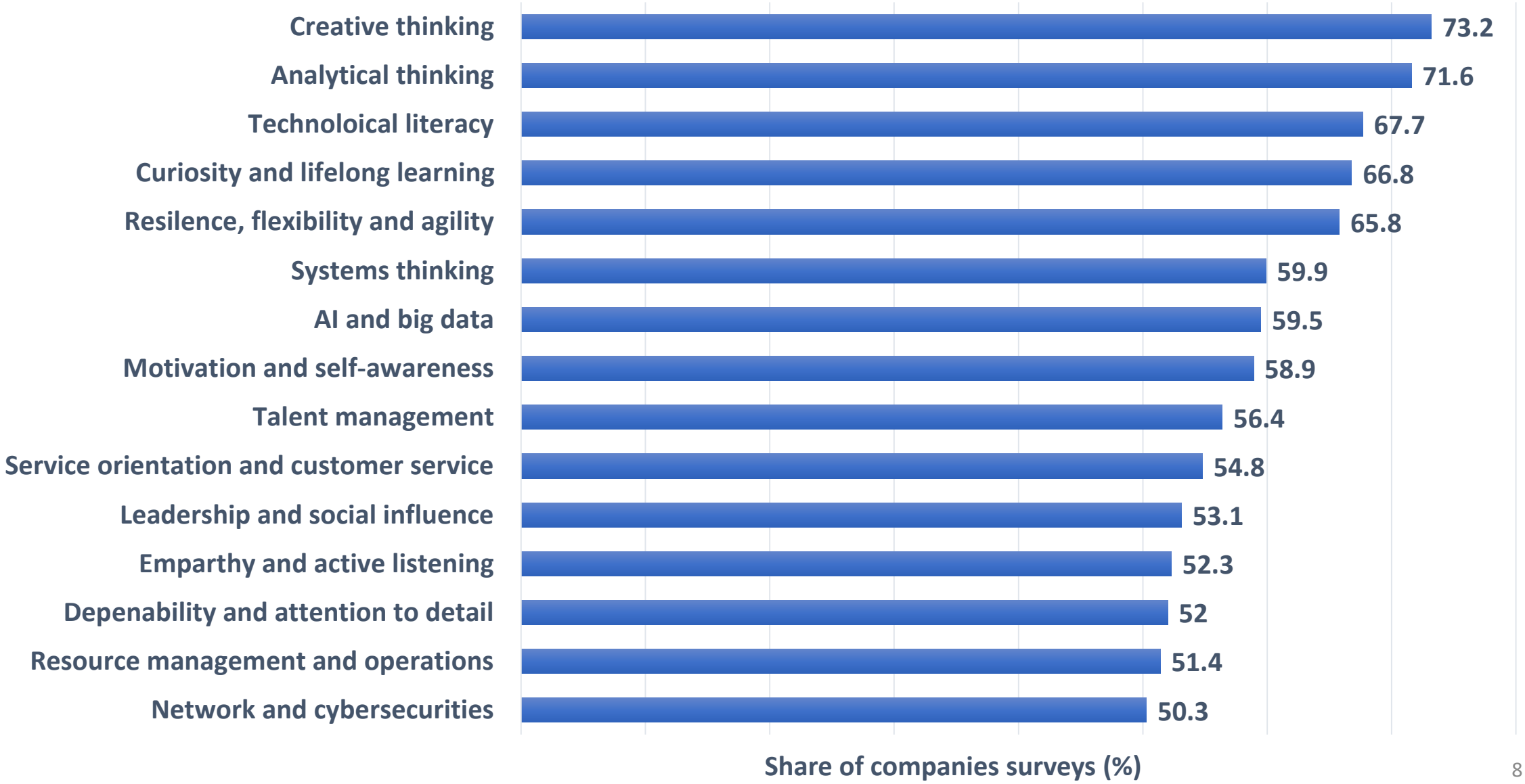
❖ OBE shifts from measuring input and process to include measuring the output (outcome)



- Assessment by exam, test and assignments.
- Assessment of teaching staff, lecture material & flow, results and student 'capabilities' (Short & long-term outcomes), interview, exit survey etc.
- Feedback from industry, alumni and other stakeholders.
- Clear continuous improvement step.

Stakeholders:
Employers
Government
Public and Parents
University / Faculty
Students / Alumni

Skill evolutino 2023-2027 (Word Economic Forum)



การกำหนด

Program Learning Outcomes

Inputs for Learning Outcomes Formulation

- Future skills
- Stakeholder's voice
- National Economic and Social Development Plan
- National Education Framework
- Federation of Professions
- International standards
- Vision & Mission of the University and Faculty
- Desirable Characteristics of the Graduate stated by the University and Faculty

Generic Competent & Subject Specific Competent

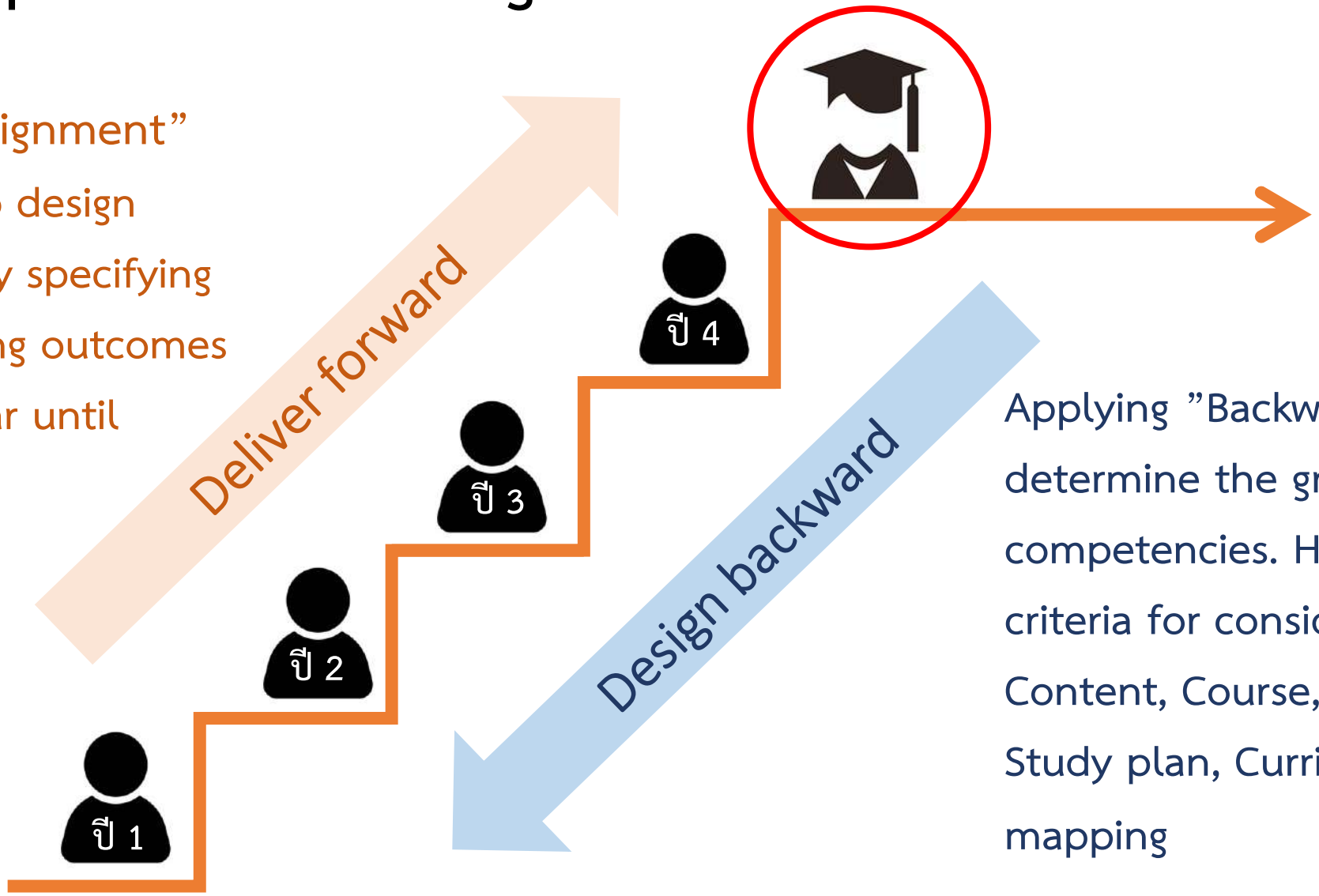
Program Goals

Program Objectives

Program Learning Outcomes (PLOs)

Educational Management for graduate development following the OBE framework

"Constructive alignment" has been used to design the curriculum by specifying the yearly learning outcomes from the first year until graduates.



Applying "Backward design" to determine the graduate competencies. Here are the criteria for consideration: Content, Course, Structure, Study plan, Curriculum mapping

PLOs -> YLOs

PLOs	YLOs when completing year 1	YLOs when completing year 2	YLOs when completing year 3	YLOs when completing year 4
PLO1				
PLO2				
PLO3				
PLO4				
PLO5				

PLOs = Program Learning Outcomes
YLOs = Year Learning Outcomes

Curriculum's Structure

Course	PLO1 	PLO2 	PLO3 	PLO4 	PLO5 
Year 1					
○ Course 1.1	I	I		I	
○ Course 1.2	I	I			I
Year 2					
○ Course 2.1	I		I/P	I	I
○ Course 2.2	R	I	R/P	P	R
Year 3					
○ Course 3.1	R	R	R/P	R	R
○ Course 3.2	R	R	R	R	R
Year 4					
○ Course 4.1	R	R	R	R	M
○ Course 4.2	M	R	M	M	M

I = PLO is introduced and assessed
R = PLO is reinforced and assessed
P = PLO is practiced and assessed
M = Level of mastery is assessed

PLOs -> CLOs course 1.1 -> LLOs

PLOs	CLOs
PLO1 	CLO1
	CLO2
	CLO3
PLO2 	CLO4
	CLO5
PLO4 	CLO6
	CLO7

Period	Topic	CLOs
1		1, 2, 3
2		2, 4
3		1, 3, 4, 5
4		3, 5
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Learning outcomes of the lesson
LO 1……. (CLO1)
LO 2……. (CLO3)
LO 3……. (CLO4)
LO 4……. (CLO5)

LLOs -> Lesson Plan

Period	Topic	CLOs
1		1, 2, 3
2		2, 4
3		1, 3, 4, 5
4		3, 5
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

LOs	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
LO1	/						
LO2			/				
LO3				/			
LO4					/		

Lesson Plan

LOs	Learning Method			Assessment	
	Lecture	Case study	Discussion	MCQ	Assignment
LO1	/			/	
LO2		/		/	
LO3		/		/	/
LO4			/		/

Alignment of PLOs > YLOs > CLOs > LLOs

Program Level

Program Learning Outcomes

The program's expectations for graduate competency at program completion.

Year Level

Year Learning Outcomes

Describe the yearly goals for students.

Course Level

Course Learning Outcomes

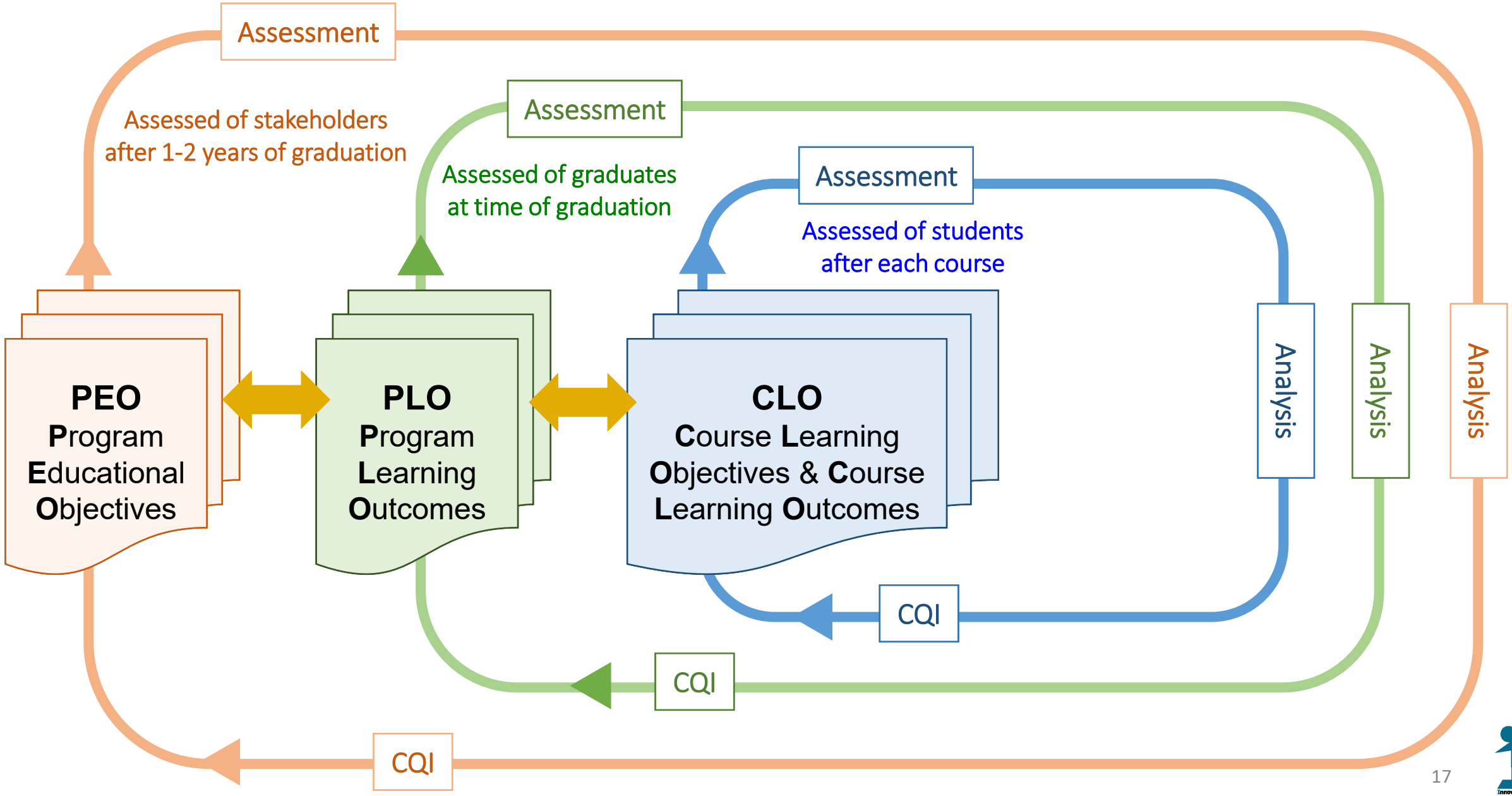
What students should do in order to successfully complete the course.

