

# Patterns in student learning at university

Prof. Jan Vermunt

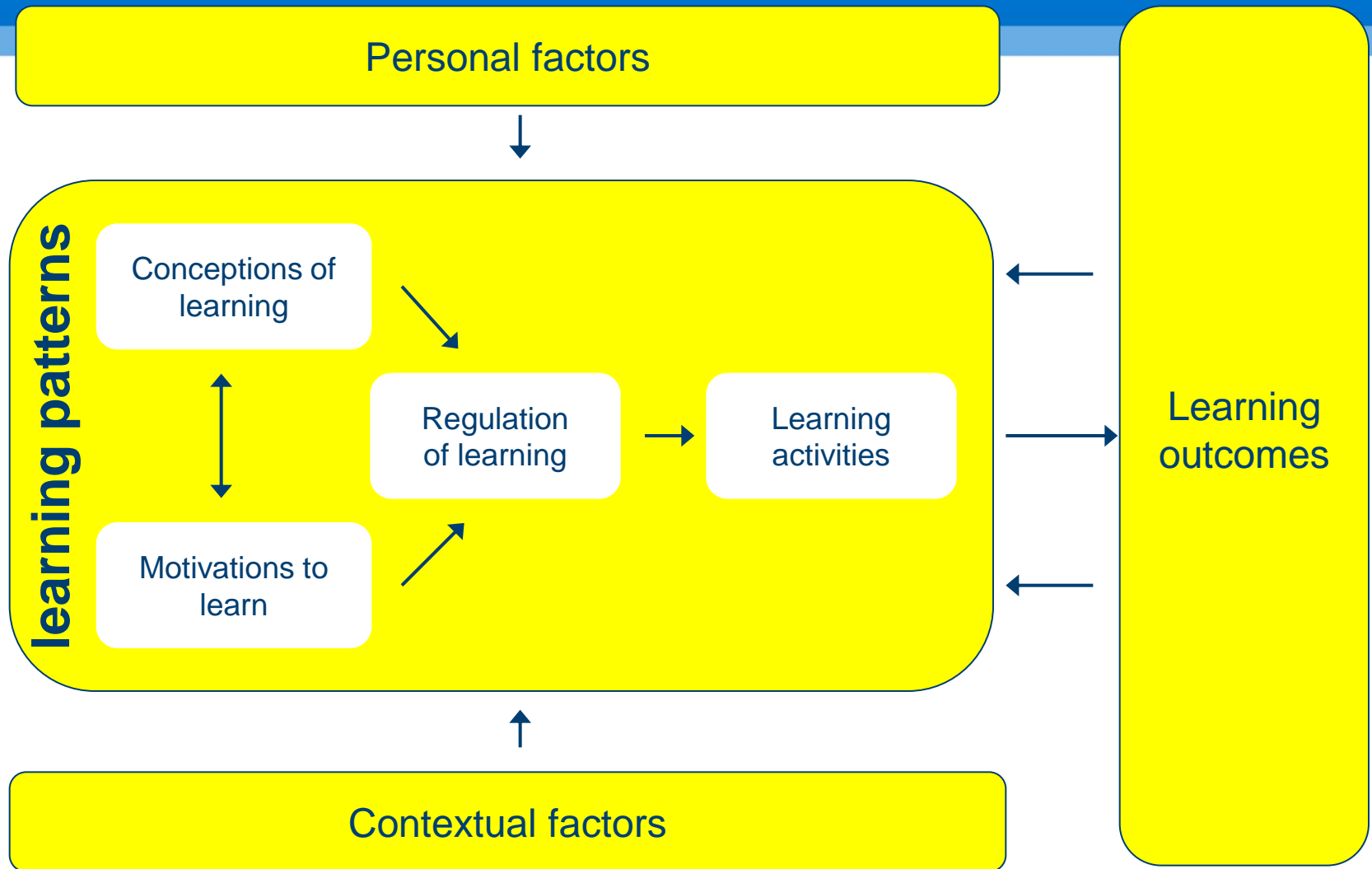
# Content and structure of this keynote

1. Recent advances in research on student learning in higher education
2. Main university teaching-learning methods and the quality of student learning
3. Teacher learning and professional development
4. Conclusions and implications

# Part 1

Some recent advances in  
research on student learning  
in higher education

# A model of student learning



# Learning pattern

A coordinating concept  
in which the interrelationships between students'  
learning activities,  
regulation of learning,  
beliefs on learning and  
learning motivations  
are united (Vermunt & Vermetten, 2004)

# Research on student learning

Qualitatively different patterns in the way students learn:

- Undirected
- Reproduction-directed
- Meaning-directed
- Application-directed

# How stable are these learning patterns?

- How students learn today resembles how they learned yesterday
- How students learn is not deeply rooted in personality
- How students learn can develop over time
- How students learn may vary across contexts

# Relations with personal and contextual factors

- Epistemological beliefs (Lonka e.a., Rozendaal e.a.):
  - Meaning directed learning associated with relative view of knowledge
  - Reproduction directed learning associated with absolute view of knowledge



# Relations with personal and contextual factors

- Perception of the study environment (Wierstra e.a. in a study on international exchange students)
  - Meaning directed learning associated with study environments perceived as student-oriented and emphasizing connections
  - Reproduction directed learning associated with study environments perceived as stressing memorization of facts and not encouraging active participation

# Outcomes of learning

- Exam results are positively related to students':
    - relating and structuring
    - self-regulation
    - critical processing (sometimes)
    - analytical processing („,„)
  - And negatively to students':
    - lack of regulation
    - ambivalence
- (Vermunt, 2005)

# Inventory of Learning Patterns (ILS)

was developed as an instrument to research such learning patterns.

It consists of 20 scales in four components:

- learning strategies (5 scales)
- regulation strategies (5 scales)
- conceptions of learning (5 scales)
- learning motivations (5 scales)

# The development of the ILS

- Based on interviews with students
- Phenomenographically analysed
- Items taken from the interviews
- From 241 via 151 to 120 and 100 items

# ILS in Northern Europe

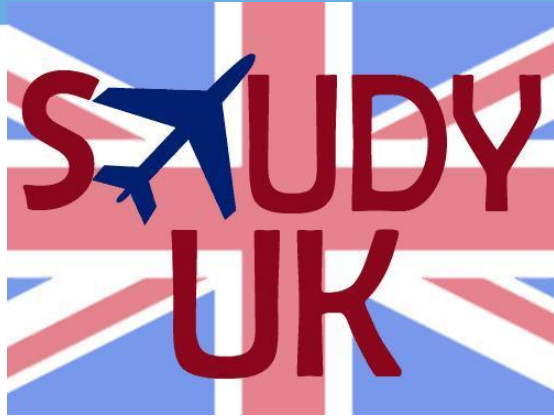
Research conducted with the ILS in higher education in Northern European countries (e.g. The Netherlands, UK, Finland, Belgium) typically shows the existence of four learning patterns:

- meaning-directed learning
- reproduction-directed learning
- application-directed learning
- undirected learning

# Research with ILS last decade



**British**



**Spanish &  
Latin-  
American**



**Thai**

**Indonesian**

**Turkish**

**Sri**

**Lankan**

**Chinese**



**Ameri  
can /  
US**



# Examples of items

- Repito las partes principales del tema hasta que me las sé de memoria (Spanish)
- Konunun ana hatlarını tamamen öğrenene kadar tekrarlarım (Turkish)
- Tôi học lại những phần chính của môn học cho đến khi thuộc lòng (Vietnam)
- (Thai)
- 我重複學科內容的主要部分，直至我緊記於心為止 (Chinese)
- Ik herhaal de belangrijkste onderdelen van de studiestof net zo lang tot ik ze uit mijn hoofd ken (Dutch)
- I repeat the main parts of the subject matter until I know them by heart (English)
- Jag studerar alla ämnesområden på liknande sätt (Swedish).



# Comparing studies from different countries and continents

- Marked differences and similarities in mean scale scores
- Marked differences and similarities in interrelations among scales (e.g. shown in underlying dimensions resulting from factor analyses)
- E.g. between Asian and European students
- But also between students from different Asian countries, and between students from different European countries

# Part 2

Teaching to foster the  
quality of student learning

# The quality of student learning: lively debate

Low quality?

- Undirected learning
- Reproduction directed learning

• High quality?

- Meaning directed learning
- Application directed learning

# New teaching-learning methods to foster the quality of student learning

Teaching-learning methods aimed to foster

- active
- meaning directed
- application directed
- self-regulated and
- cooperative

student learning

# Main contemporary university teaching-learning methods

1. Traditional teaching
2. Assignment-based teaching
3. Problem based learning
4. Project-centred learning
5. Self-directed specialisation learning
6. Competency-based teaching
7. Dual or work-based learning
8. Autodidactic learning

# Problem Based Learning and how students learn



- Discourages undirected learning
- Discourages reproduction directed learning
- Encourages meaning directed learning
- Application directed learning?
- Encourages cooperative learning
- Independent learning?

