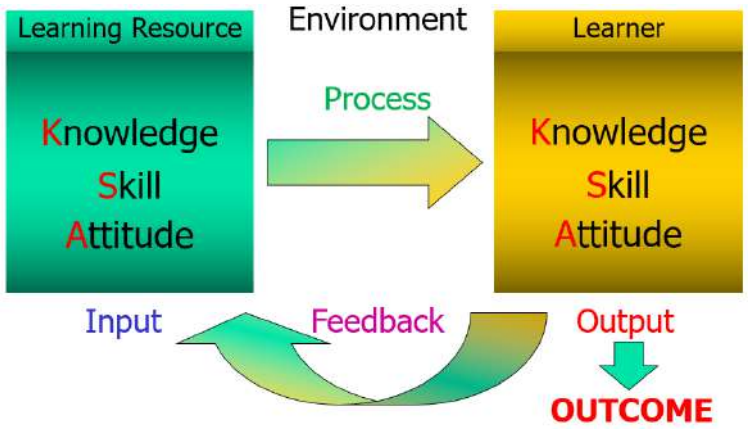
General Concept of Educational Research

2025



Assoc.Prof.Dr.Chailerd Pichitpornchai
M.D., Ph.D.
Director, Institute for Innovative Learning

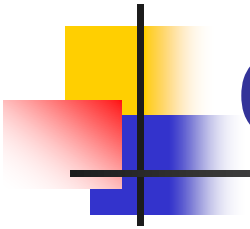
https://il.mahidol.ac.th

H.R.H. Prince Mahidol of Songkla

True success is not in the learning,

but in its application

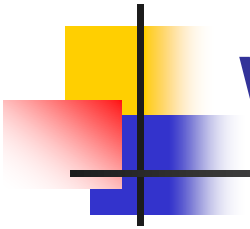
to the benefit of mankind.



Quick survey…

Which domain of BT is …?

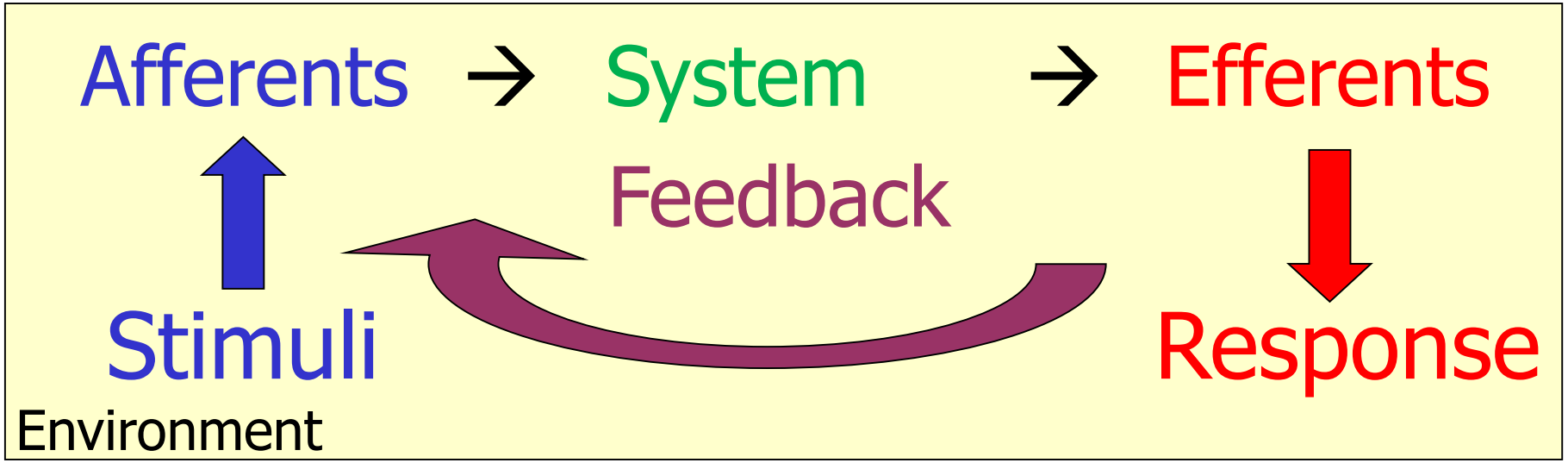
1. calculation skill
2. negotiation skill
3. singing
4. project writing