Lesson Level

Lesson Learning Outcomes

Following the lesson, what do you want or expect students to do.

Constructive Alignment


Assessment
Assessed of stakeholders
after 1-2 years of graduation
Assessment
Assessed of graduates
at time of graduation
Assessment
Assessed of students
after each course
PEO
Program
Educational
Objectives
PLO
Program
Learning
Outcomes
CLO
Course Learning
Objectives & Course
Learning Outcomes
Analysis
Analysis
Analysis
CQI
CQI
CQI

Part 2/3
Learning Objective vs. Learning Outcome

Learning Objectives

VS.

Learning Outcomes

Instructor-centered:

Focuses on what the teacher aim to teach or cover during the instruction

Student-centered:

Focuses on what students will be able to do after learning has occurred

How will we teach?

What were we teaching?

How will we know if the students understand?

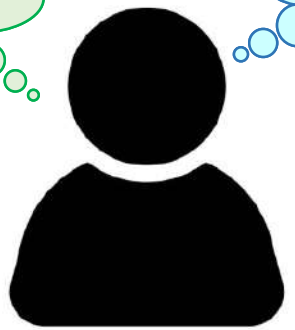
Focus on objectives

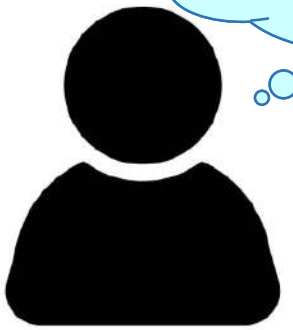
Focus on outcomes

How can we best help students achieve it?

What do we want the students to have or be able to do ?

How will you know whether the students have achieved it ?





Learning Objective:

- To promote participants with an understanding of OBE framework

Learning Outcome:

At the end of this session, participants should be able to

- Correctly write the course learning outcomes based on SMART model
- design the learning activities and assessment tools aligned with the learning outcomes

Writing Learning Outcome: ABCD method

Audience **B**ehavior **C**ondition **D**egree

Example:

At the end of this session, students should be able to design the learning activities and assessment tools aligned with the learning outcomes

Writing Learning Outcome

Learning outcomes describe the measurable skills, abilities, knowledge or values that students should be able to demonstrate as a result of a completing a lesson/course.

Learning outcomes ต่อไปนี้ ใช้ action verbs ได้เหมาะสมหรือไม่

1. เข้าใจหลักการจัดการเรียนรู้แบบตามกรอบ OBE ได้
2. ประยุกต์ OBE framework ในการจัดการเรียนการสอนระดับรายวิชาได้
3. มีคุณธรรมจริยธรรม ความตระหนักถึงความสำคัญของการใช้ IT อย่างปลอดภัยและสร้างสรรค์
4. มีทักษะการทำงานร่วมกับผู้อื่น
5. สื่อสารได้อย่างมีประสิทธิภาพ

SMART Outcomes

Specific - What content standards & skills do I focus on?

ระบุพฤติกรรมหรือทักษะที่ผู้เรียนต้องแสดงได้อย่างเฉพาะเจาะจง

Measuring - How will I know when goal has been achieved?

สามารถวัดผลได้อย่างเป็นรูปธรรม

Attainable - Can the target end result be reasonably achieved?

เหมาะสมกับระดับผู้เรียน และสามารถทำได้จริง

Relevance - Does outcome align with the focus on results of the course or curriculum?

สอดคล้องกับวัตถุประสงค์ของรายวิชา/หลักสูตร

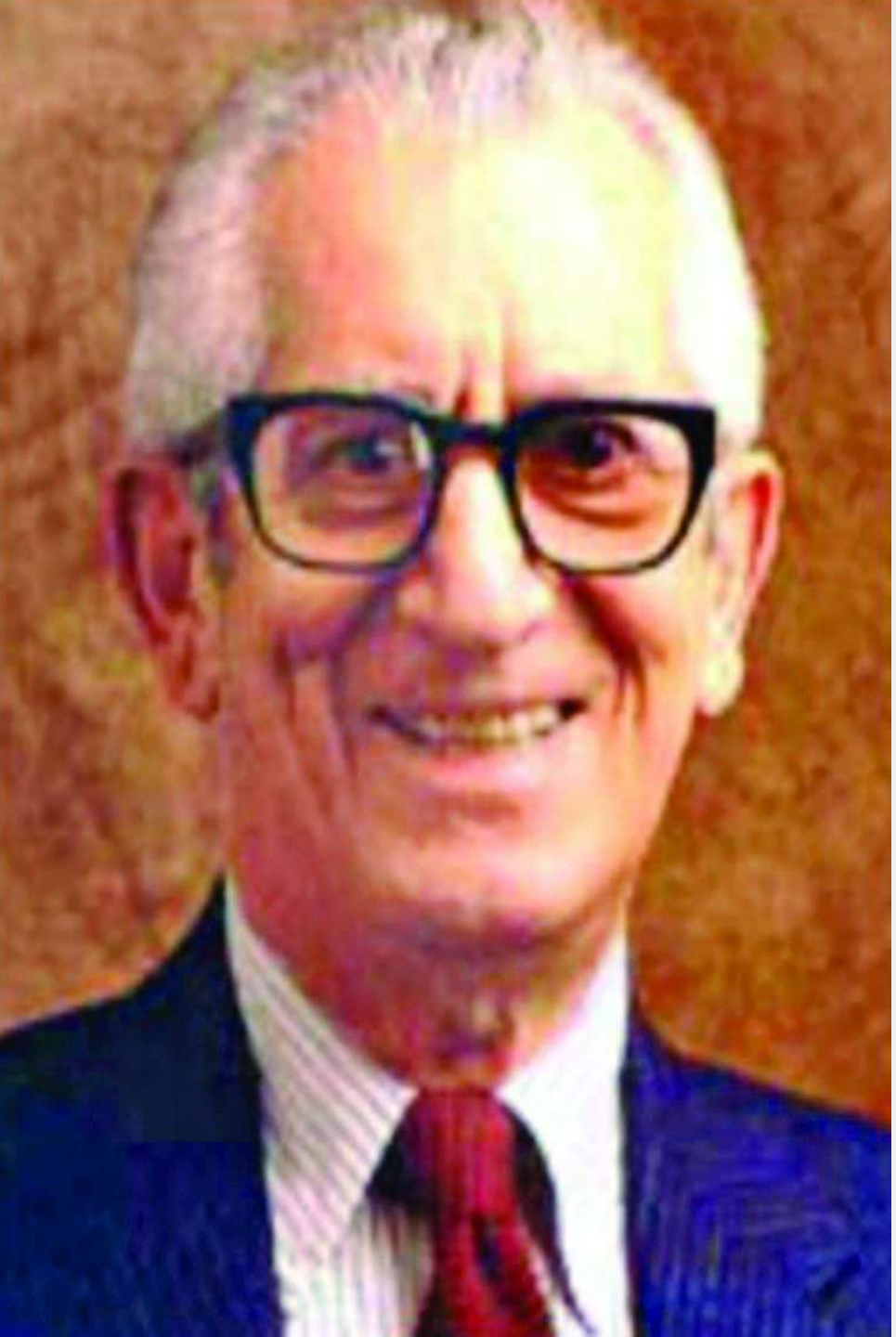
Time-bound - What is the specified & realistic timeframe for achievement?

ระบุชัดเจนว่าผลลัพธ์การเรียนรู้นี้จะต้องเกิดเมื่อใด (ภายในกรอบเวลาของหลักสูตร/รายวิชา/บทเรียน)

Evaluate the learning outcomes

เมื่อสิ้นสุดการเรียนการสอนใน session นี้แล้ว นักศึกษาสามารถ...

1. อธิบายแนวทางการประยุกต์ใช้ IT ในการให้บริการทางสุขภาพได้ถูกต้อง
2. อธิบายแนวคิดพื้นฐานเกี่ยวกับวงจรชีวิตเครื่องจักร และคำนวณค่าใช้จ่ายตลอดวงจรชีวิตเครื่องจักรได้ถูกต้องตามหลักการ
3. ประยุกต์ ABCD method และ SMART model ในการเขียน Learning outcome ของรายวิชาได้ถูกต้อง
4. วิเคราะห์ประเด็นกฎหมายและจริยธรรมที่เกิดจากการเผยแพร่ข้อมูลสารสนเทศทางสุขภาพได้ถูกต้องตามหลักการ
5. เขียนเพื่อสื่อสารเชิงธุระได้ถูกต้องตามหลักภาษา
6. มีทักษะในการทำงานเป็นทีมได้ทั้งผู้นำและผู้ตาม มีความรับผิดชอบในงานที่ได้รับมอบหมาย
7. แสดงออกถึงการมีคุณธรรมจริยธรรมความตระหนักถึงความสำคัญของการใช้เทคโนโลยีสารสนเทศอย่างปลอดภัยและสร้างสรรค์



"Education must be increasingly concerned about the fullest development of all children and youth, and it will be the responsibility of the schools to seek learning conditions which will enable each individual to reach the highest level of learning possible."

—Benjamin S. Bloom —

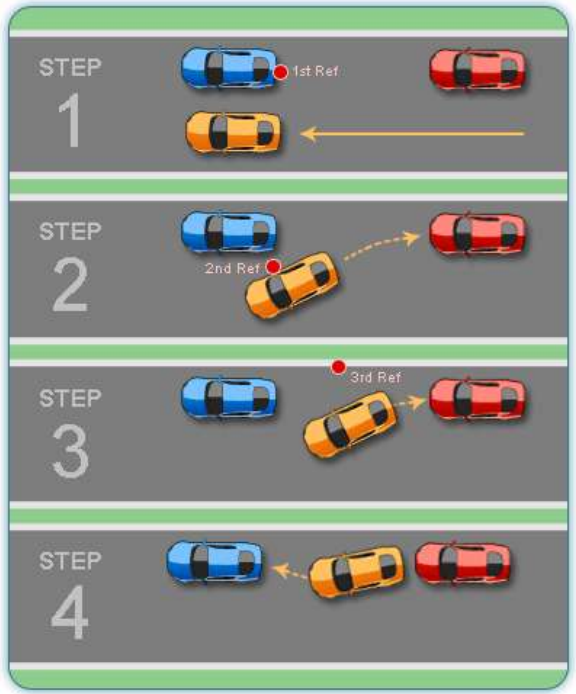
EDUCATIONAL PSYCHOLOGIST

Taxonomy Educational Objectives

Three domains of teaching, learning, and assessing

Cognitive Domain

intellectual capability, knowledge, or 'think'



https://www.safe2drive.com/how-to/how-to-parallel-park

Psychomotor Domain

manual and physical skill, or 'do'

