Patterns in student learning at university

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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
Some recent advances in research on student learning in higher education
A model of student learning

- Personal factors
  - Conceptions of learning
  - Motivations to learn
  - Regulation of learning
  - Learning activities
  - Learning outcomes

- Contextual factors

Faculty of Education
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
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
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)
• Toâi hoïc ŋi hoïc laïi caùc phaàn chính cuûa moân hoïc cho ñeán khi thuoâclocông (Vietnam)
• I repeat the main parts of the subject matter until I know them by heart (English)
• Ik herhaal de belangrijkste onderdelen van de studiestof net zo lang tot ik ze uit mijn hoofd ken (Dutch)
• 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
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?
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 %

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<td>Considering own practice</td>
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<tr>
<td>Experiencing friction</td>
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<td>14.8</td>
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<td>Getting ideas from others</td>
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<td>0.7</td>
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<td>Total</td>
<td>735</td>
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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
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 by teachers
- Sometimes by students

Elapse of time
Constant regulation of student learning in unchanging teaching

Regulation of learning processes

- Often
- Sometimes

Elapse of time
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


Thank you for your attention!

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