What to cover…

1. System Concept & Physiology of Learning
2. Learning vs Education
3. Education Concept
4. Revised Bloom's Taxonomy
5. Educational Research

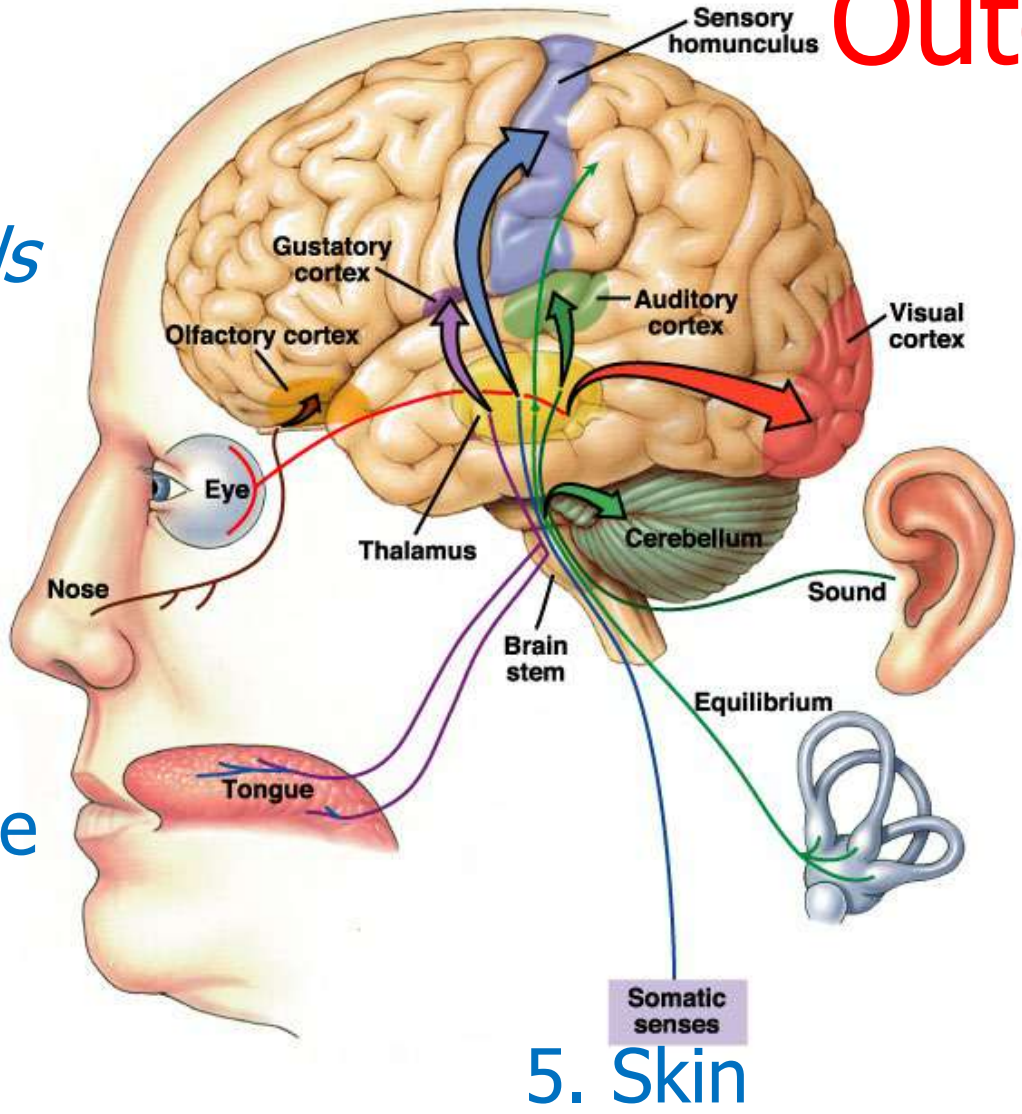
1. System Concept & Physiology



Input → Process → Output & Outcome

Observation tools

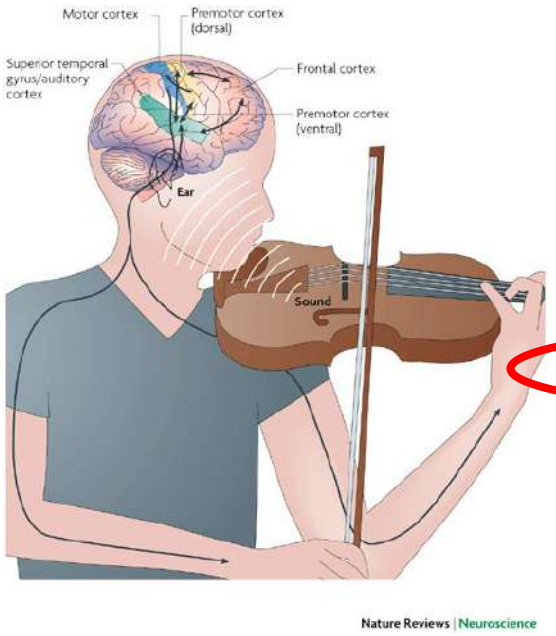
1. Eye
2. Ear
3. Nose
4. Tongue
5. Skin



Input – Sensory perception

Process

Brain & Mind



Output

Feedback

Muscles

Learning & Memory

Feeling & Emotion

Belief & Behavior

2. Learning vs Education

- Learning refers to an intellectual process of acquiring new skills and knowledge, through experience, study or teaching.