https://says.com/my/lifestyle/how-to-parallel-park

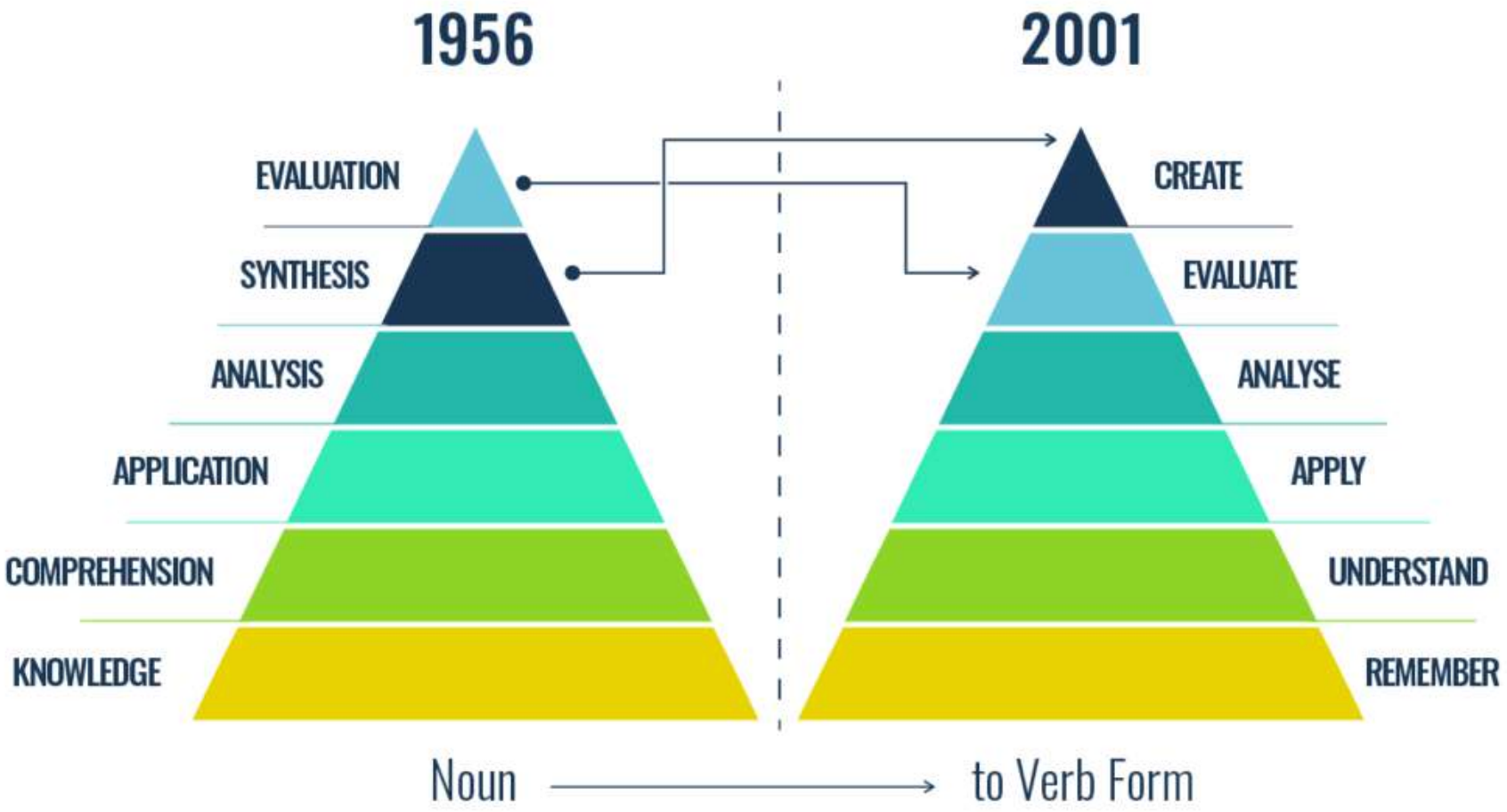
Affective Domain

emotion, feeling, value, attitude, or 'feel'

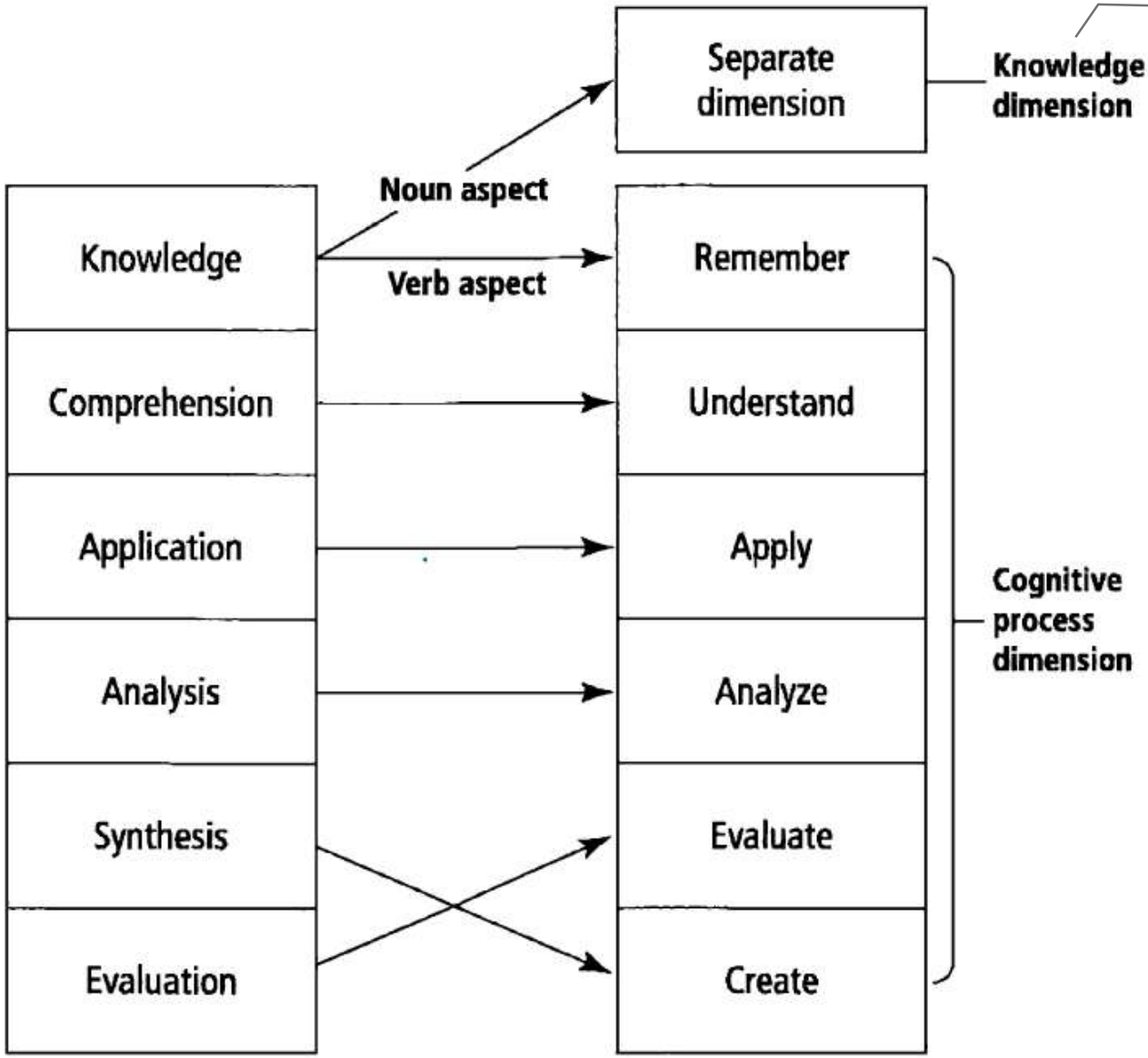
https://media.istockphoto.com/id/1154781373/vector/bad-parking-carparkedininappropriateway.jpg?s=612x612&w=0&k=20&c=49DXVXQ6EjmvnybUNHncX40VVa5NdximC_zlf0d-IKk=

Cognitive Domain

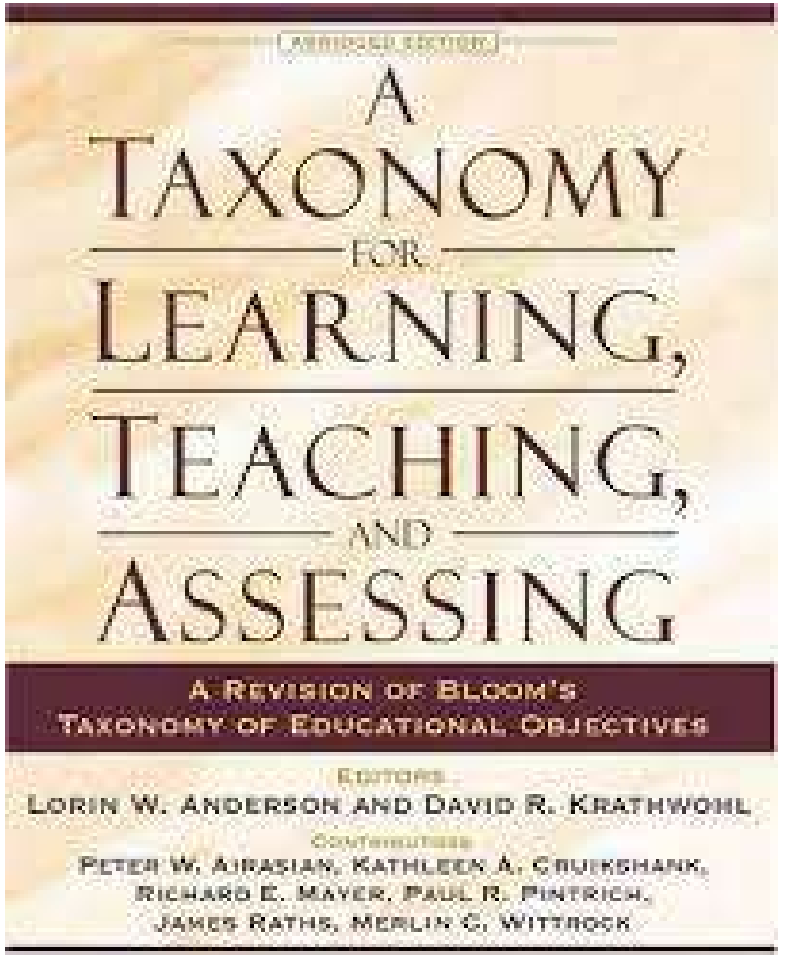
Bloom's Cognitive Domain



https://www.growthengineering.co.uk/what-can-blooms-taxonomy-tell-us-about-online-learning/



- Factual knowledge
- Conceptual Knowledge
- Procedural Knowledge
- Metacognitive Knowledge



Remember

Retrieve relevant knowledge from long-term memory

5 4 3 2 1

Novak (2010)

Repeat the information

Miller (1956) cited by Novak (2010)

Miller (1956) cited by Novak (2010)