# Dual learning and how students learn

Oosterheert et al:

- All student teachers learn application oriented in a dual learning environment, but in different ways:
  - Survival oriented
  - Reproduction oriented
  - Meaning oriented

# New teachers' roles and skills

- Explain subject matter well, ...
- Make assignments, feedback,...
- Tutor, block coordinator, ...
- Coach cooperative learning, ...
- Assess competencies, ...
- Mentor, portfolio supervisor, ...
- Model, activator, reflector, ...



# Part 3

These new teaching-learning methods  
require a lot of

teacher learning and  
professional development!

# Research project on teacher professional learning

- 94 teachers were followed for a year in their learning experiences
- Among others through digital learning logs (6 a year)
- In the context of the introduction of active and self-regulated student learning

# Teacher learning activities

- Experimenting
- Considering own practice
- Experiencing friction
- Struggling not to revert to old ways
- Getting ideas from others
- Avoiding learning

Bakkenes et al (2010)

# Learning activities: f en %

Learning activities	f	%
Experimenting	234	31.8
Considering own practice	244	33.2
Experiencing friction	109	14.8
Struggling not to revert to old ways	33	4.5
Getting ideas from others	110	15.0
Avoiding learning	5	0.7
Total	735	100.0

# Patterns in teacher learning

- Meaning-oriented learning
- Immediate performance-oriented learning
- Undirected, survival-oriented, problematic, learning

(Oosterheert et al, 2001; Bakkenes et al, 2010)

# Part 4

## Conclusions and Implications

# Implications for practice

Key features of powerful university teaching:

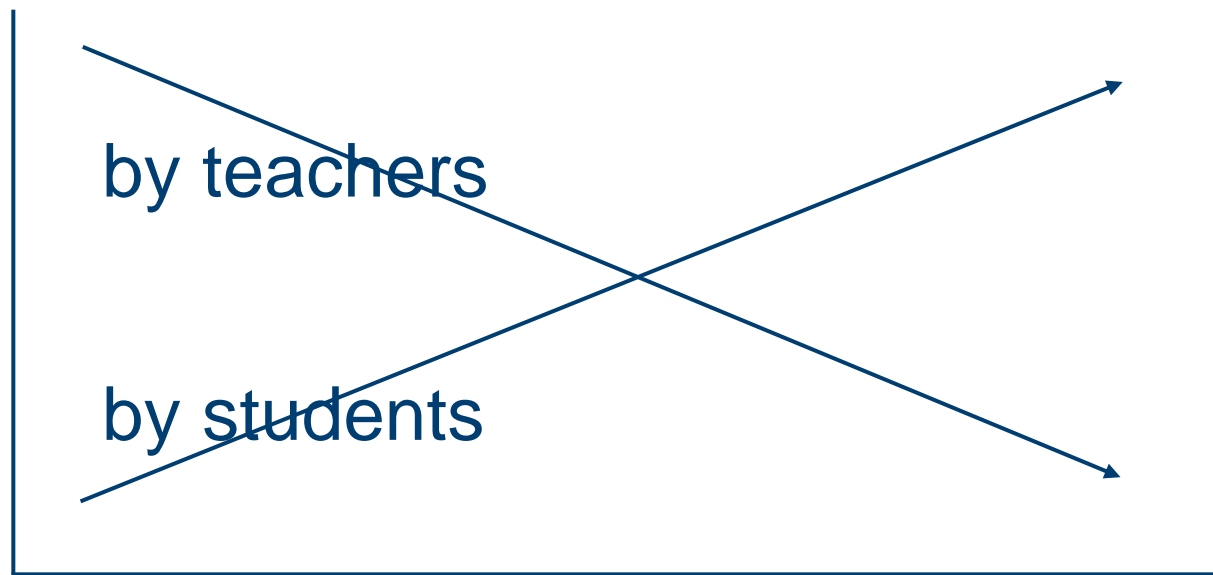
- Prepares students for lifelong, self-regulated, cooperative and work-based learning
- Fosters high quality student learning
- The teaching methods change in response to students' increasing metacognitive and self-regulatory skills
- The complexity of the problems dealt with increases gradually and systematically