- Education is an enlightening process of receiving and providing knowledge, through systematic instruction.

What is "Learning" ?

- Processes include (C. Pichitpornchai)

I 1. Input DIK (via sensory perceptions)

P → Brain (recognize, think, analyze, synthesize,..)

O 2. Practice (motor system)

P & F 3. Monitored by brain & mind

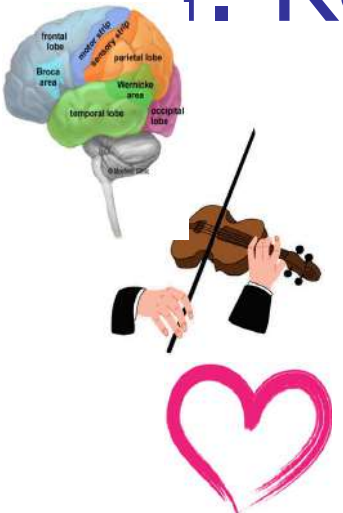
Outcome → Apply for the benefit of mankind

https://il.mahidol.ac.th/th/i-Learning-Clinic/general-articles/นวัตกรรมการเรียนรู้คือ/

3. Education Concept

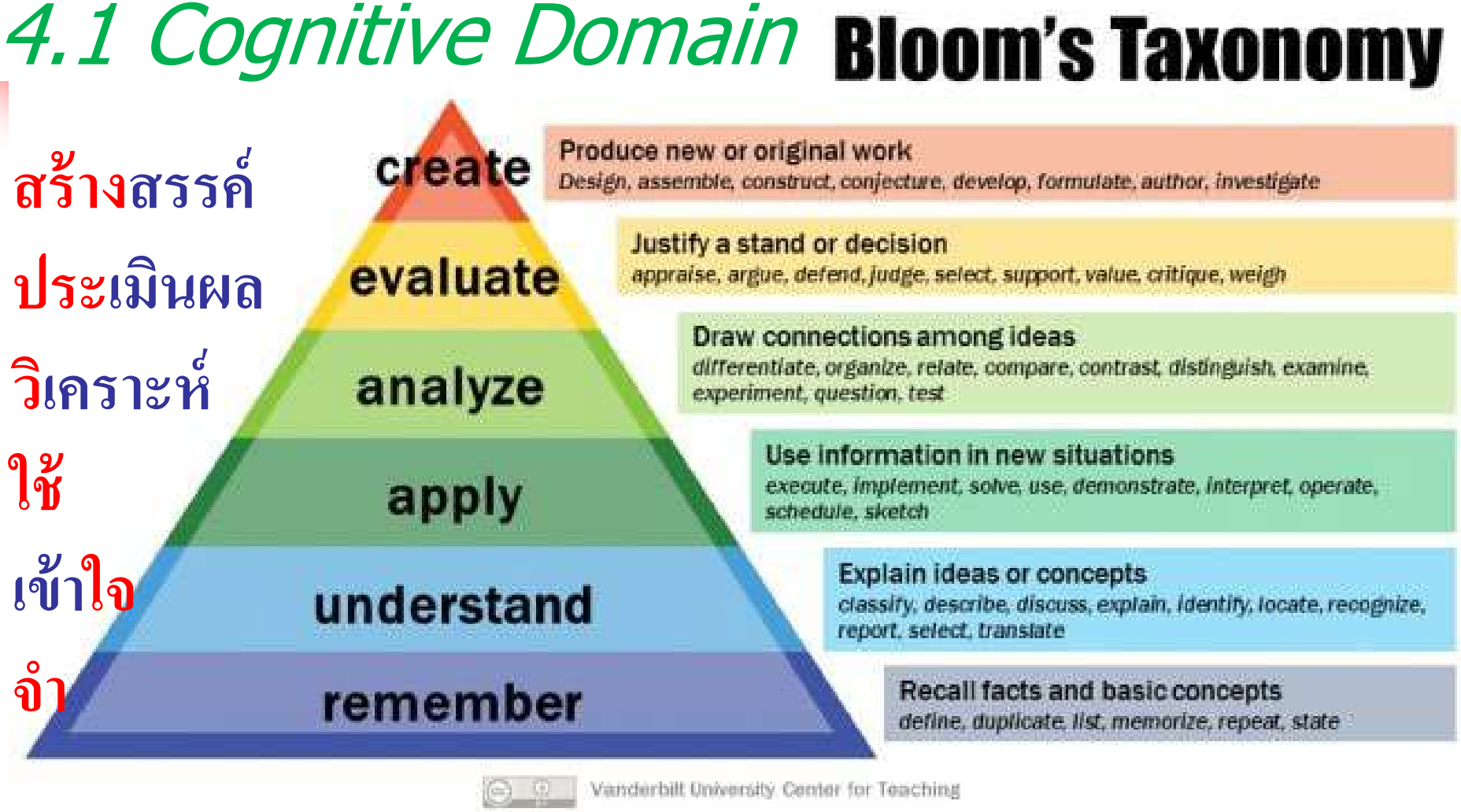
1. Objective: Learning Outcome
2. Learning process: Teaching & Learning
3. Evaluation: Formative, Summative

