

# Constructive Alignment of Teaching & Approaches to Teaching & Student Learning

TED, Ankara, Turkey

October, 21, 2015 – First Day of Workshop for Academics

Dr. Anne Nevgi

Centre for Research and Development of Higher Education

University of Helsinki

# Assumptions underlying theories of teaching

- **First assumption:** Learning is a direct result of differences between students → students' ability and talent explain differences in learning
  - Additive model of teaching and learning
- **Second assumption:** Learning is primarily result of good teaching → teachers' pedagogical skills and methods explain differences in learning
  - Additive model of teaching and learning
- **Third assumption:** Learning is a result of students' engagement and active learning supported and facilitated by the total teaching context → all three components – students (learning), teachers (teaching) and teaching/learning context – are dynamically related to each other
  - Systemic model of teaching and learning

# Approaches to teaching and concepts of teaching

## Two aspects of approaches to teaching

- **an intention or motive** (why the person adopts a particular strategy to teach)
- **a strategy** (or what the person does in teaching). (Biggs, 1989; Trigwell & Prosser, 1996)

## Concepts of teaching

- Supporting students' learning
- Changing students' conceptions
- Facilitating understanding
- Transmitting knowledge
- Imparting information (Samuelowicz & Bain, 1992)

# Approaches to teaching...

- Describe teachers'
  - a) intentions (what are their aims) and
  - b) strategies (what they do to reach these aims, e.g. methods)
- Approaches are contextual and dynamic
- Several studies distinguish between two approaches:
  - 1) Learning-focused (student-focused, student-centred,..)
  - 2) Content-focused (teacher-focused, teacher-centred...)

(e.g. Samuelowicz & Bain, 2001; Trigwell & Prosser, 1999)

# Learning-focused approach to teaching

- Focus on how students learn
- Primary aim is to improve students' learning (lies on constructivist tradition)
- Students are seen as active participants and capable of constructing their own knowledge
- Emphasis is on developing own teaching
- Related often with positive emotions towards teaching
- Is not a synonym to activating teaching methods!

# Content-focused approach to teaching

- Focus on what the teacher does and on course contents
- Primary aim is to transmit knowledge (lies on behavioristic tradition)
- Students are seen as less active recipients of information
- Repeats traditional and familiar ways of teaching
- Related often with negative emotions towards teaching
- Is not a synonym to lecturing!

# Approaches to teaching

Teacher-centred,  
information  
transmission,  
content-  
focused

Reproduction of  
knowledge

Imparting  
information

Transmitting  
structured  
knowledge

Learning-  
centred,  
conceptual  
change,  
learning-  
focused

Change in ways  
of thinking

Helping  
students to  
develop  
expertise

Changing  
students'  
conceptions  
Preventing  
mis-  
understanding

Encouraging  
knowledge  
creation

(Kember, 1997; Samuelowicz & Bain, 2001; )



## LEARNING FOCUSED

flexible

contextual

understanding

facilitator

active

enhances learning

enhances learning

understanding

## TEACHING PROSESS

Planning of teaching

Teaching practices

Assessment practices

## LEARNING ENVIRONMENT

Teacher's role

Student's role

Interaction

Creating a good  
athmosphere

## CONCEPTION OF LEARNING

## CONTENT FOCUSED

precise

not contextual

Knowledge, remembering

expert

passive

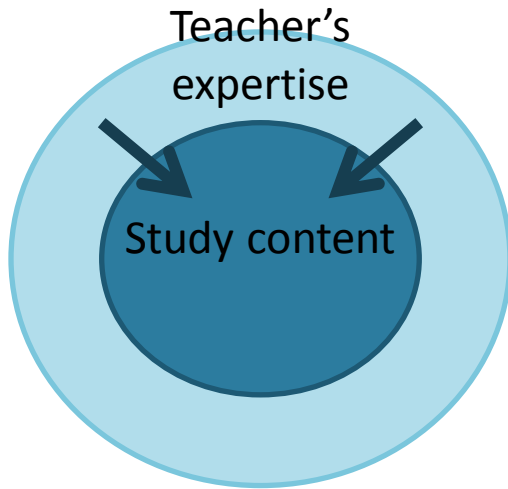
not important

not important

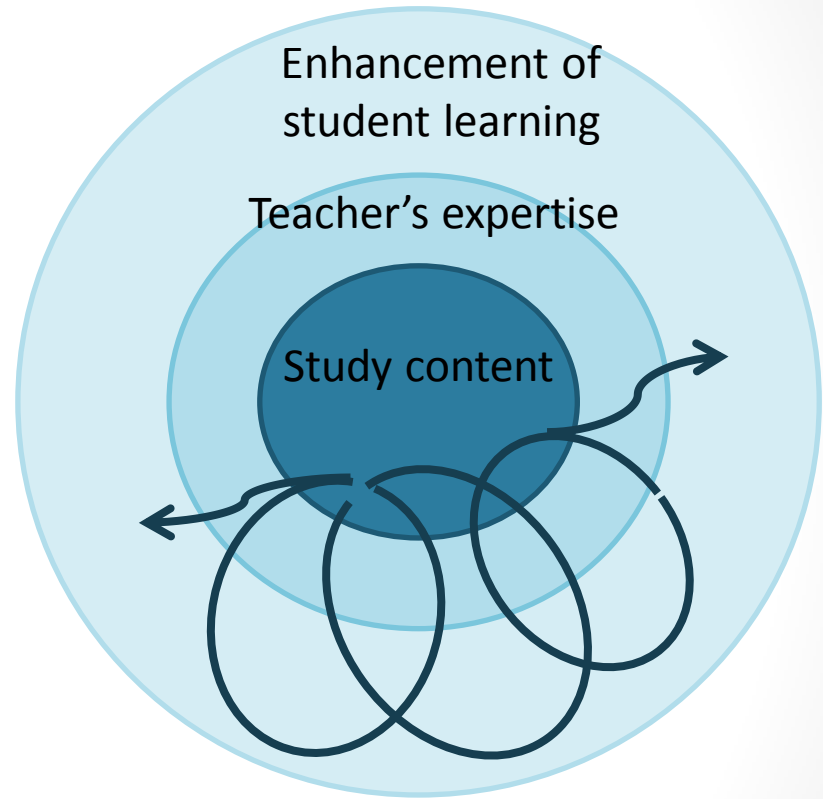
remembering



## Content-focused approach



## Learning-focused approach



# Group activity: Discussion

- Which factors have an effect on your approach to teaching?
  - Write down 3-4 things that first come to your mind
- Discuss with your pair/group about these
- Fishbowl: half of the pairs/groups go inside circle and discuss and other half is in outside circle and listens. (10-15 min). After that participants in outer circle comment and add.