Key Memory System of the Brain

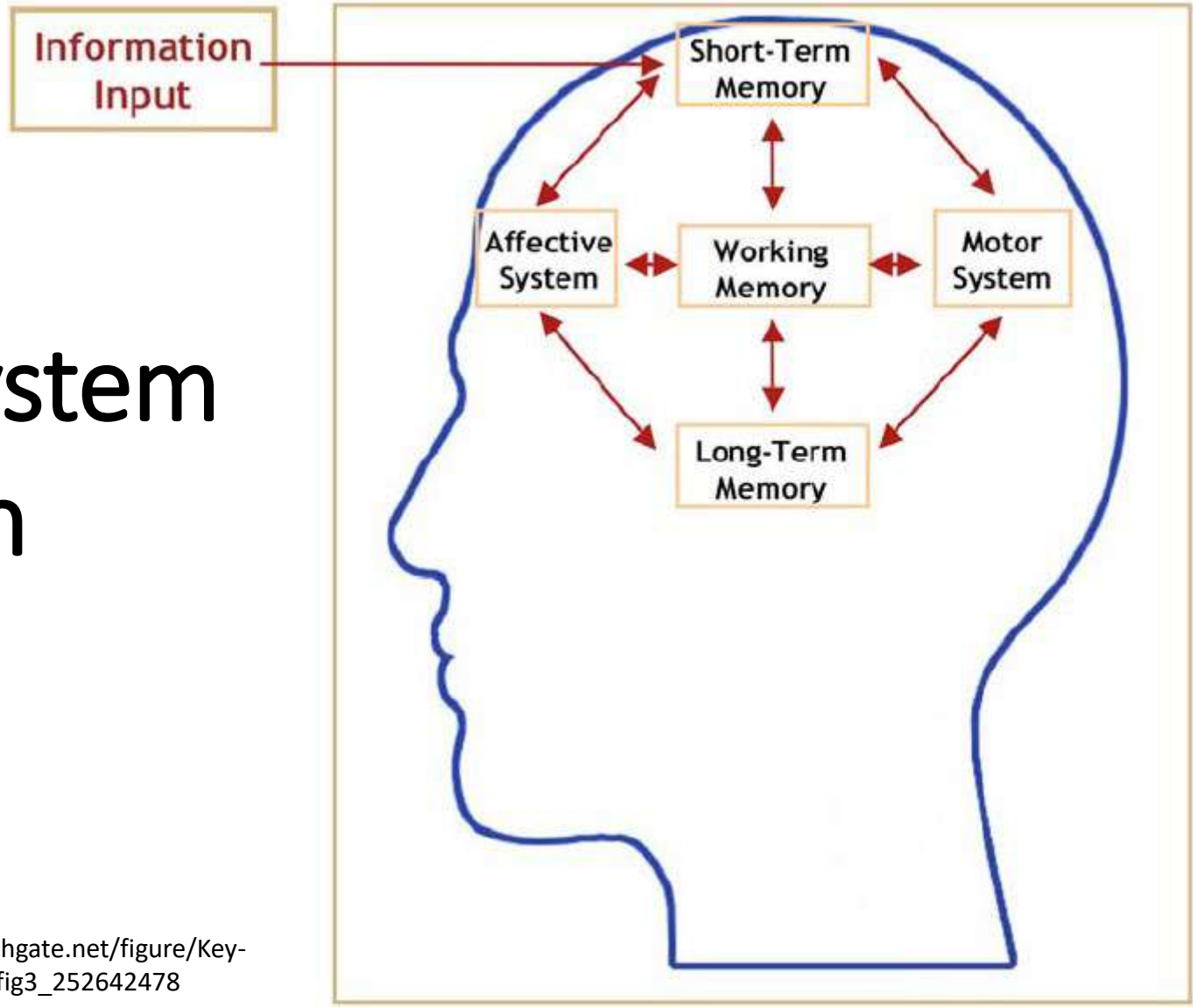
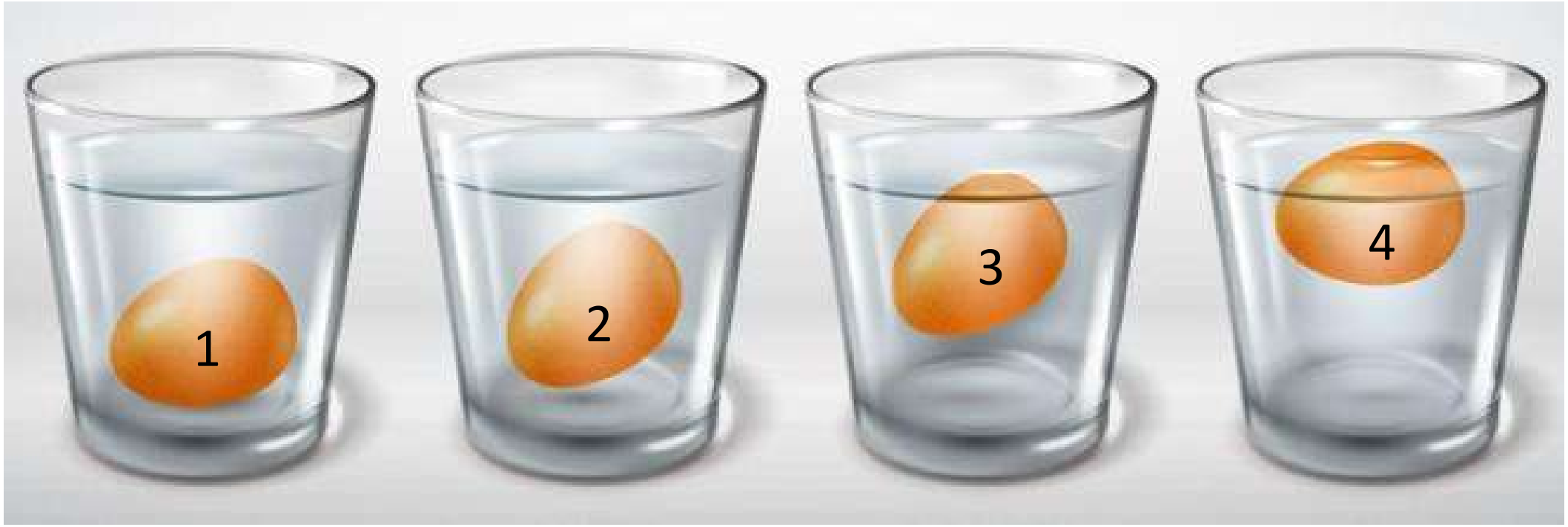
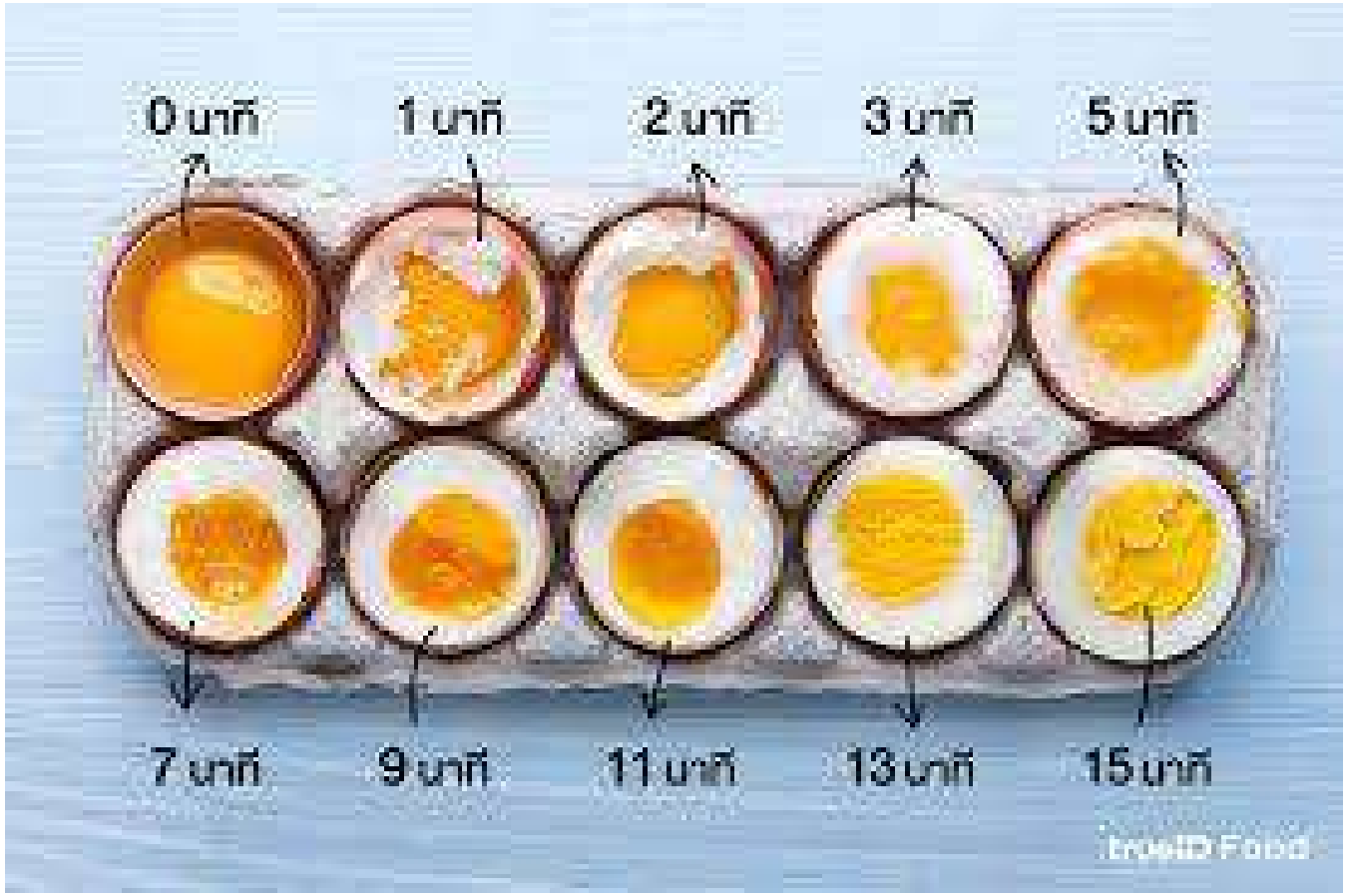


Figure uploaded by Joseph D. Novak onhttps://www.researchgate.net/figure/Key-memory-systems-of-the-brain-and-their-interactions_fig3_252642478

Remember or Understand



Understand

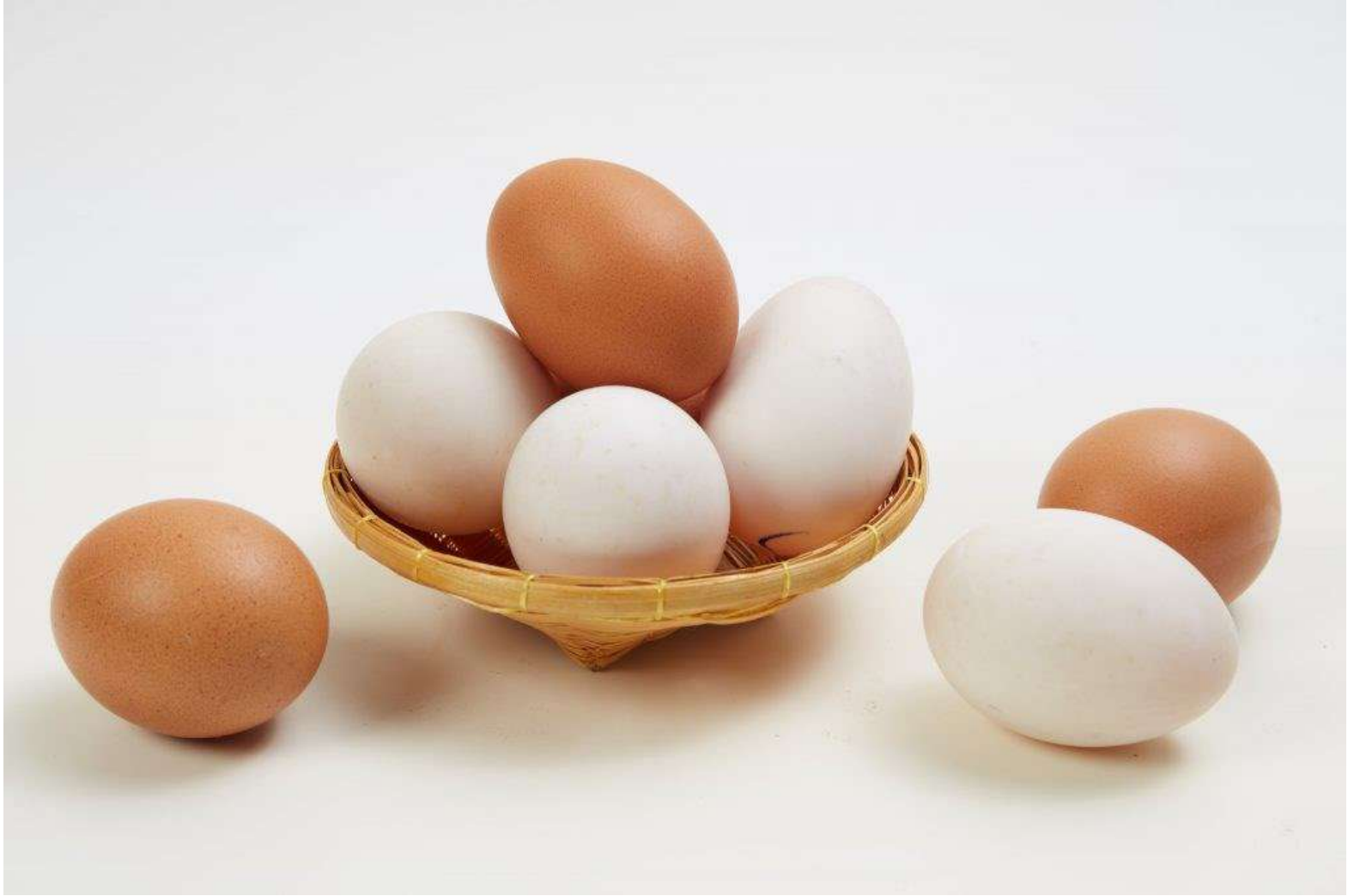


Effect of heat

- Proteins in the egg white coagulates at 60oC becomes opaque and forms a gel.
- Egg yolk proteins at 70oC, yolk thickens.
- Whole egg between 60-70oC
- The cooking process 12mins 55secs