# Decreasing teacher regulation and increasing student-regulation in powerful teaching

## Regulation of learning processes

Often

Sometimes

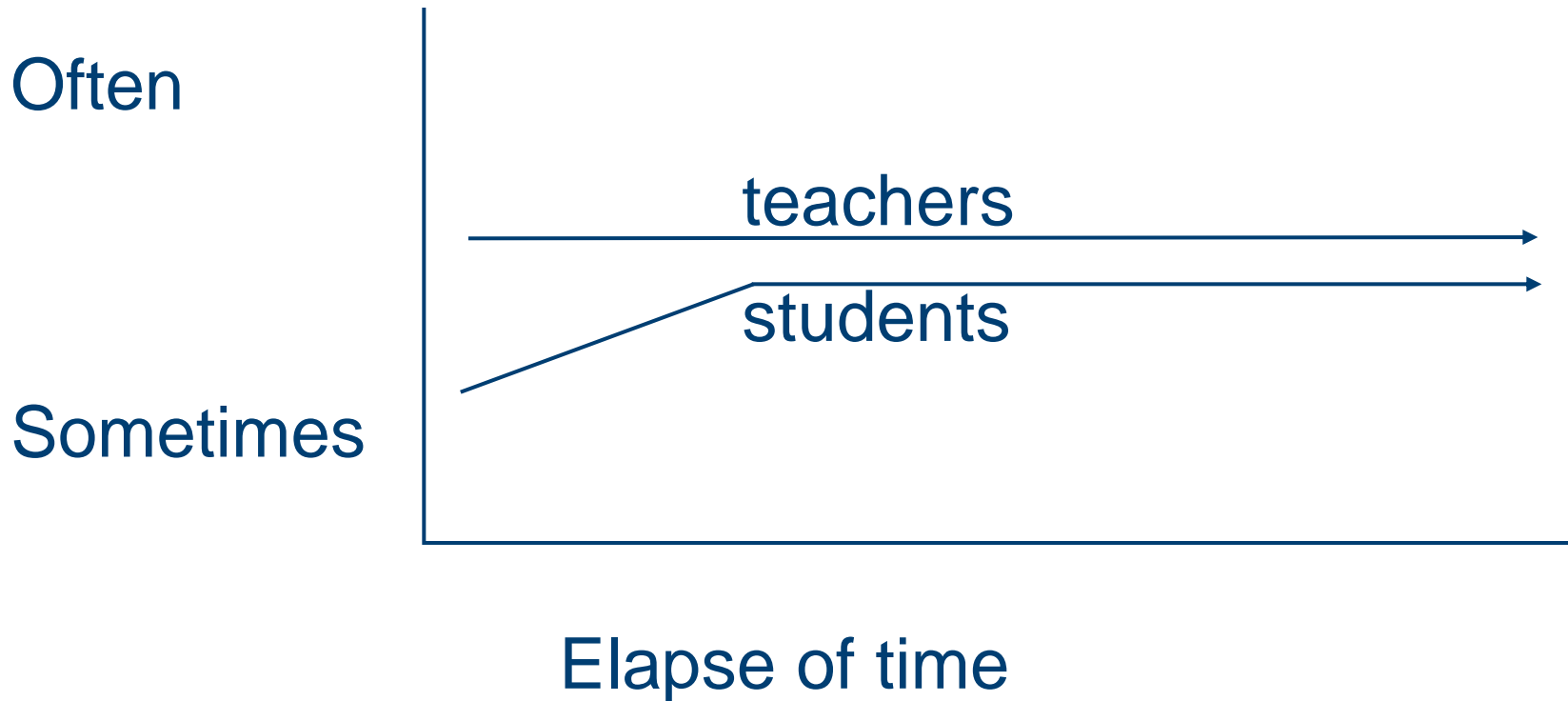


Elapse of time



# Constant regulation of student learning in unchanging teaching

Regulation of learning processes



# Implications for research

- Develop pedagogical approaches / intervention models to foster high quality student and teacher learning, based on scientific research on how students and teachers learn (best), and study the power and effects of these models

# Some references

- Vermunt, J.D. (2007). The power of teaching-learning environments to influence student learning. *British Journal of Educational Psychology Monograph Series II, 4*, 73-90.
- Bakkenes, I., Vermunt, J.D., & Wubbels, T. (2010). Teacher learning in the context of educational innovation: Learning activities and learning outcomes of experienced teachers. *Learning and Instruction, 20*, 533-548.
- Marambe, K.N., Vermunt, J.D., & Boshuizen, H.P.A. (2012). A cross-cultural comparison of student learning patterns in higher education. *Higher Education, 64*, 299-316.
- Gijbels, D., Donche, V., Richardson, J.T.E., & Vermunt, J.D. (2013, in press). *Learning patterns in higher education: Dimensions and research perspectives*. New York: Routledge.

**Thank you for your attention!**

**Prof. Jan Vermunt**  
**Email: [jdhv2@cam.ac.uk](mailto:jdhv2@cam.ac.uk)**