# Approaches to teaching are affected by:

- **Conceptions of teaching and learning** (e.g., Kember & Kwan 2002; Postareff & Lindblom-Ylänne, 2008)
- **Context** (Lindblom-Ylänne et al., 2006)
- **Teaching culture of the faculty** (Lindblom-Ylänne, Trigwell & Nevgi, 2006)
- **Discipline** (Lindblom-Ylänne et al., 2006; Lueddeke, 2003; Postareff et al. 2008)
- **The amount of pedagogical training** (Postareff, Lindblom-Ylänne & Nevgi 2007; 2008; Coffey & Gibbs 2000)
- **Own teaching and learning experiences** (Lindblom-Ylänne, Trigwell & Nevgi, 2006)
- Amount of teaching experience, age or sex have NOT been shown to be related to approaches to teaching

# Disciplinary differences in approaches to teaching

- Teachers who represented "hard sciences" were more content-focused than teachers who represented "soft sciences"
- Teachers who represented "soft sciences" were more learning-focused than teachers who represented "hard sciences"

(LINDBLOM-YLÄNNE, TRIGWELL, NEVGI & ASHWIN, 2006)

# The quality of teaching enhances the quality of student learning

- The teachers applying the learning-focused approach to teaching enhance the adoption of a deep approach to learning among students, through
  - facilitating students' learning processes
  - helping students to become independent learners
  - being interactive with the students
  - using activating teaching methods
  - giving students an active role during teaching

(Trigwell, Prosser & Waterhouse, 1999)

# How to understand students' differences in learning?

- Self-regulation in learning (self-directed learning)
- Motivation (intrinsic – extrinsic)
- Prior knowledge (prior understanding and knowledge base)
- Academic self-beliefs (beliefs of oneself as learner of subjects)
- Approaches to learning (surface, deep, strategic)
- Study strategies
- Study skills

Forethought  
of Learning

**Self-control**

- Self-instruction
- Imagery
- Attention focusing
- Task strategies

**Self-observation**

- Self-recording
- Self-experimentation

Performance  
or Volitional  
Control

**SELF-REGULATION  
IN LEARNING**

**Self-judgment**

- Self-evaluation
- Causal attribution

**Self-reaction**

- Self-satisfaction/affect
- Adaptive-defensive

Self-  
Reflection

**Task analysis**

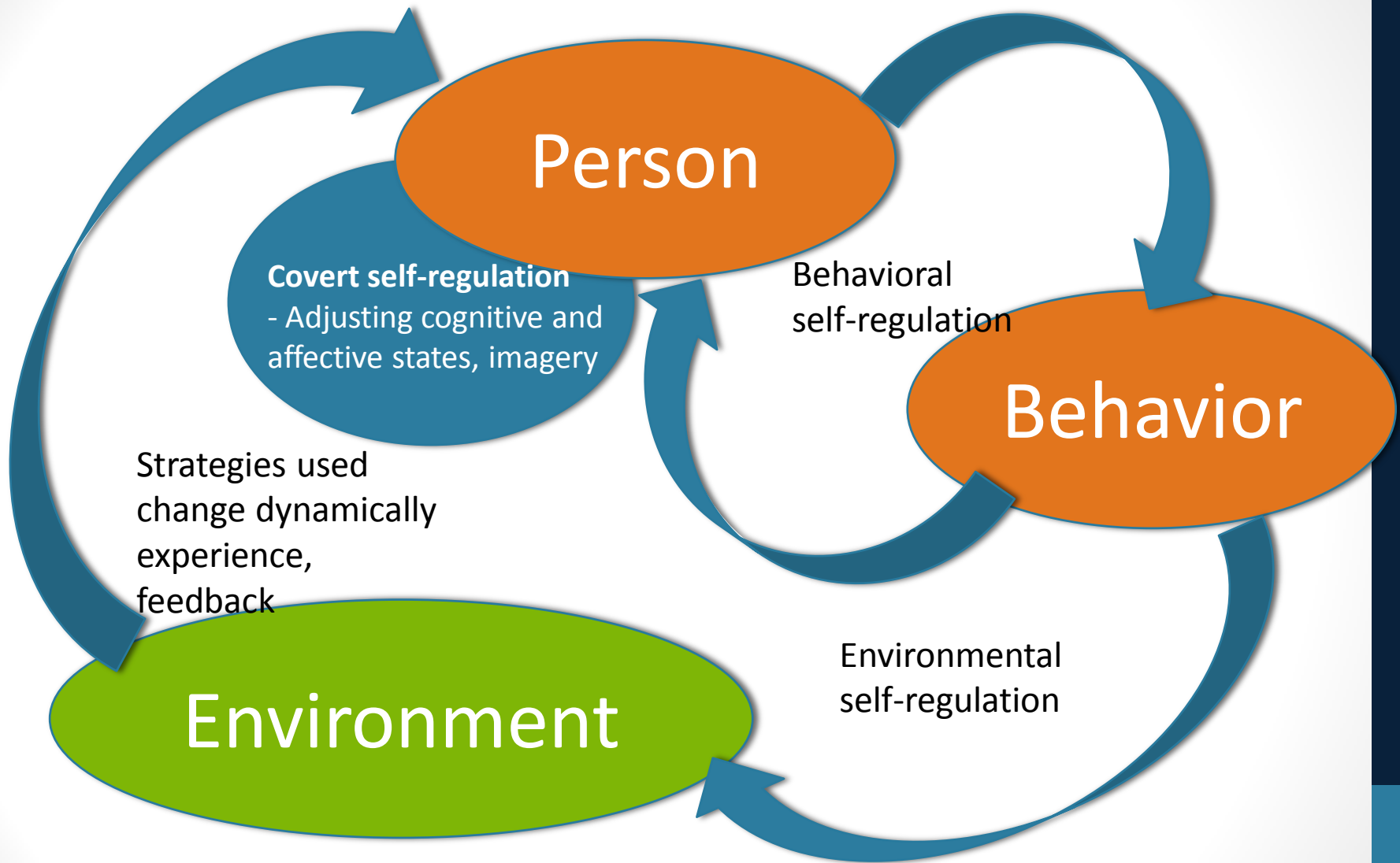
- Goal setting
- Strategic planning

**Self-motivation beliefs**

- Self-efficacy
- Outcome expectations
- Intrinsic interest/value
- Goal orientation