Apply

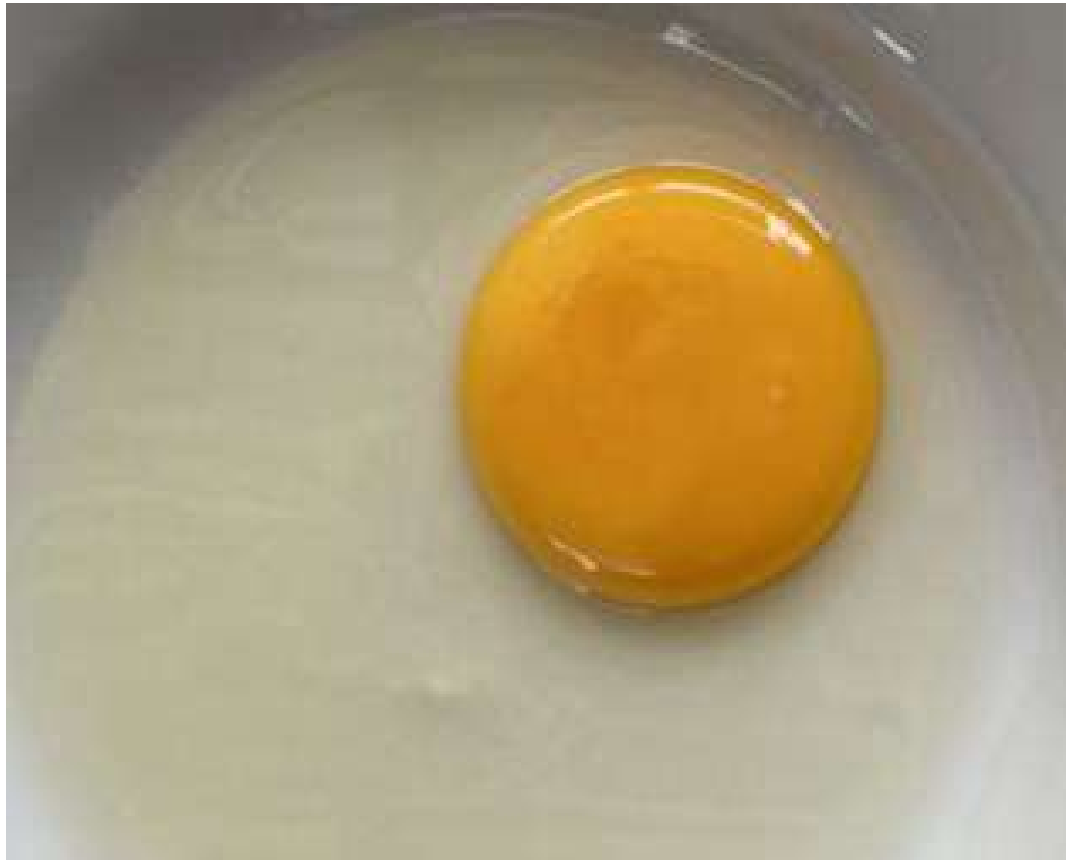
Analyze



Evaluate

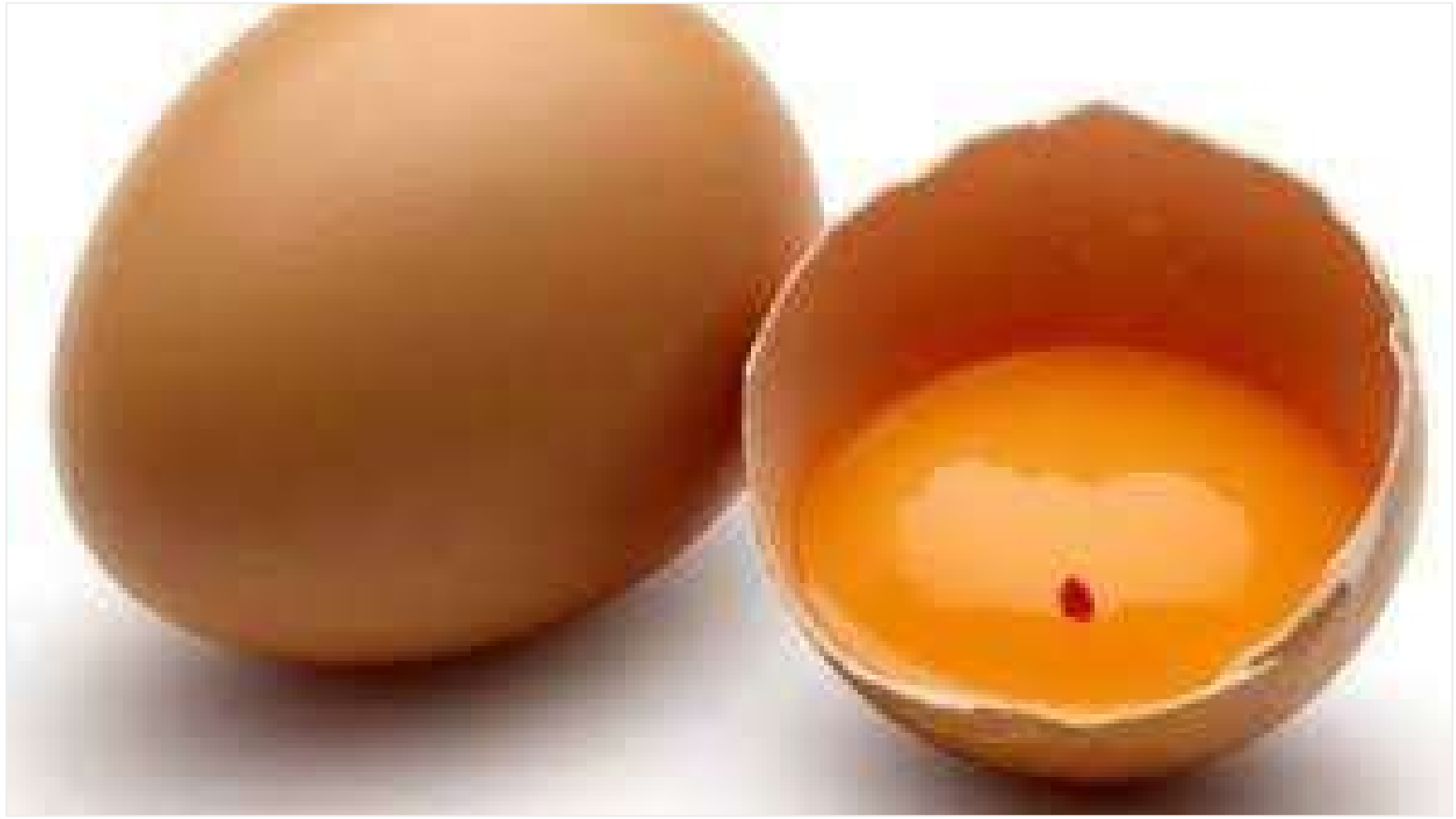
Choose good quality eggs

ไข่เก่า หรือ ไข่ใหม่



Evaluate

"Eggs with Blood Spot are not safe to eat!" – True od False ?



Create

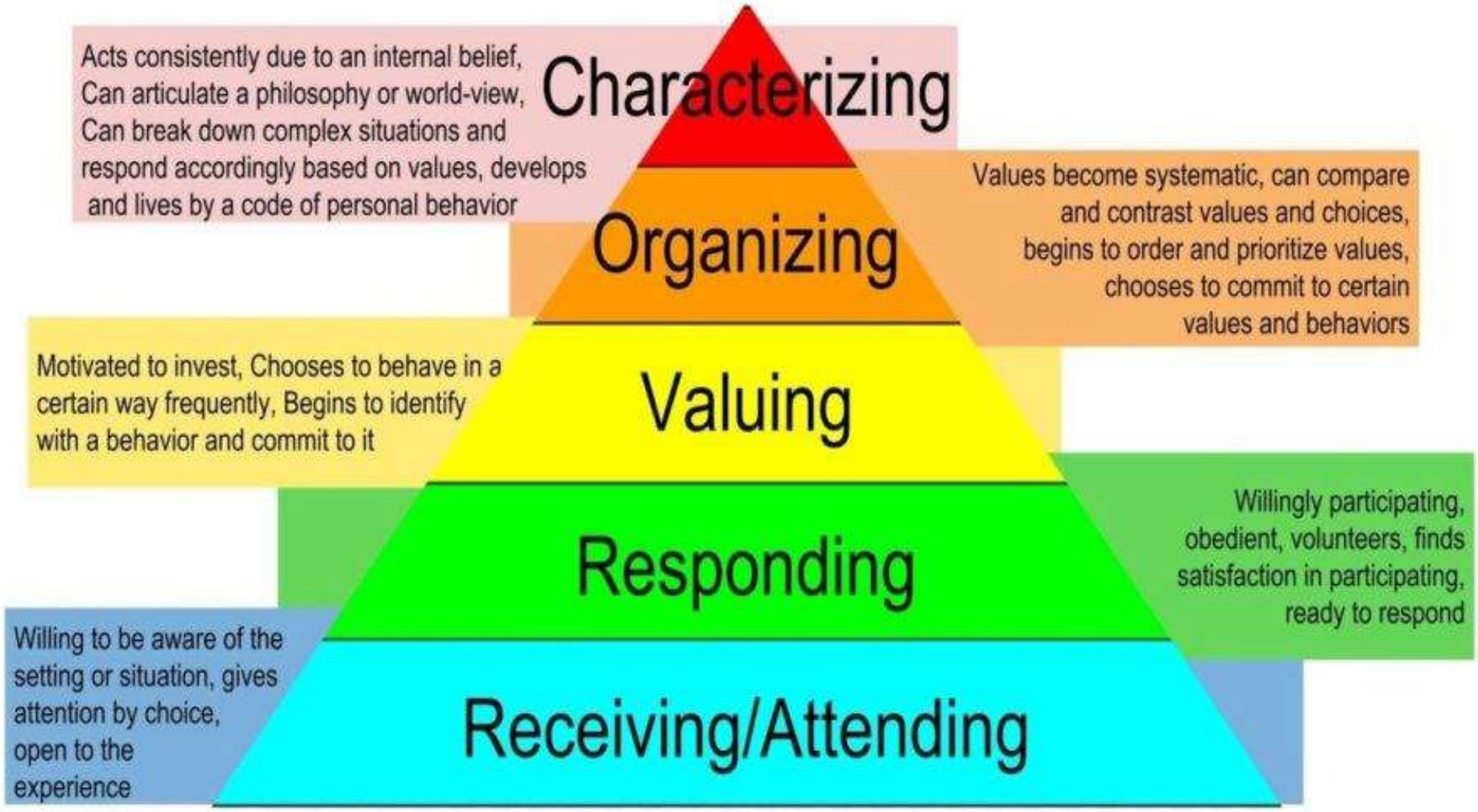
Cognitive Process Dimension

Remember	Understanding	Apply	Analyze	Evaluate	Create
Retrieve relevant knowledge from long-term memory	Construct meaning from instructional messages, including oral, written, and graphic communication	Carry out or use a procedure in a given situation	Break materials into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose	Make judgments based on criteria and standards	Put elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure
• Identify • Recall	• Example (Illustrate) • Classify (categorize) • Infer (conclude, interpret, predict) • Compare (contrast, map, match) • Explain (clarify, paraphrase, represent, construct model)	• Execute (carry out) • Implement (use)	• Differentiate (discriminate, distinguish, select) • Organizing (finding, coherence, integrate, outline, structuring) • Attribute (deconstruct)	• Check (detect, monitor, test) • Critiquing (judge)	• Generate (hypothesize) • Plan (design) • Produce (construct, invent)

Affective Domain


ไข่จุ๊บ

Krathwohl's Affective Domain



https://educarepk.com/affective-domain-krathwohls-taxonomy.html?_gl=1*1r6m71m*_ga*MTg1NDUyNTkxOC4xNjkyOTEyNDc1*_ga_1408K3ZX26*MTY5MjkxMjQ3NS4xLjEuMTY5MjkxMjU5OS41LjAuMA..&_ga=2.106576451.1557447973.1692912475-1854525918.1692912475

Affective Dimension

Dimension	Key words (Verbs)	Examples
1. Receiving / Attending	ask, choose, show willingness, pay attention, hold, follow, describe, identify, locate, name, point to, select sit attentively	Listen attentively to teacher. Show awareness of important learning. Attends closely to the class activities.
2. Responding	answer, reply, respond, assist, comply, conform, discuss, greet, help, label, perform, practice, present, read, recite, tell, report, select, write	Comply with procedures or follow directions. Response to the teacher's question.
3. Valuing	complete, describe, differentiate, explain, follow, form, initiates, invite, join, justify, propose, report, share	Demonstrate problem solving attitude. Appreciates good literature. Support idea to improve proficiency.
4. Organizing	adhere, alter, arrange, combine, compare, complete, defend, explain, generalize, integrate, modify, order, organize, prepare, relate, synthesize	Spend more time in study than playing computer game. Prioritizes time effectively to meet the needs of the study. Understand and accept own strength and weakness.
5. Characterizing	act, discriminate, display, influence, listen, modify, perform, practice, propose, qualify, question, revise, serve, solve, use, verify	Show self-reliance when working independently. Cooperate in group activity (display teamwork). Use an objective approach in problem solving. Value people for what they are, not how they look.