4. Revised Bloom's Taxonomy



1. Cognitive Domain (Knowledge): Head
2. Psychomotor Domain (Skill): Hand
3. Affective Domain (Attitude): Heart

4.1 Cognitive Domain



https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/

Bloom's revised taxonomy

with matched sample verbs, learning outcomes and assessment tasks

Taxonomy[1]	Example Active Verbs[2345]	Example Unit of Study Learning Outcomes	Example Assessment Tasks
Create Putting elements together to form a novel, coherent whole or make an original product	Create, generate, plan, produce, invent, imagine, frame, fabricate, develop, design, devise, initiate, craft, build, construct, set up, compose, write, argue, teach, theorise	Argue for reform of selected areas of criminal procedure. Design new products according to the conditions of minimal environmental cost.	Model or product, editorial, portfolio, performance test, presentation, poster, project, design plan, business plan, treatment plan, exhibition, simulation, game, website, audio and/or video-taped interview, video, position paper, conference paper, letter to the editor, letter to client, reflective journal, report
Evaluate Making judgments based on criteria and standards	Evaluate, check, critique, value, appraise, assess, judge, rank, rate, gauge, estimate, approximate, calculate, compute, quantify, determine, ascertain, weigh, measure, review, justify, predict, decide	Assess the resources needed for an interactive digital media project. Evaluate different theoretical approaches in the study of personality.	Essay, report, letter of advice, presentation, briefing paper, article or book review, literature review, article for foreign newspaper or magazine, reflective journal, written exam†
Analyse Breaking material into its constituent parts and detecting how the parts relate to one another and to an overall structure or purpose	Analyse, differentiate, organise, attribute, separate, dissect, examine, investigate, study, critique, estimate, test, diagnose, explore, consider, distinguish, compare, contrast	Analyse risk management strategies for investment decisions. Examine regional identities within the Sydney basin from 1788 to the present.	Essay, literature review, problem scenario analysis, group work report, work-based problem analysis, critical incident analysis, committee inquiry report, case study report, reflective journal, written exam†
Apply Carrying out or using a procedure in a given situation	Apply, perform, execute, implement, use, utilise, employ, operate, exercise, practise, solve, carry out, verify, conduct	Apply ethical frameworks associated with the provision of holistic nursing care. Carry out the basic experimental procedures of DNA cloning.	Performance test, direct observation, clinical assessment, mini practical, employer's report, case study report, lab or field report, illustrated manual, simulated interview, audio and/or video-taped interview, video, debate, role play, moot trial, viva, written exam†
Understand Determining the meaning of instructional messages, including oral, written, and graphic communication	Interpret, exemplify, classify, summarise, infer, compare, explain, perceive, discern, deduce, relate, conclude, describe, define, outline, discuss, illustrate	Explain how strategic cost management can be used in the creation of competitive advantage. Describe the ways in which gene expression is regulated in both prokaryotes and eukaryotes.	Essay, report, presentation, poster, project, annotated bibliography, glossary, encyclopaedia entry, written exam†, multiple-choice questions
Remember Retrieving relevant knowledge from memory	Recognise, recall, memorise, list, name, recite, identify, label, select, state, organise	Identify the major organs of the immune system. Recognise architectural technical drafting symbols.	Multiple-choice exam, true-false questions, short answer questions, matching task