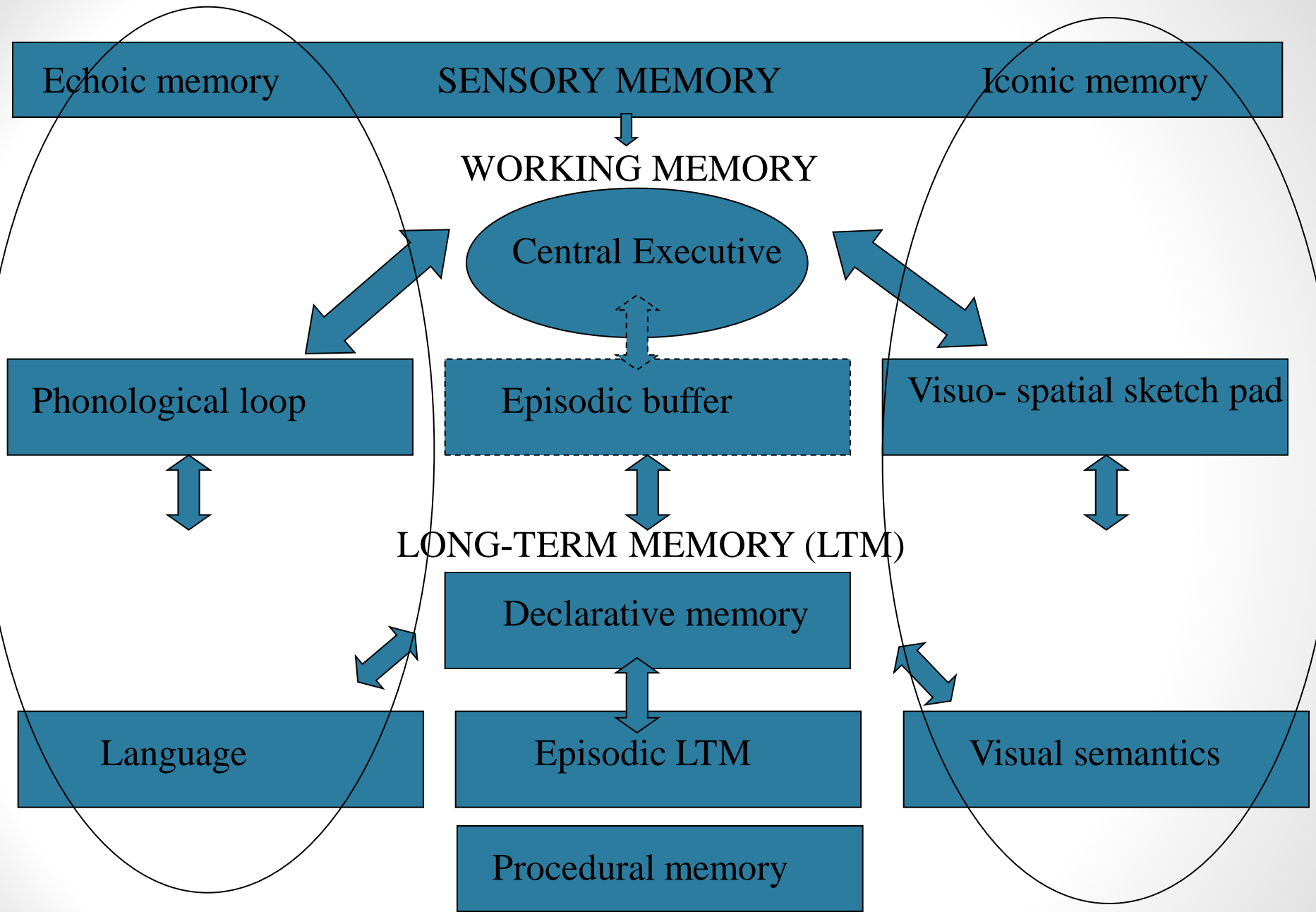
(Zimmermann, 2000)

# TRIADIC FORMS OF SELF-REGULATION

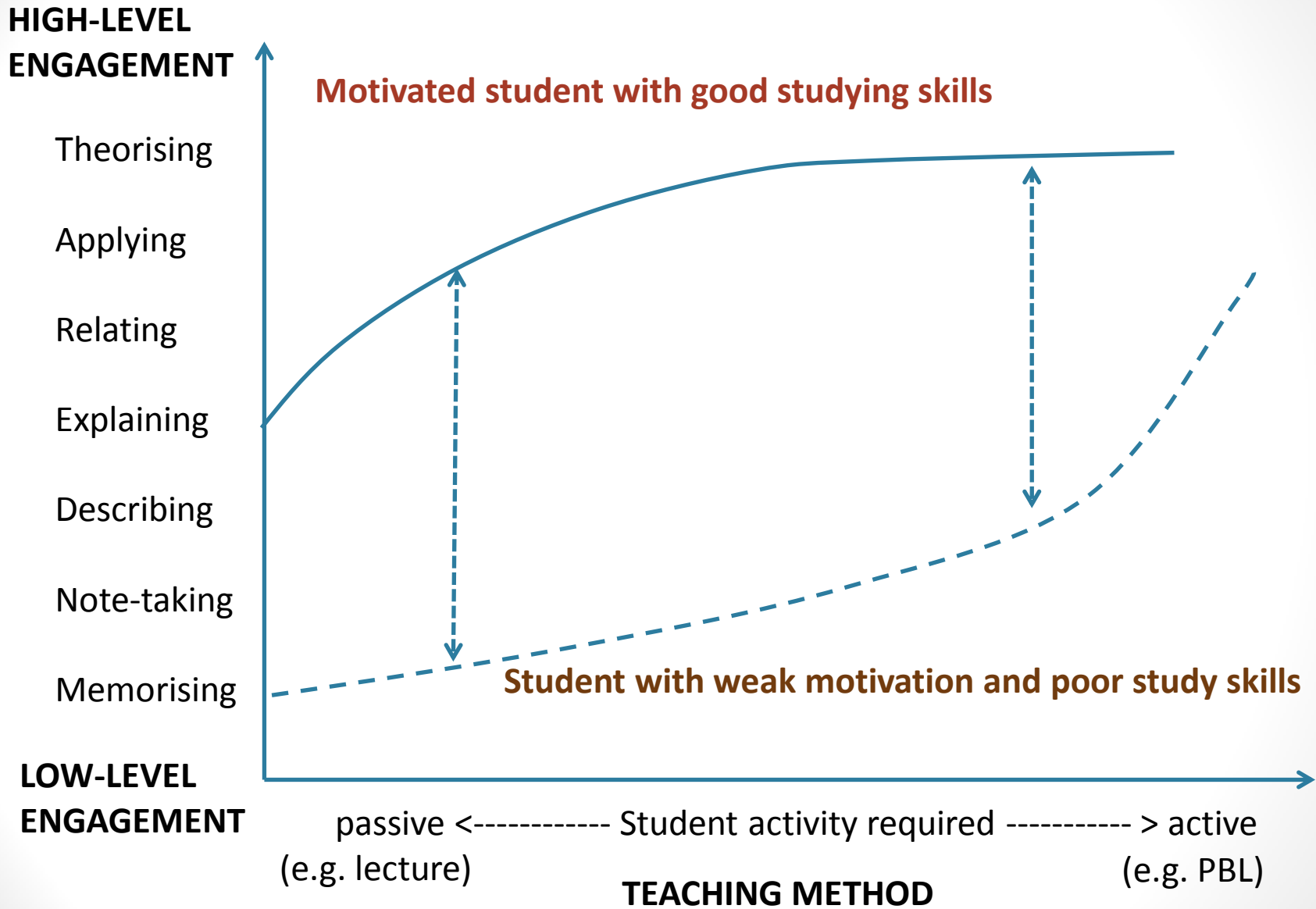


(Zimmerman, 2000)





**Figure 1. Student orientation, teaching method, and level of engagement**



(Biggs, 1999, 59)

# Active learning and student achievement in studies

- Active learning experience explained student teachers' achievement or teacher's professional competencies (Niemi & Nevgi, 2014)
  - Two Finnish Universities (N = 287)
  - Professional Competencies (self-report instrument)
- Teachers' who report using teacher-focussed/information transmission approach to teaching are more likely to be teaching students who adopt surface-approach to learning
- Student-focussed/conceptual change approach to teaching is less likely to yield students to adopt surface-approach to learning (Trigwell, Prosser & Waterhouse, 1999)

# Group activity/Discussion

- Why students' active engagement facilitates learning?
- What you do / can do to support students' active engagement in learning
  - During class hours?
  - During independent studies (at home, library etc.)?

