Learning knowledge as an integral part of competencies in higher education: Effects on students' knowledge

Exploring qualitative features of students' knowledge in competency-based learning in higher vocational education.

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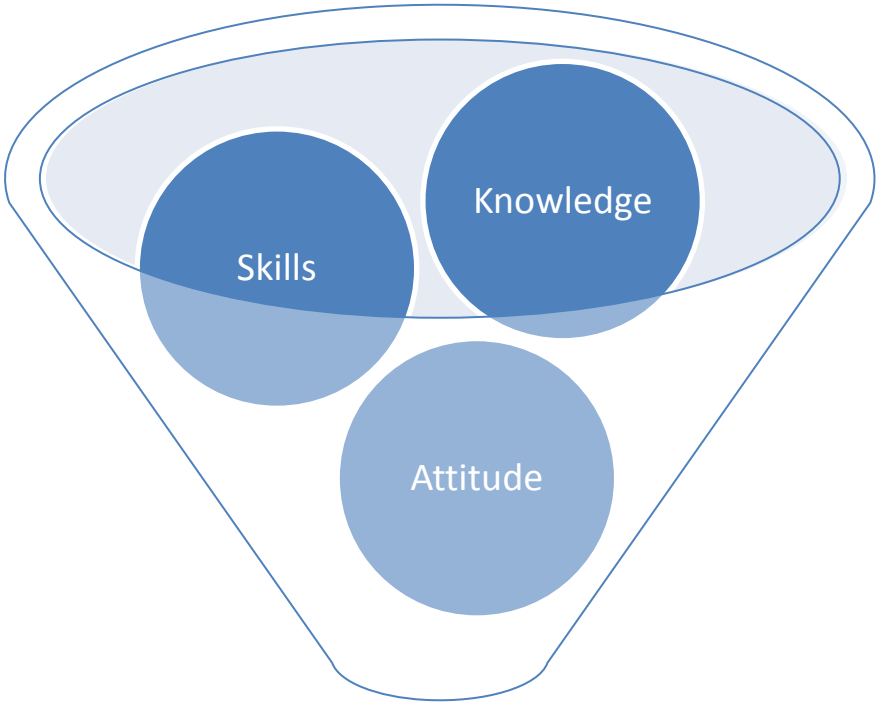
Competency-based learning:
Theory ⟺ Practice



Competency = using knowledge in practice + achieving results

Social-constructivist Learning Theory

- Active knowledge construction
- Self-directed learning
- Meaningful context
- Social interaction: discourse and cooperation

Doubts and debate

Solid knowledge base

Skills to "look it up"

Self-directed learning

Direct-instruction

Research questions

- What are the qualitative features of students' knowledge at the end of a CBL-course in higher vocational education?

- To what extent are these features in accordance with demands upon professional knowledge at initial qualification?

Definition

Professional knowledge

=

Concepts and theories underpinning professional actions and deliberations

Qualities of professional knowledge

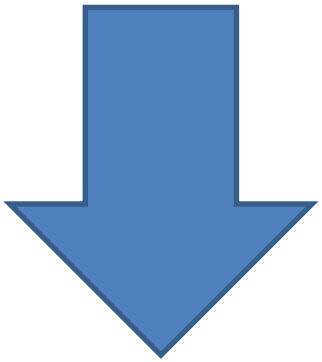
Features of expert knowledge

Extent
Depth
Structure
Critical control

On the way from novice to expert

In ill-structured domain:

No precise standards for initial qualification



Criteria derived from expert-teachers

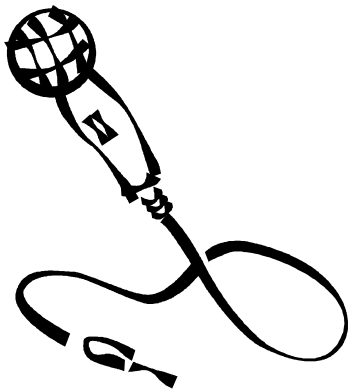
Method

- Explorative case-study / mixed methods
- Participants:
  Final-year bachelor students (n=18)
  Professional domain: *Social Work*
- Instruments:
  semi-structured interview
  + visual mapping task
  (resembling concept mapping)