† May include short answer and essay type questions.

1 Source: Krathwohl, D. R. (2002). A revision of Bloom's taxonomy: An overview. *Theory into Practice, 41*(4), 212-218.

2 Ibid.

3 Urdang, L. (1991). The Oxford thesaurus. Oxford: Clarendon Press.

4 (n.d.). Roget's II: The new thesaurus. Third Edition. Retrieved 4 May, 2008, from Thesaurus.com website: http://thesaurus.reference.com/browse/apply

5 Microsoft® Office Word 2003 thesaurus.

Developed by Dr Graham Hendry, Education Portfolio graham.hendry@sydney.edu.au

4.2 Psychomotor Domain

- Dave's Psychomotor Domain Taxonomy

5. Naturalization: Automate & become expert
4. Articulation: Combine & integrate related skills
3. Precision: Develop precision
2. Manipulation: Follow the instruction
1. Imitation: Copy

Dave, R.H. (1970). Psychomotor levels in Developing and Writing Behavioral Objectives, pp.20 21. R.J. Armstrong, ed. Tucson, Arizona: Educational Innovators Press.

4.2 Psychomotor Domain (2)

Category	Behavioral Description
5. Naturalization	High level of performance achieved with actions becoming second nature
4. Articulate	Several skills can be performed together in a harmonious way
3. Precision	Performance becomes more exact, and action are more precise
2. Manipulate	Actions performed through memorization or following directions
1. Imitate	Learning by watching and imitating actions

Dave, R.H. (1970). Psychomotor levels in Developing and Writing Behavioral Objectives, pp.20 21. R.J. Armstrong, ed. Tucson, Arizona: Educational Innovators Press.

4.3 Affective Domain

Category	Behavioral Description
5. Characterizing	Act consistently in accordance with the values you have internalized
4. Organizing	Put together different values, information, and ideas then relate them to already held beliefs to create your own unique value system
3. Valuing	Able to see the value or worth of something and express it
2. Responding	Actively participating in learning process. You are not only aware of a stimulus, but reacting to it in some way
1. Receiving	Involve passively paying attention and being aware of the existence of certain ideas, material, or phenomena