Discuss in small groups/pairs: what kind on activities you've used and why, how these have supported students' learning?

# DESIGNING TEACHING TO SUPPORT STUDENT LEARNING

# Constructive alignment

(Biggs 1996)

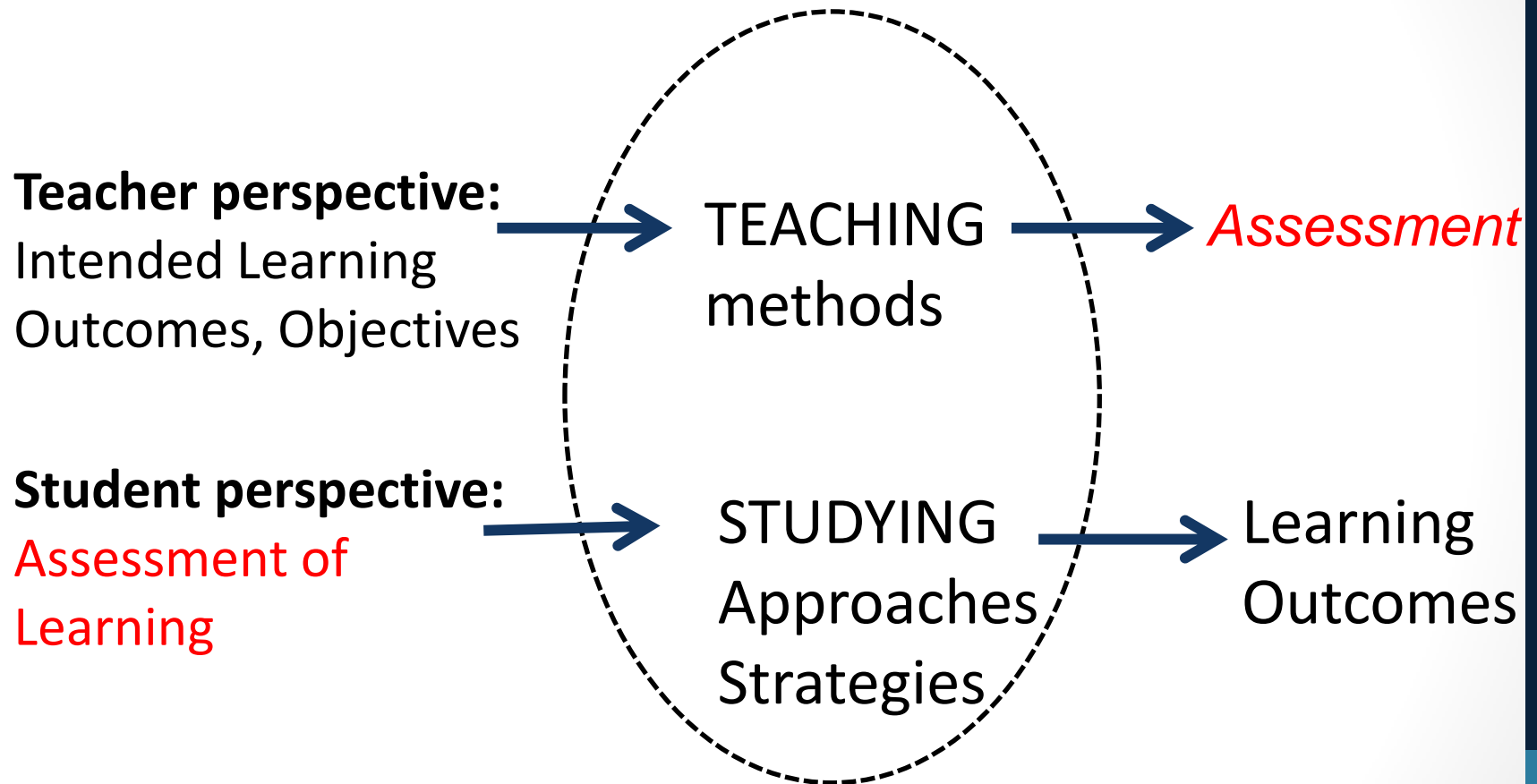
= a theoretical model of how to support deep, constructive learning;

= a practical tool for teachers to design teaching

- *Constructive* refers to the idea that students *construct meaning* through relevant learning activities.
- *Alignment* refers to a learning environment where teaching and learning activities, and assessment tasks, are *aligned* to the intended learning outcomes of a subject.

# Two perspectives to teaching-learning process

(Biggs, 2003; Biggs & Tang, 2007, 169)