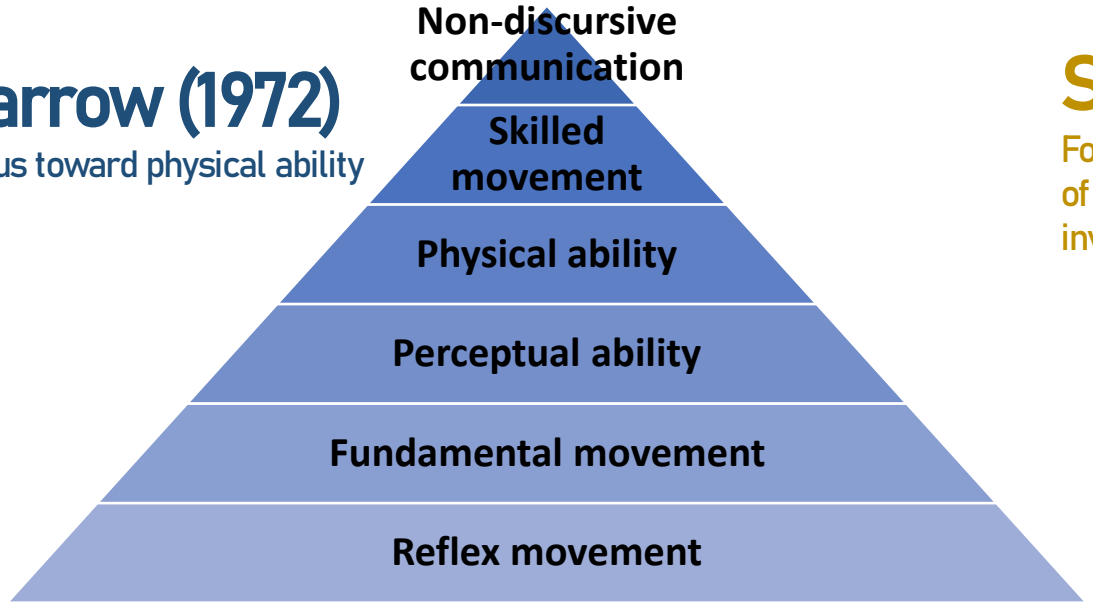
Psychomotor Domain

Use a steamer to make decorated eggs meets the standard and complies with the guidelines.

https://www.tkvariety.com/%E0%B8%AA%E0%B8%B2%E0%B8%A7%E0%B8%97%E0%B8%B3%E0%B9%84%E0%B8%82%E0%B9%88%E0%B8%97%E0%B8%A3%E0%B8%87%E0%B9%80%E0%B8%84%E0%B8%A3%E0%B8%B7%E0%B9%88%E0%B8%AD%E0%B8%87%E0%B8%84%E0%B8%A3%E0%B8%B1%E0%B9%89/

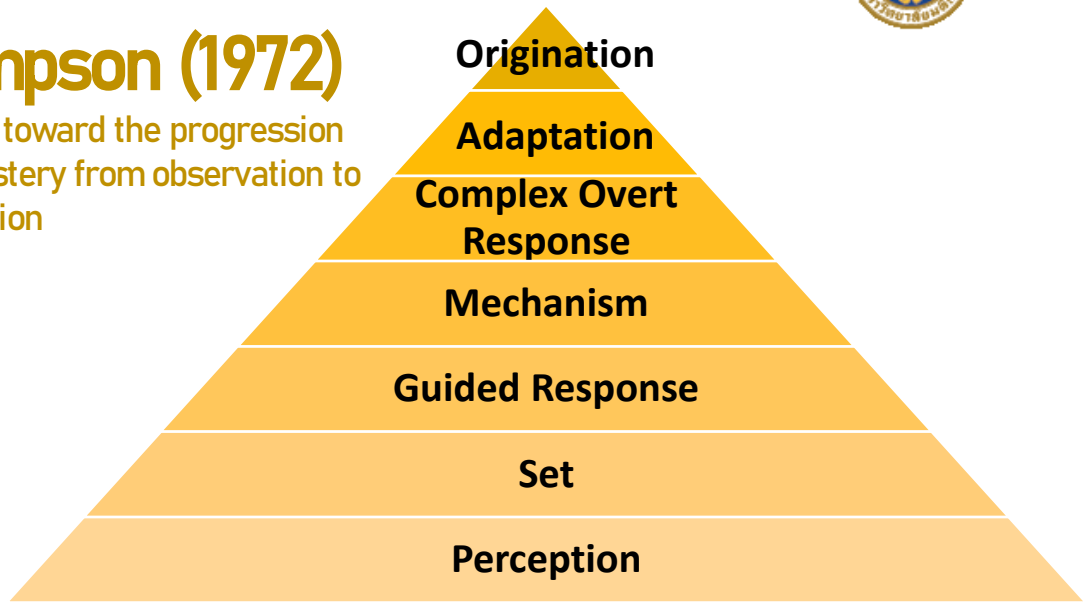
Harrow (1972)

Focus toward physical ability

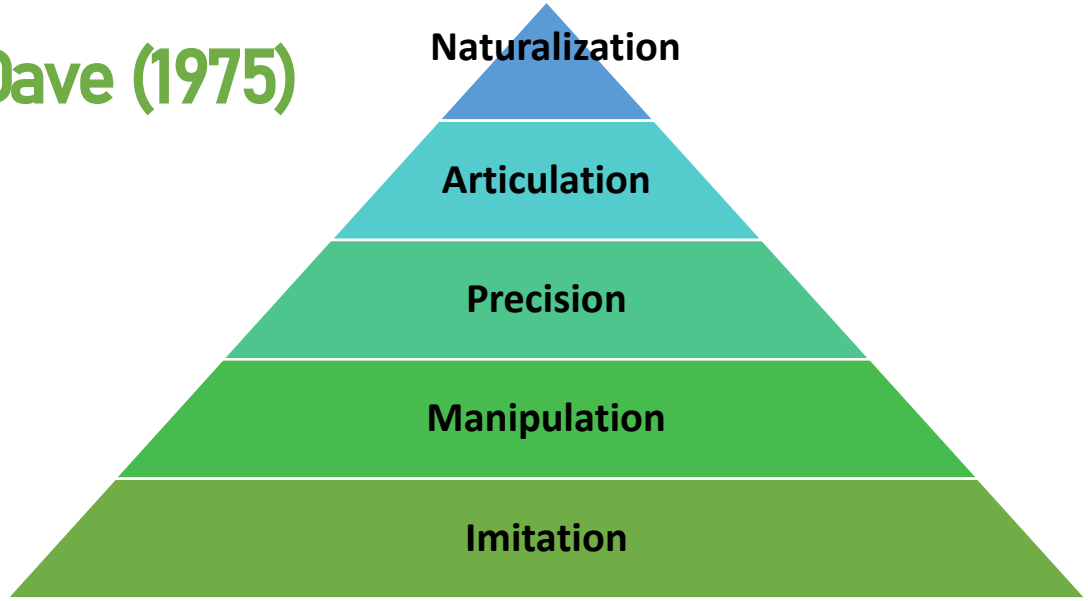


Simpson (1972)

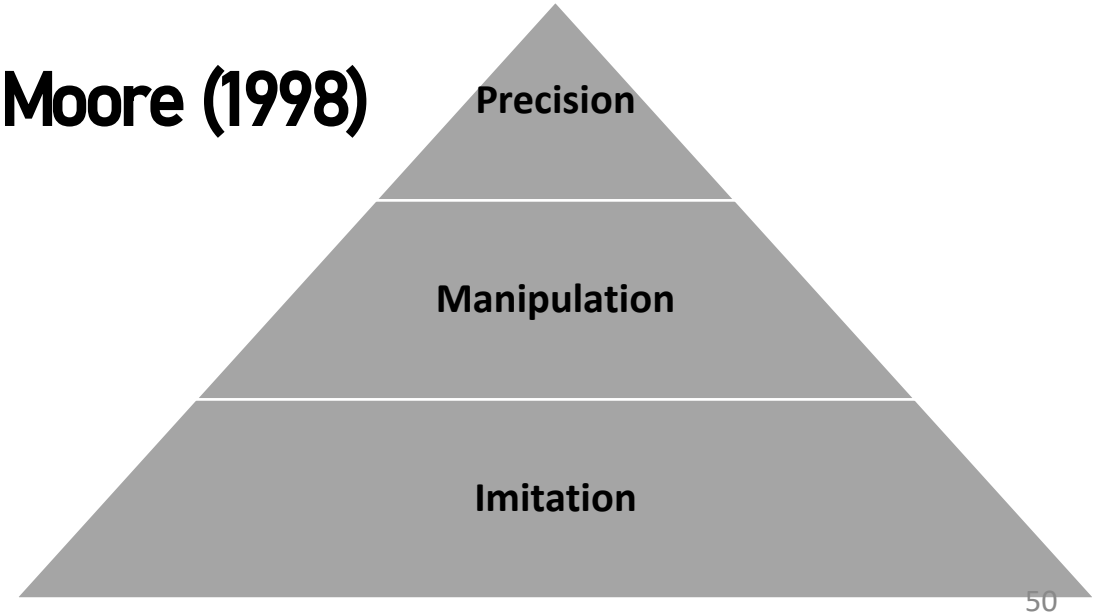
Focus toward the progression of mastery from observation to invention



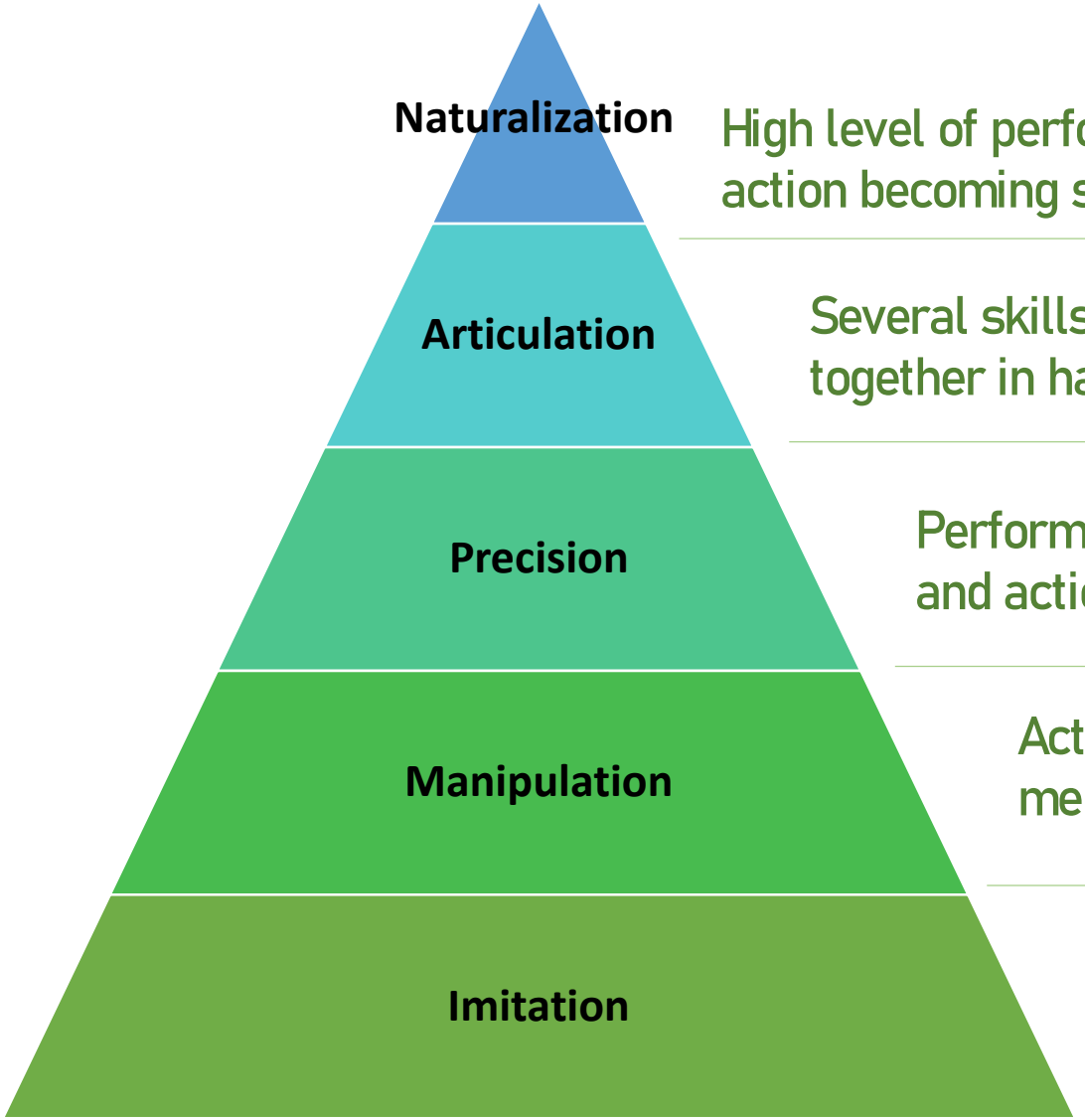
Dave (1975)



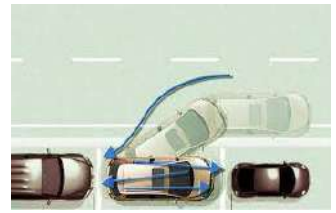
Moore (1998)



Dave's Psychomotor Dimension

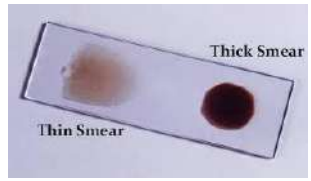


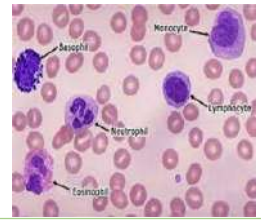
High level of performance achieved with action becoming second nature



Several skills can performed together in harmonious way

Performed becomes more exact, and actions are more precise.