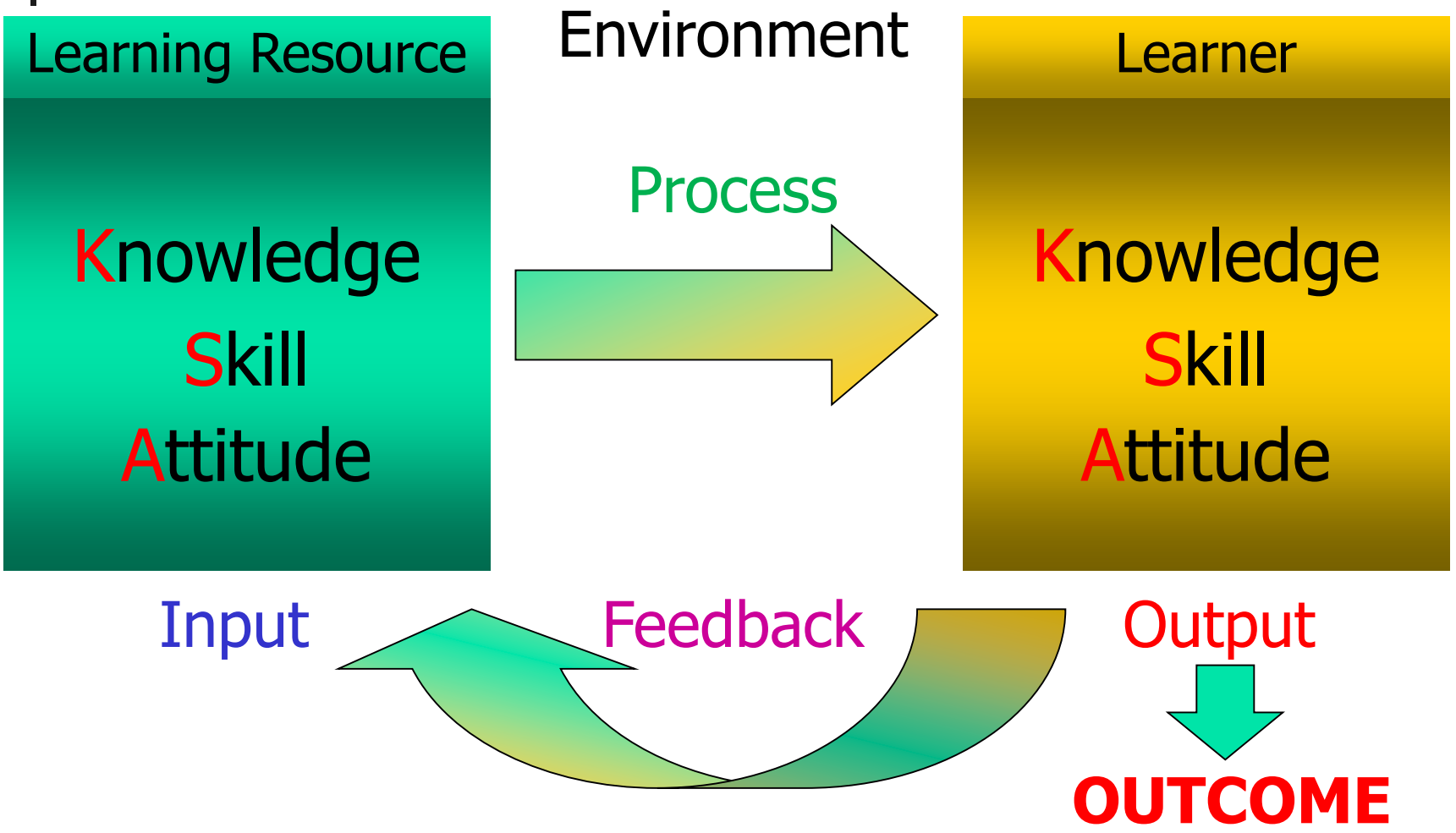
https://thepeakperformancecenter.com/educational-learning/learning/process/domains-of-learning/affective-domain/