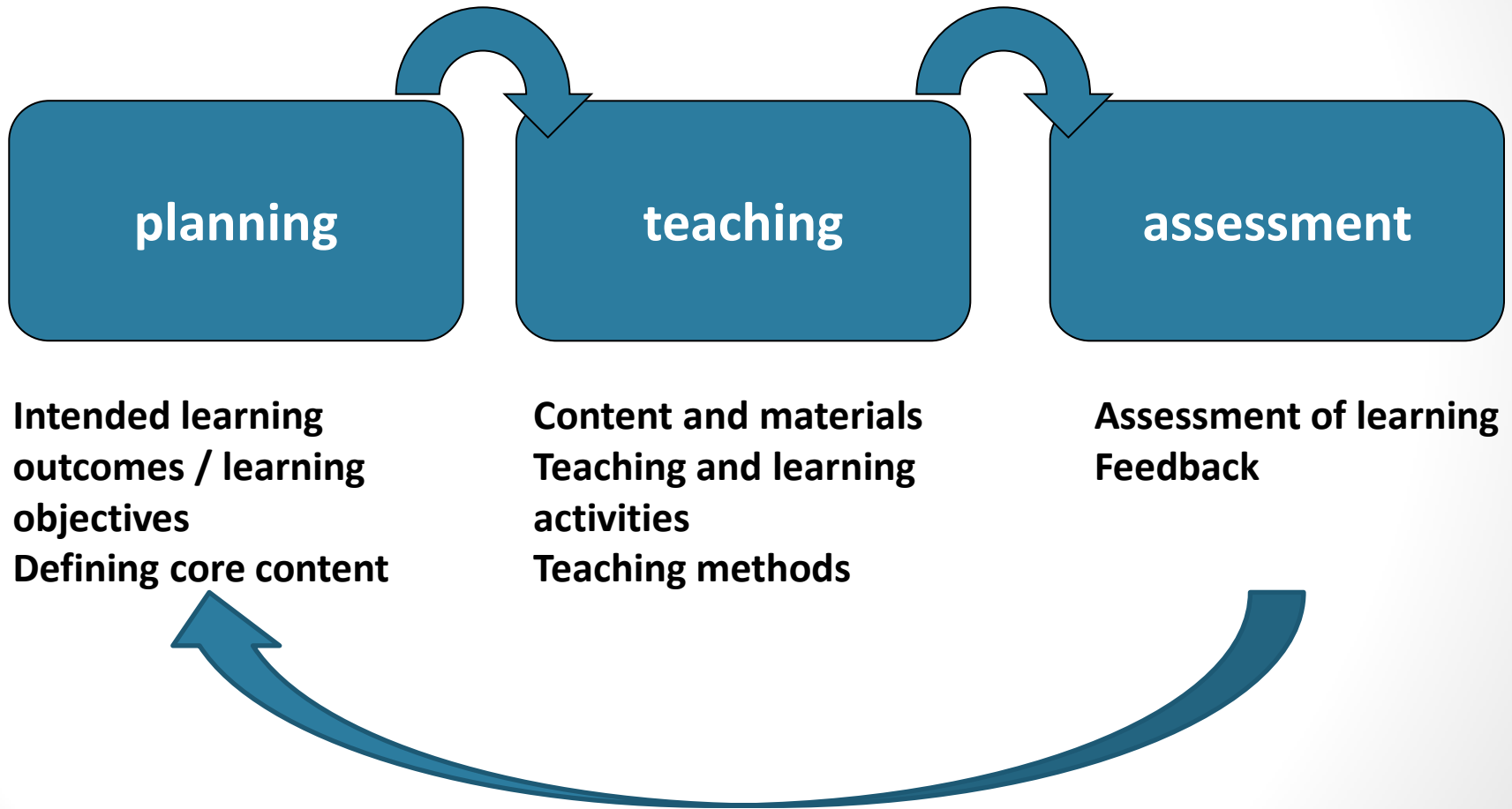
The focus in teaching is not what we teach but **what our students' should learn** and how we can help them achieve that

Constructive alignment – teaching methods and assessment are aligned to support students' active studying and learning



# Students' intended learning outcomes are aligned with teaching and assessment

(Biggs 1996)



# Constructive alignment – teaching methods

- How can the learning objectives / intended learning outcomes be converted into actions and assignments that enable and enhance deep learning?
- Select the teaching method and learning activities to support achievement of the learning objectives / intended learning outcomes

*“It is helpful to remember that what the student does is actually more important in determining what is learned than what the teacher does.” (Shuell, 1986: 429)*

# Designing constructively aligned teaching

(Biggs & Tang, 2008)

Four steps:

1. describe *intended learning outcomes/objectives* using understandable and concrete learning verbs
2. create a *learning environment* likely to bring about the intended outcomes (contents, learning activities, teaching methods)
3. use *assessment tasks* enabling you to judge if and how well students' performances meet the outcomes
4. develop *assessment/grading criteria* for judging the quality of student performance

# Types of knowledge/performance

- Consider what types of
  - **Knowledge** (content, topics)
  - **Skills** (e.g. interaction, communication, group work, problem solving, critical thinking skills, other *generic skills*)
  - **Attitudes** (e.g. curiosity, criticism, honesty, ethical thinking...)

you want your students to learn?

# Level of understanding

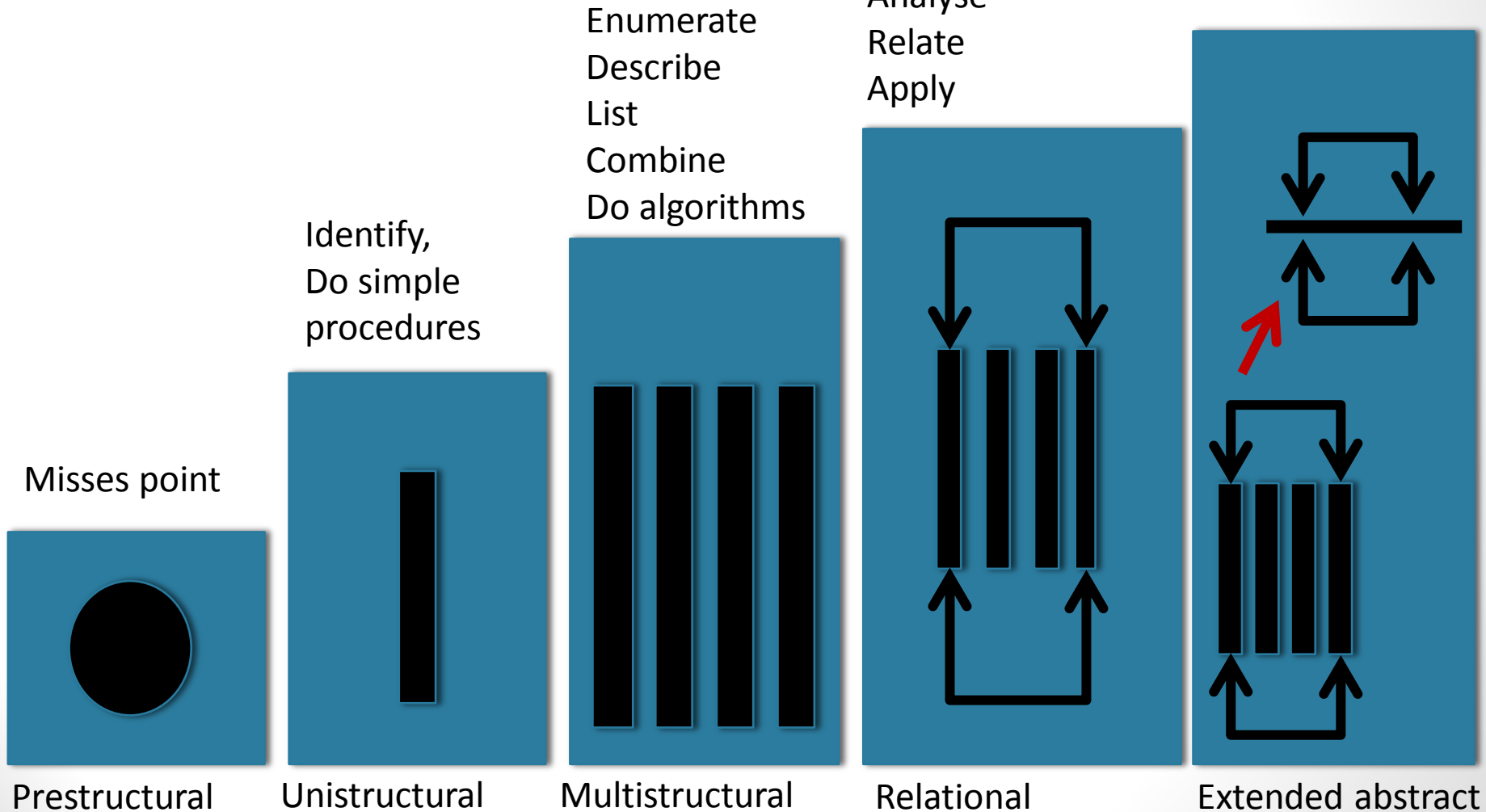
- What is the level of understanding our students' should achieve?
- Introducing three ways of conceptualising the levels of understanding
  - Biggs (2003): SOLO-taxonomy
  - Bloom's revised taxonomy (Anderson and Krathwohl, 2001)
  - Hailikari (2010): Levels of understanding