Actions performed through memorization or following directions.

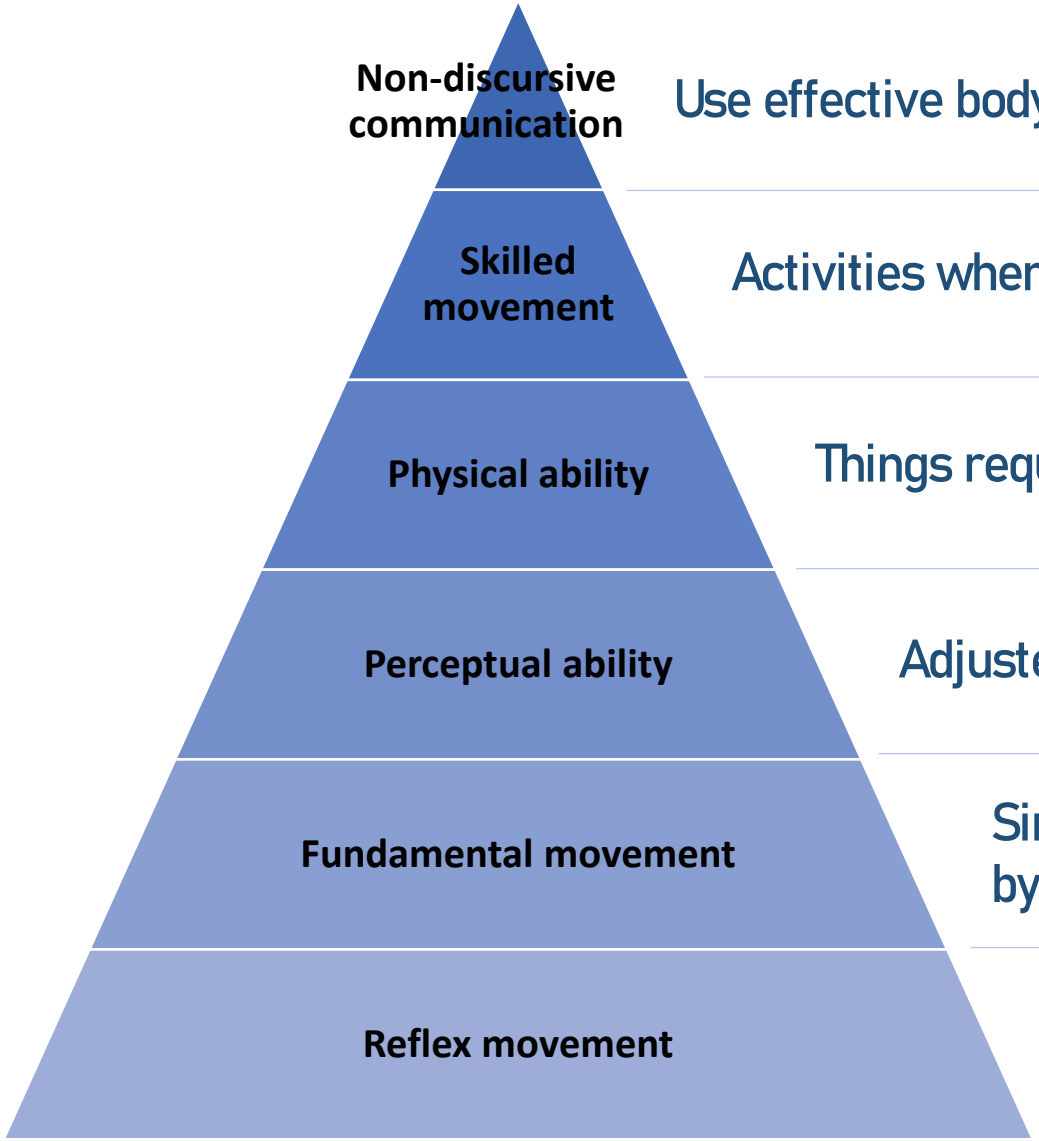
Learns by watching and imitating actions.

Dave's Psychomotor Dimension

Dimension	Descriptor	Key words (Verbs)	Examples
1. Imitation	The learner observes a skill and attempts to repeat it, or sees a finished product and attempts to replicate it while attending to an exemplar.	attempt, copy, imitate, mimic, follow, repeat, duplicate, replicate, reproduce	Copy a work of art. Perform a skill while observing a demonstrator.
2. Manipulation	The learner performs the skill or produces the product in a recognizable fashion by following general instructions rather than observation.	act, build, perform, complete, accomplish, follow, play, produce	Perform a skill on one's own after taking lessons or reading about it. Follow instructions to build a model.
3. Precision	The learner independently performs the skill or produces the product, with accuracy, proportion, and exactness; at an expert level.	achieve, automatically, excel expertly, perform masterfully, demonstrate skillfully, calibrate perfectly	Demonstrate problem solving attitude. Appreciates good literature. Support idea to improve proficiency.
4. Articulation	The learner modifies the skill or the product to fit new situations; combines more than one skills in sequence with harmony and consistency.	adapt, construct, combine, customize, modify, formulate, alter, originate	Combine a series of skills to produce a video that involves music, drama, color, sound, etc. Combine a series of skills or activities to meet a novel requirement.
5. Naturalization	The learner accomplishes one or more skills with ease and makes the skill automatic without needing to think much about it.	Manage naturally or perfectly	Maneuver a car into a tight parallel parking spot. Operate a computer quickly and accurately. Display competent while playing the piano.

Harrow's Psychomotor Dimension

Focus toward physical ability

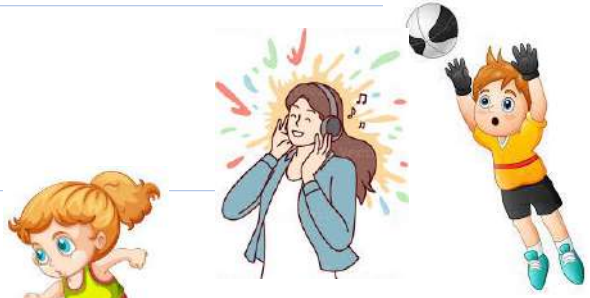


Use effective body language.

Activities where a level of efficiency is achieved.

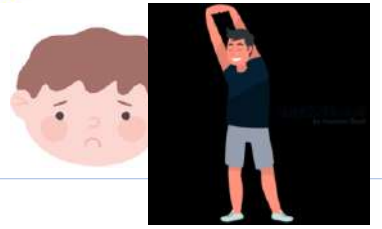
Things requiring endurance, strength, vigor, and agility

Adjusted movement as response to stimuli.



Simple movements which are formed by combining of reflex movement.

Automatic reactions without learning.



Harrow's Psychomotor Dimension

Dimension	Descriptor	Examples
1. Relax movement	Action elicited without learning in response to some stimuli.	flexion, extension, stretch, postural adjustment
2. Basic fundamental movement	Inherent movement patterns which are formed by combining of reflex movements and are the basis for complex skilled movement	Walking, running, pushing, twisting, griping, grasping, manipulating
3. Perceptual	Refer to interpretation of various stimuli that enable one to make adjustments to the environment. Visual, auditory, kinesthetic, or tactile discrimination.	Coordinated movement such as jumping, rope, punting, catching
4. Physical activity	Require endurance, strength, vigor, and agility which produces a sound, efficiently functioning body.	All activities which require a) strenuous effort for long periods of time; b) muscular exertion; c) a quick, wide range of motion at the hip joints; and d) quick, precise movements
5. Skilled movement	Are the result of the acquisition of a degree of efficiency when performing a complex task	all skilled activities obvious in sports, recreation, and dance.
6. Non-discursive comunication	Communication through bodily movements ranging from facial expressions through sophisticated choreographics.	body postures, gestures, and facial expressions efficiently executed in skilled dance movement and choreographics.

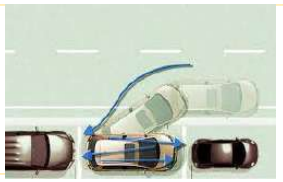
Simpson's Psychomotor Dimension

Focus toward the progression of mastery from observation to invention

Origination — New movements can be created for special situations


Adaptation — Movements can be modified for special situations

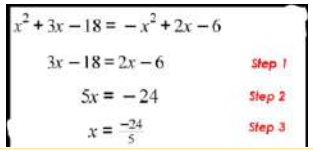
Complex Overt Response — Complex movements are possible with a minimum of wasted effort and a high level of assurance they will be successful.




Mechanism — Response are habitual with a medium level of assurance and proficiency.



Guided Response — First attempts at a physical skill and include imitation, and trial and error



Set — Mental, physical, and emotional dispositions that make one response in a certain way to a situation

Perception — Sensory cues guide motor activity.



Simpson's Psychomotor Dimension

Dimension	Descriptor	Key words (Verbs)	Examples
1. Perception	Ability to use sensory cues to guide motor activity	select, detects, isolate, select	Detects non-verbal communication cues. Estimate where a ball will land after it is thrown and then moving to the correct location to catch the ball
2. Set	It is the mental, physical and emotional dispositions that make you response in a certain way to a situation.	begin, display, explain, move, proceed, react, show, state, volunteer, demonstrate, assume a position	Show desire to learn a new process. Recognize one's abilities and limitation. Know and act upon a sequence to steps in a manufacturing process.
3. Guided response	Early state of learning a complex skill. It is the first attempt at a physical skill and includes imitation, and trial and error.	copy, trace, follow, react, reproduce, respond, attempt, imitate, try	Perform a mathematical equation as demonstrated. Follow instruction to build a model. Respond hand-signal of instructor while learning to operate a forklift.
4. Mechanism (basic proficiency)	Intermediate state in learning a complex skill. It is the ability to convert the learned response into action so the movement can be performed with a medium level of proficiency, assurance and confidence.	assemble, calibrate, construct, dismantle, display, fasten, fix, manipulate, measure, mend, mix, organize, sketch	Use a personal computer. Repair a leaking faucet. Drive a car.
5. Complex overt response (Expert)	Ability to skillfully perform complex movement correctly. Complex movement are perform quickly, accurately and with a minimum wasted effort. It includes automatic and highly coordinated performance without hesitation.	The key word are the same as "Mechanism", but will have adverbs or adjectives that indicate the performance is quicker, better, more accurate	Maneuver's a car into a tight parallel parking spot. Operate a computer quickly and accurately. Display competence while playing the piano.
6. Adaptation	Ability to modify the learned skill to meet new or special requirement.	adapt, alter, change, rearrange, reorganize, revise, modify, vary	Respond effectively to unexpected experience. Modify instruction to meet the need of the learner. Perform a task with a machine that it was not originally intended to do.
7. Origination	Ability to create new movement for a special situation or problem	arrange, combine, compose, construct, initiate, make, originate	Compose a new symphony. Develop a new and comprehensive training program Create a new gymnastic routine.

IT'S NOT WHAT WE TEACH,
IT'S WHAT STUDENTS LEARN.

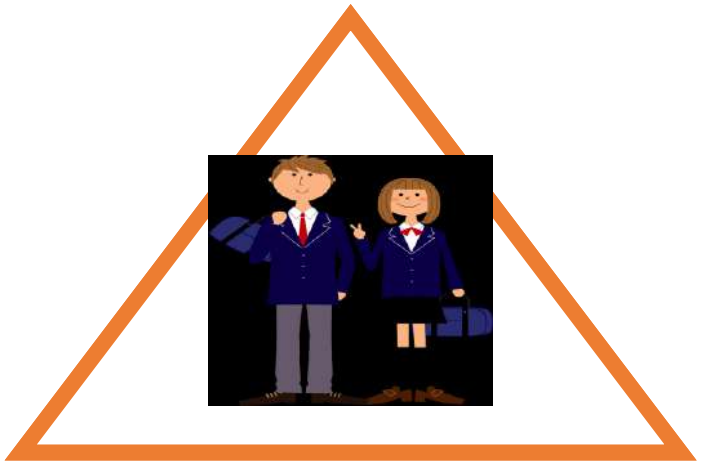
OBE focuses on
what students should have
or are able to do
after completion of the
session/course/program

Part 3/3
OLE & Lesson Plan

What is the important of a lesson plan?