5. Educational Research

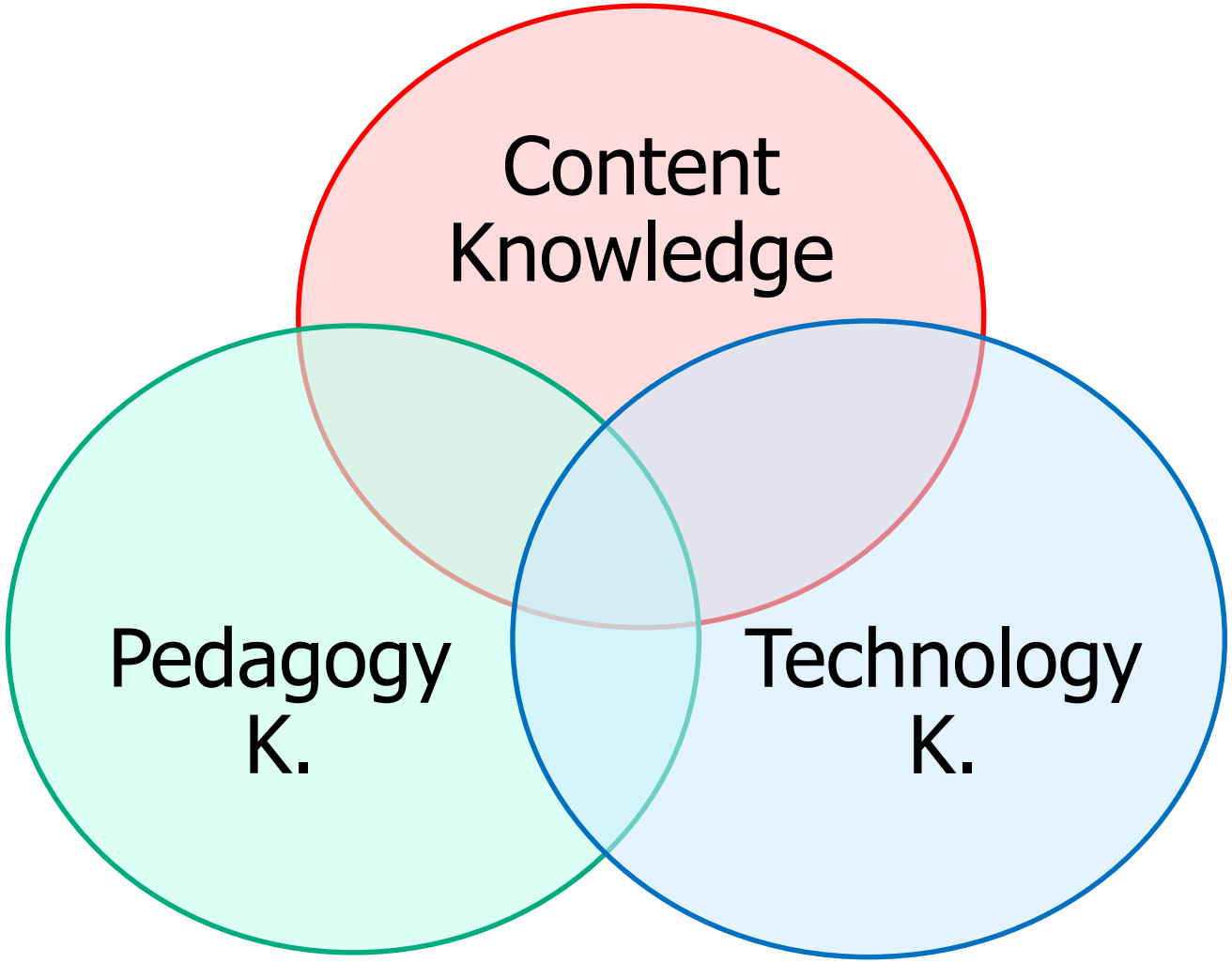
- Systematic collection and analysis of data related to the field of education.
- It may involve a variety of methods and various aspects of education including student learning, teaching methods, teacher training, classroom dynamics, etc.

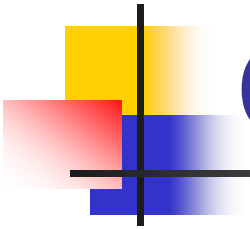
https://en.wikipedia.org/wiki/Educational_research

Teaching & Learning Components



TPACK: Technology Integration Framework





Q5:

- What are your problems regarding teaching and learning?
- Research Question

Education (Research)

- Curriculum/Program (PLO)
  - Course (CLO)
- Teacher → Pedagogy, Classroom Management
- Learner → How to learn
- Teaching & Learning Materials & Technology
- Evaluation Methods
- Faculties & Staff Development

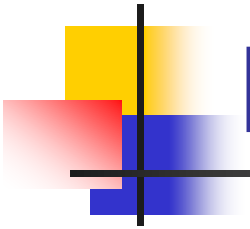
Teaching & Learning Processes

1. Traditional Lecture
2. Active Lecture
3. Story Telling
4. Question & Answer
5. Buzz Group
6. Group Discussion
7. Brain Storming
8. Role Play
9. Flip Classroom
10. Multimedia/Web – AV, AR
11. Problem-Based
12. Project-Based
13. Team-Based
14. Demonstration
15. Experiment
16. Field Trip / Experience
17. Learning by Teaching
18. etc.

Education Research's Aims

Aims at building on existing knowledge and understanding of learning and education by

- Studying phenomenon, interaction, interventions
- Formulating models, theories and predictions
- Studying what works, why, how and for whom



Educational Research is…

- Seeking to deepen the knowledge and understanding of learning & teaching
- The process of
  - Transforming ideas and problems into researchable questions
  - Choosing a research approach

Transforming ideas to…

- To get from ideas or problems to research questions
  - Have a conceptual, theoretical framework
  - What is already known
  - What needs to be investigated further

→ Research questions

→ Research methodology

About the speaker

Assoc.Prof.Dr. Chailerd Pichitpornchai
M.D., Ph.D.

1. Director, Institute for Innovative Learning
2. Dept. of Physiology, Fac. of Medicine Siriraj Hospital
   Mahidol University

Mobile: 086-363-1539
Email: Chailerd.Pic@mahidol.ac.th
Chailerd@gmail.com