# The SOLO (Structure of Observed Learning Outcomes) taxonomy

- **Prestructural** – misses point
- **Unistructural** – identify, name, do simple procedures
- **Multistructural** – “knowledge-telling”
  - E.g. enumerate, describe, list, combine, do algorithms, follow a procedure
- **Relational** – understading relations and how things form an integrated whole
  - E.g. compare, contrast, explain causes, analyse, relate, apply
- **Extended abstract** – going beyond existing principles
  - E.g. theorize, generate new ideas, hypothesize;

# SOLO-taxonomy

## CRITICAL THINKING



# QUALITY OF KNOWLEDGE

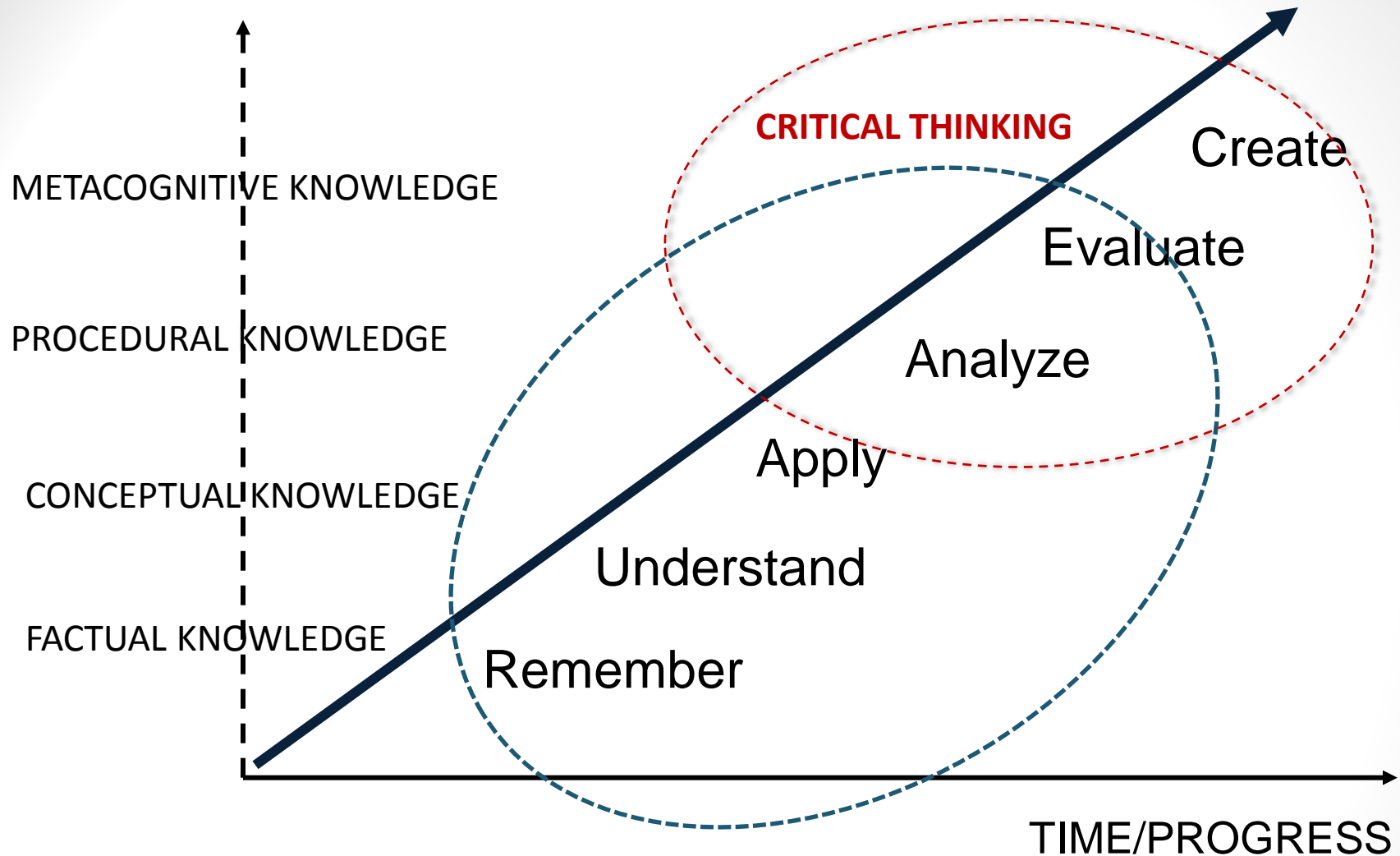
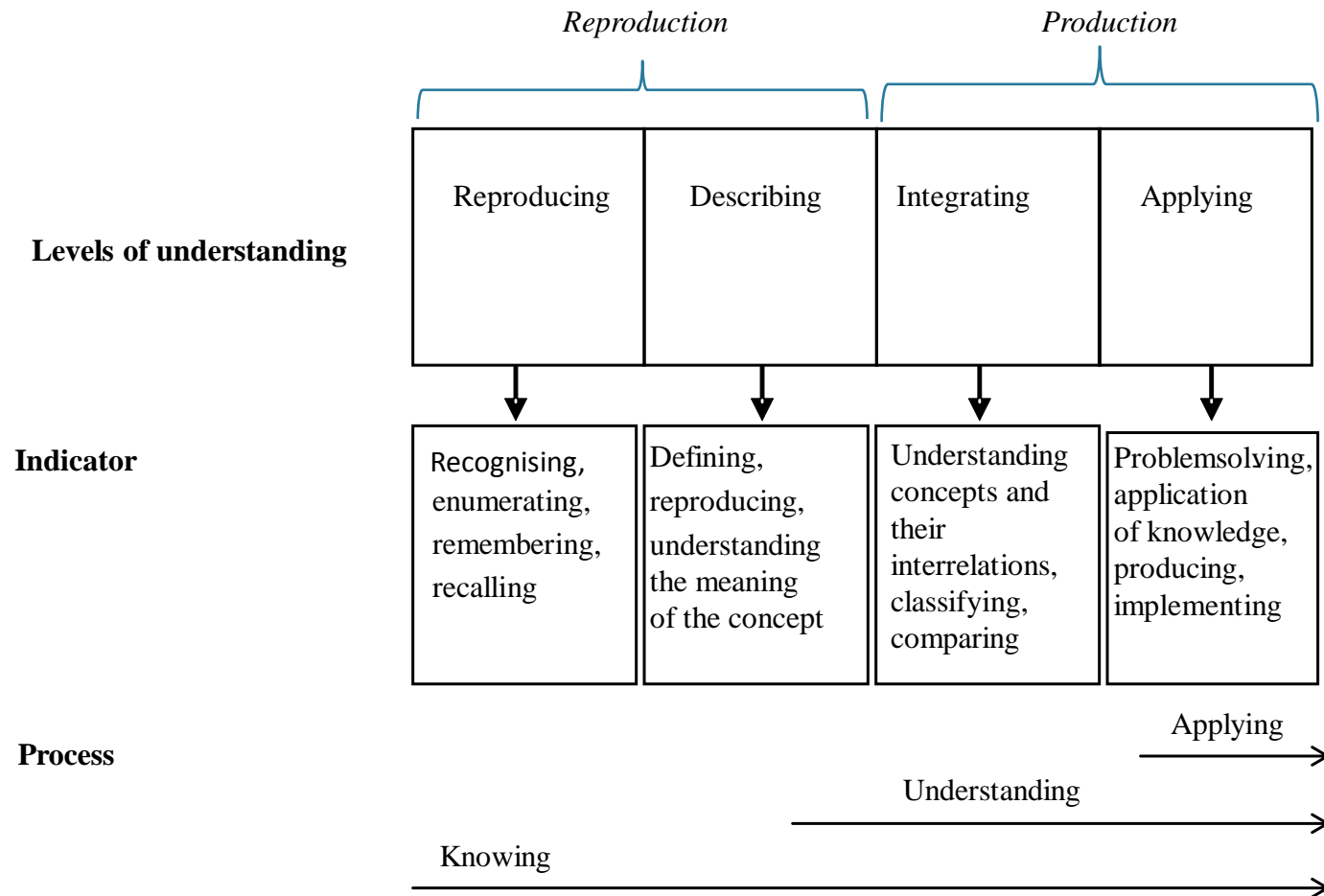