Learning Objective

Learning Outcome



Leaning experience

Learning experience for developing specified outcomes

Evaluation method

Assessment method must follow the specified outcomes

Backward Design

Step 1: Identify desired results

- What should the students know, understand, and be able to do?

Step 2: Determine assessment evidence

- How will determine if the desired results occurred?

Step 3: Plan learning experience

- What learning activities and content will lead to desired results?

LLOs -> Lesson Plan

Period	Topic	CLOs
1		1, 2, 3
2		2, 4
3		1, 3, 4, 5
4		3, 5
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

LOs	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
LO1	/						
LO2			/				
LO3				/			
LO4					/		

Lesson Plan

LOs	Learning Method			Assessment	
	Lecture	Case study	Discussion	MCQ	Assignment
LO1	/			/	
LO2		/		/	
LO3		/		/	/
LO4			/		/

ประเมิน (ร่าง) แผนการสอนวิชาการสื่อสารเชิงธุระ

มหาวิทยาลัยมหิดล
สถาบันนวัตกรรมการเรียนรู้

LOs: เมื่อสิ้นสุดการเรียนการสอนแล้ว นักศึกษาสามาถ...

1. อธิบายหลักการการสื่อสารในบริบทต่าง ๆ ได้ถูกต้องตามทฤษฎีการสื่อสาร
2. ระบุใจความสำคัญจากการฟังและการอ่านได้ถูกต้องตามหลักการการรับสาร
3. เขียนเพื่อสื่อสารเชิงธุระได้ถูกต้องตามหลักภาษา
4. เขียนความเรียงที่มีองค์ประกอบด้วนเนื้อหาครบถ้วนตามหลักภาษา
5. นำเสนอเชิงวิชาการได้เหมาะสมตามหลักการพูด

LOs	วิธีจัดประสบการณ์เรียนรู้				วิธีการวัดผลลัพธ์การเรียนรู้		
	บรรยาย	อภิปราย	สาธิต	แบบฝึกหัด/ฝึกปฏิบัติ	MCQ	สอบข้อเขียน	สอบพูดนำเสนอ
LO1	/	/		/	x		
LO2	/			/	x	x	
LO3	/		/	/	x	x	
LO4	/		/	/		x	
LO5	/		/	/			x

ประเมิน (ร่าง) แผนการสอนวิชาการทำอาหารเมนูไข่เชิงสร้างสรรค์

LOs: เมื่อสิ้นสุดการเรียนการสอนแล้ว นักศึกษาสามาถ...

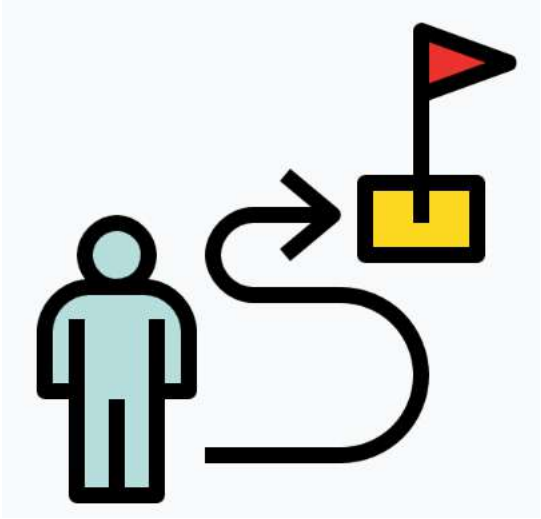
1. อธิบายหลักการทำอาหารเมนูไข่เชิงสร้างสรรค์ได้ถูกต้องตามหลักวิชาการ หลักสุขภาพ และหลักความปลอดภัยของผู้บริโภค
2. ทำอาหารเมนูไข่เชิงสร้างสรรค์ได้สอดคล้องกับวัตถุประสงค์และกลุ่มเป้าหมาย
3. ประกอบอาหารโดยใช้วัสดุอุปกรณ์และเทคโนโลยีได้อย่างถูกต้องและเหมาะสมบนพื้นฐานของความสะอาดและปลอดภัย
4. วิพากษ์อาหารเมนูไข่ได้ถูกต้องตามหลักการและทฤษฎี

LOs	วิธีจัดประสบการณ์เรียนรู้			วิธีการวัดผลลัพธ์การเรียนรู้			
	บรรยาย	กรณีศึกษา	ปฏิบัติ	MCQ	การสังเกตพฤติกรรม	ผลงาน	รายงานกลุ่ม
LO1	/			x			
LO2	/		/		x	x	
LO3	/		/		x		
LO4	/	/	/	x			x

Considerations for writing lesson plan: 5W2H

1. **Why** Key objectives of the instruction
2. **What** What students need to understand, or perform after instruction?
3. **Who** Who are learners?
4. **When** When to teach? How long for the instruction?
5. **Where** Where to learn?
6. **How** How to help students to achieve the learning objectives?
7. **How** How to assess the learners?

Issues relating to Objectives and Outcomes



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- **KSA (In line with Program/Course Learning outcomes)**
  - K -> Knowledge & Cognitive skill
  - S -> Psychomotor domain & Soft skill (Communication, Collaboration, Lifelong learning, etc.)
  - A -> Affective domain
- **ABCD Method**
- **SMART**
- **Learning outcomes** ต้องสอดรับกับ **Learning objective**

พิจารณาความสอดคล้องของLearning Objectives & Learning Outcomes

Learning Objectives	Learning Outcomes
เพื่อพัฒนานักศึกษาให้มีคุณลักษณะต่อไปนี้ 1. มีความรู้ความเข้าใจในการทำงานพัฒนาเด็กและครอบครัวโดยมีชุมชนเป็นฐาน 2. สามารถนำความรู้ไปประยุกต์ใช้ในการพัฒนาเด็กและครอบครัวโดยมีชุมชนเป็นฐานได้ 3. ทำงานร่วมกับชุมชนในการพัฒนาเด็กและครอบครัวได้	เมื่อสิ้นสุดการเรียนการสอนแล้ว นักศึกษาสามารถ... 1. อธิบายวิธีการทำงานพัฒนาเด็กและครอบครัวในชุมชนได้ถูกต้องตามหลักการ 2. ออกแบบโครงการพัฒนาเด็กและครอบครัวในชุมชนได้ถูกต้องตามหลักวิชาการ กฎหมาย และระเบียบของชุมชนนั้น ๆ 3. ประเมินผลการจัดกิจกรรมเพื่อพัฒนาเด็กและครอบครัว ตามแนวทางที่โครงการตั้งเป้าหมายไว้ได้ 4. ทำงานเป็นทีมโดยชุมชนมีส่วนร่วมในการพัฒนาเด็กและครอบครัวในชุมชนตามเป้าหมายที่วางแผนไว้ได้

Concern about Learners

https://all-free-download.com/free-vector/download/students-icons-modern-colored-cartoon-characters_6837733.html

- Level of the study
- Prior knowledge and prior experiences
- Skill level
- Background
- Learning preference

Concern about Time

https://www.vectorstock.com/royalty-free-vector/time-clock-cartoon-vector-24575266

- How much time is allocated for teaching?
- What times do you teach?
- How many period do you have?
- How much time does each activity require?

Concern about Infrastructure and Instrument

https://www.indiamart.com/timesitsolutions-newdelhi/claasroom-projector.html

- Classroom characteristics such as size, slope/normal class type, seat set-up, etc.
- In-class technology
- Media, materials, equipment

Concern about Content and Pedagogy

https://in.pinterest.com/pin/893753488527547793/

- Consistent with Learning outcomes
- Align with the focus of the course and curriculum
- Learning-centered instruction such as
  - experiential learning,
  - authentic learning,
  - active learning

Concern about Assessments

https://bys.ac.th/byis/index.php/en/byis-community/calendar/122-year-1-year-7-assessment-final-2

- Assessments must match performance outcomes
- Issues of Formative & Summative assessment
- Issues of validity, reliability and bias
- Issues of fairness – Criterion reference assessment

Issues involving Assessing The Level of Cognitive, Affective, and Psychomotor

Traditional Assessment	Authentic Assessment
• Selecting response	Performing task
• Contrive	Real-life
• Recall / Recognition	Construct / Application
• Indirect evidence	Direct evidence

Example

Laboratory "Blood Cell Staining"

For 3rd Year Medical Technology students

(3 hours)

Archavarungson, N., Saengthong, T., Riengrogpitak, S., Panijpan, B., & Jittam, P.* (2011). An experiential learning unit for promoting conceptual understanding and skills in diagnostic laboratory in undergraduate students. *The International Journal of Learning, 18*(2), 203-217.

Learning Outcomes

After finishing this sessions, students will be able to

1. Accurately explain the underlying principles of the three blood cell staining techniques (Giemsa stain / Wright stain / MPO stain).
2. Identify the accuracy and sensitivity of the three blood cell staining techniques in accordance with their principles.
3. Accurately diagnose white blood cell abnormalities based on established hematological principles.
4. Perform accurate blood cell staining by strictly adhering to the protocol, resulting in clear differentiation of blood cell types.
5. Precise counts each type of white blood cell microscopically.
6. Exhibit ethical behavior when interpreting and reporting blood test findings.

Outcome

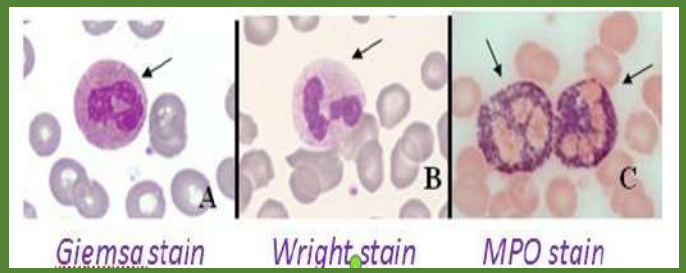
O

Students will be able to

1. Accurately explain the underlying principles of the three blood cell staining techniques (Giemsa stain / Wright stain / MPO stain).
2. Identify the accuracy and sensitivity of the three blood cell staining techniques in accordance with their principles.

Learning Experience

L



Evaluation

E

Presentation & Discussion

Outcome

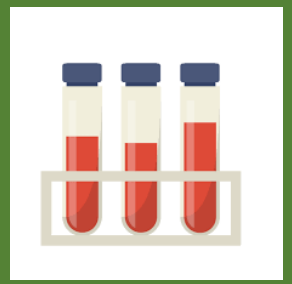
O

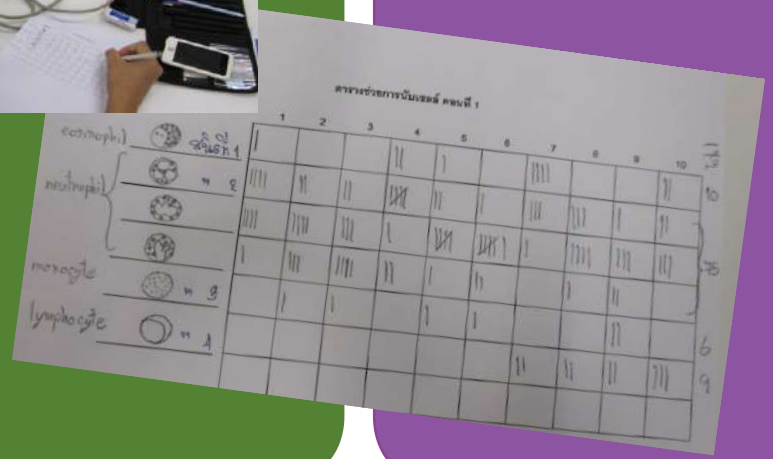
Students will be able to

1. Accurately diagnose white blood cell abnormalities based on established hematological principles.
2. Perform accurate blood cell staining by strictly adhering to the protocol, resulting in clear differentiation of blood cell types.
3. Precise counts each type of white blood cell microscopically.

Learning Experience

L





Evaluation

E

Table 4: Improvement in Counting Competency of Students upon Repetition

Level of competency in counting cell	Number of students*	
	First exposure	Second exposure
Excellent (95-100% correct)	22 (73.3%)	28 (93.3%)
Good (93-94.9% correct)	4 (13.3%)	2 (6.7%)
Fair (90-92.9% correct)	4 (13.3%)	0
*Total number of students = 30		

Objective

O

Students will be able to

1. Exhibit ethical behavior when interpreting and reporting blood test findings.

Learning Experience

L

- Discuss the reliability of the conclusions.
- Discuss about the procedures for testing and delivering blood results.
- Scenario

What should you do if the result is inaccurate and the doctor has already received the report?

If this is discovered, it could damage the hospital's reputation and may result in your termination.

Evaluation

E

- Conclusion and discussion in Lab report
- Observe scenario's reflection


Innovative Learning