Figure. Bloom's revised taxonomy and levels of knowledge  
<http://www.celt.iastate.edu/teaching/RevisedBlooms1.html>



# A model of (prior) knowledge and understanding

(Hailikari, 2010)



**How to design curriculum based on  
constructive alignment, and how to support  
self-regulated learning by curriculum**

# Choosing content

*"Less coverage, more understanding"*

- **Core content** (Must know)
  - Content which the student needs to learn in order to be able to form a deeper understanding of the subject
- **Complementary content** (Should know)
  - Content which is useful for the student as it provides the opportunity to further deepen theoretical knowledge in the subject
- **Special content** (Nice to know)
  - Content which allows student to deepen understanding on a specific topic within the subject

# Good learning objectives

- Are flexible to students' needs
- Are discussed with the students at the beginning of the course
- Are realistic
- Take into account the *types of knowledge*
- Take into account *levels of knowledge/performance* (e.g. SOLO taxonomy)
- Differentiate between *core, complementary and special content*

# The importance of obtaining 'higher level' understanding

(Hailikari, 2010)

- Students who are able to integrate and apply knowledge at the beginning of the course
  - obtain higher final grades (study success)
  - Pass the courses in time (study pace)
  - Have higher self-efficacy beliefs
  - Have higher performance in the long run (accumulation of knowledge and understanding)
  - On the other hand, low performance is related to lower grades, slow study pace or dropping out of the course
- Implications:
  - Awareness of the students' level of prior knowledge and understanding at the beginning of the course
  - Students should be encouraged to reach higher level understanding

# Conclusions: Phases in designing learning objectives

1. Select the contents (core, complementary, special) to be taught
2. Consider what type of knowledge, skills and attitudes your students' should learn
3. Decide the levels of understanding the students are expected to achieve
4. Consider if all the objectives are of equal importance

# Setting objectives: Questions to think about (E. Lofström)

- Is the level of the goals **appropriate and realistic** in light of the learners' prior knowledge, level of development, and time available?
- What **level of understanding** should the students reach?
- How do you think the students should be **able to use the knowledge**, for instance what kind of applications should they master?
- Are there **different types of goals**, ie. those regarding content, and those regarding general skills?
- Are the learners **aware of what they are expected to learn**, i.e. how are the objectives communicated?
- Are the **students** given the opportunity to influence or participate **in the goal setting or voice their hopes**?
- Do the students have opportunities to think about and express how the learning goals of the course or lecture are related to **their own**

# Teaching methods & LEARNING ACTIVITIES



# Selecting the teaching methods/ learning activities

After setting the learning objectives, we need to think which teaching methods and learning activities would best facilitate students to achieve the learning objectives.

Some examples (Biggs, 2008):

Learning objective	Possible teaching methods / learning activities
The student is able to describe...	Set reading, write essay
The student is able to integrate...	Project, assignment
The student is able to apply...	Case study
The student is able to solve problems...	Case study, Problem Based Learning
The student is able to reflect....	Reflective diary

# Teaching methods / learning activities should...

- Relate prior knowledge with the new information
- Enable students' active knowledge construction
  - Not enable surface learning
- Give time for reflection, critical evaluation, thinking...
- Show the relevance; motive students
  - What students' do not know yet about the topic?
  - Why they should learn it?
  - Why specific teaching methods /learning activities are used?

# Activating methods for lectures – some examples

- **Writing assignments**

- e.g. Activate prior knowledge – what do the students already know?

- **Reflection tasks (2-5 min)**

- Give time for the students to process new information
- A good way to slow down!
- Can be a questions (e.g. What puzzles you?) or a summary of the contents (e.g. Write down three things you learned today)
- Can be written or oral

- **Snowball**

- Oral snowball: 1+1 discussion → 2+2 discussion → (4+4 discussion)
- Write snowball: we will do it today!

- **Discussion groups** (2-5 students, a few minutes)
  - Give students a clear question/topic/statement...
- **Debate**
  - 2-6 students
  - Students are forced to take a certain opinion
- **Learning diary**
  - Give time to write a few sentences at the end of the lecture

# Activating methods with smaller groups

For instance:

- Puzzle technique
- Fishbowl discussion
- PBL (problem based learning)
- Case-method
- Posters

Read more about group work methods:

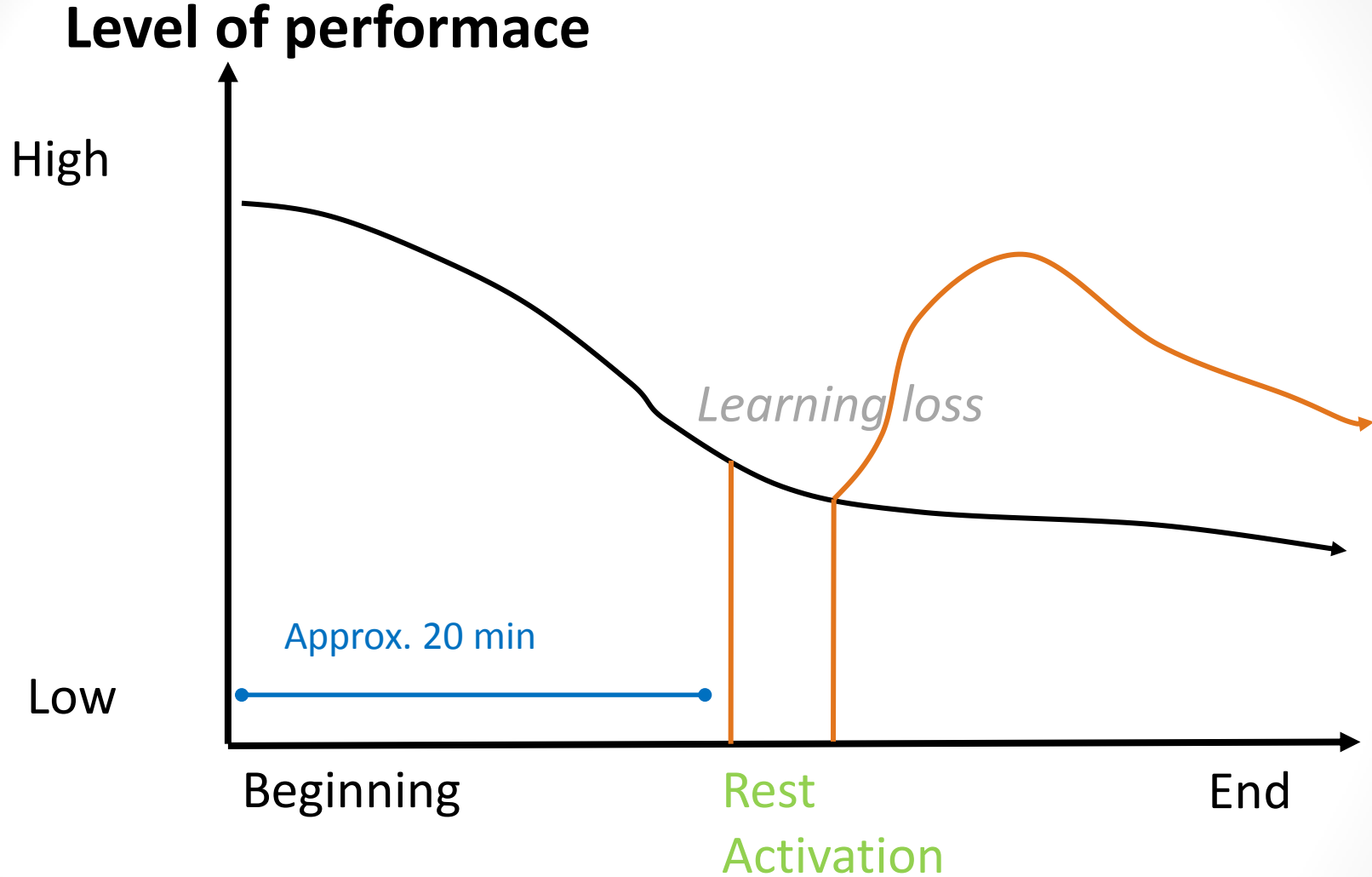
Jaques, D. (2000). Learning in groups. A handbook for improving group work.  
London: Kogan Page.

# Content and methods: questions to think about

E. Lofström

- Are the teaching methods in line with the learning goals?
- Do the teaching methods facilitate deep understanding instead of mere memorisation?
- Are assignments designed to facilitate the learning process beyond memory for facts?
- Do the methods help the learners to engage in active participation?
- Do the methods encourage students to exchange their knowledge and ideas in dialogue with peers?
- Do materials and assignments match the goals and the teaching methods?
- Is the amount of work expected from the learners reasonable given the learning goals and the time and support available, and considering the learners developmental level?

# Level of students' performance during a lecture



# Activation in different phases of a lecture

- **Before lecture**
  - Reading material with group work assignment
  - Students prepare mini-lectures/presentations/questions to teacher or to peers
- **At the beginning:**
  - Questions which activate prior knowledge or orientate to the content
  - Students' own questions
  - Getting to know each other (or at least some other students)
- **In the middle:**
  - How the content has been understood?
  - Making synthesis
- **At the end**
  - What did we learn?
  - What should we still learn?
  - How to apply the learnt knowledge?



# Factors related to the increase of the deep approach to learning in lecture courses

(Postareff, Lindblom-Ylänne & Parpala, 2014)

- Good self-regulation skills
  - *Teacher can e.g. help in setting goals and mid-goals and reflect on how these are reached*
- Investing time and effort into studying
  - *e.g. activation in different phases of the course*
- Regular studying throughout the course
  - *e.g. assignments throughout the course / mid-course assessment*
- Positive challenges
  - *e.g. facilitating group work, providing help, creating a safe atmosphere*
- Emotional commitment
  - *e.g. getting to know the students, interaction (teacher-student / student-student)*

# What did we learn today?

- What was the most important thing you learned today? Or what puzzles you?
  1. Write one thing on top of a paper
  2. Circulate the papers in your group:
    - Give your own paper to the person on your left hand side. He/she will write a comment/question related to your comment.
    - Circulate the papers as long as you get you own paper back, with all the comments/questions from your peers.

# References

**Center for Research and Development of Higher Education, University of Helsinki,**

<http://www.helsinki.fi/yty/english/index.htm>

**Publications:**

<https://tuhat.halvi.helsinki.fi/portal/en/organisations-units/centre-for-research%28f0aae73-e12e-41a8-b7ad-28cf2a15a6f1%29/publications.html>

- **Biggs, J.** (1996). Enhancing teaching through constructive alignment. *Higher Education*, 32, 347-364.
- **Biggs, J.** (1999). What the Student Does: teaching for enhanced learning. *Higher Education Research & Development*, 18(1), 57-85.
- **Biggs, J.** (2003) Teaching for Quality Learning at University – What the Student Does. 2nd Edition SRHE / Open University Press, Buckingham.
- **Biggs, J., & Tang, (2007).** Teaching for Quality Learning at University – What the Student Does. 3rd Edition SRHE / Open University Press, Buckingham.
- **Langer, E. J.** (1993). A mindful education. *Educational Psychologist*, 28, 43–50.
- **Lonka, K. & Ketonen, E.** (2012). How to make a lecture course an engaging learning experience? *Studies for the Learning Society*.
- **Mathews, S., & Lowe, K.** (2011). Classroom environments that foster a disposition for critical thinking. *Learning Environments Research*, 14, 59-73.

■ ■ ■

- **Samuelowicz, K., & Bain, J. D. (1992).** Conceptions of teaching held by academic teachers. *Higher Education*, 24, 93-111.
- **Samuelowicz, K., & Bain, J. D. (2001).** Revisiting academics' beliefs about teaching and learning. *Higher Education*, 41, 299-325.
- **Zimmermann, B. (2000).** Attaining Self-Regulation: A social cognitive perspective. In Monique Boekaerts, Paul R. Pintrich & Moshe Zeidner (ed) *Handbook of Self-Regulation*. San Diego: Academic Press. 13-39.