Semi-structured interview Procedures

- Students selected an own case from real-life practice

  → *capture knowledge as integrated in competencies*



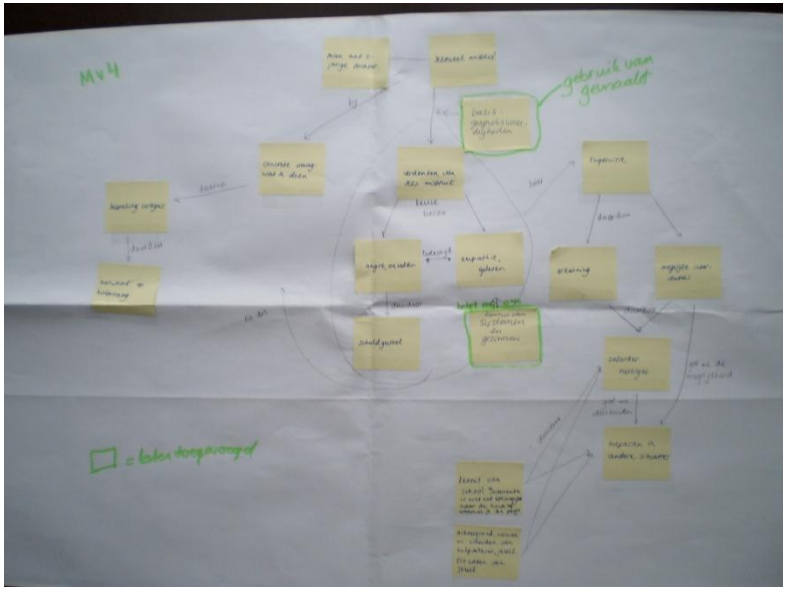
- Aimed at:
  knowledge extent, depth & critical control
- Verbatim transcript

Visual mapping task procedures

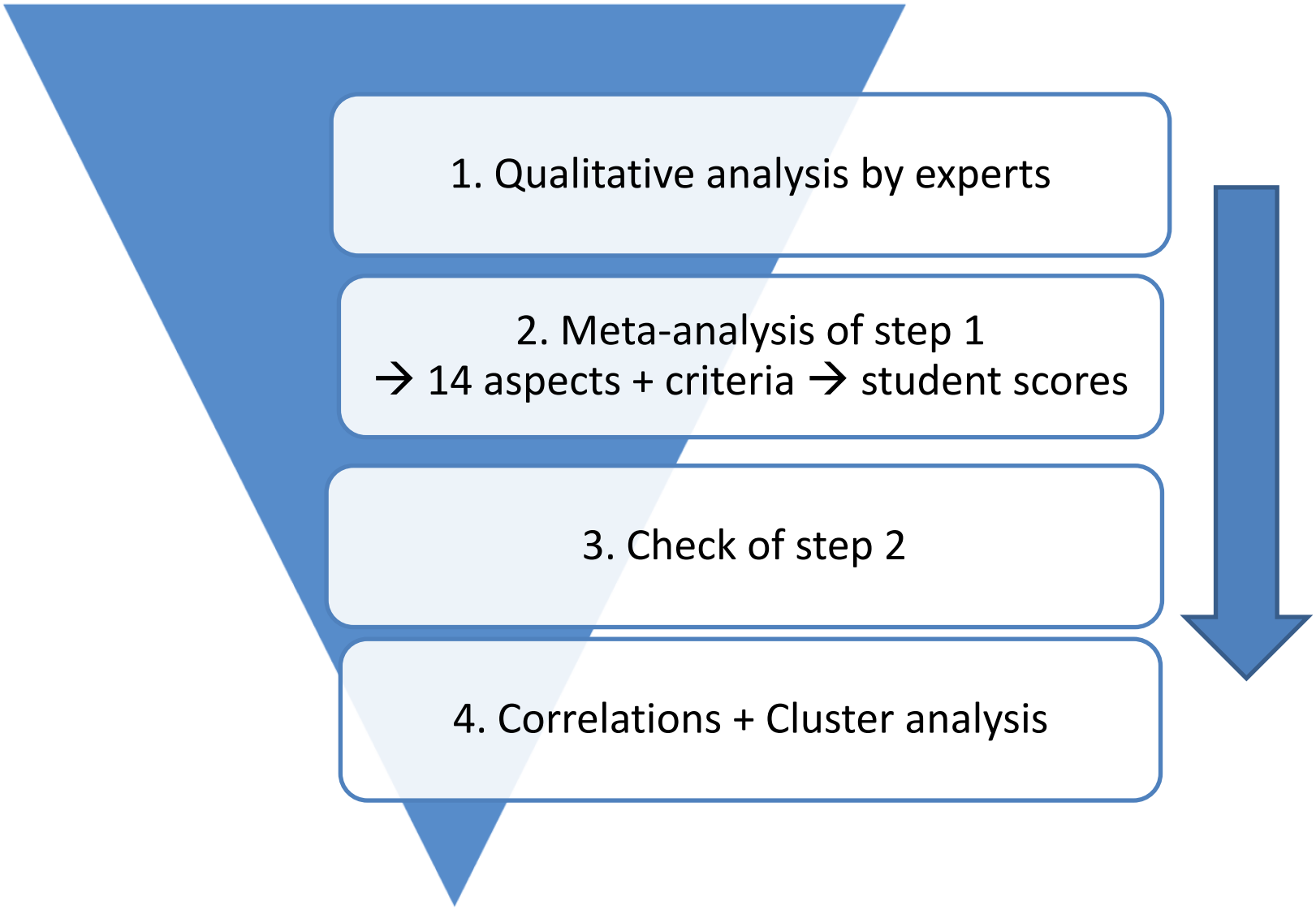
- Write case-elements on small ‘post-its’
- Arrange on A1-paper
- Draw and name connections (think aloud)
  → visual map of case

- Aimed at:
  knowledge structure

- Verbatim transcript



Analysis process

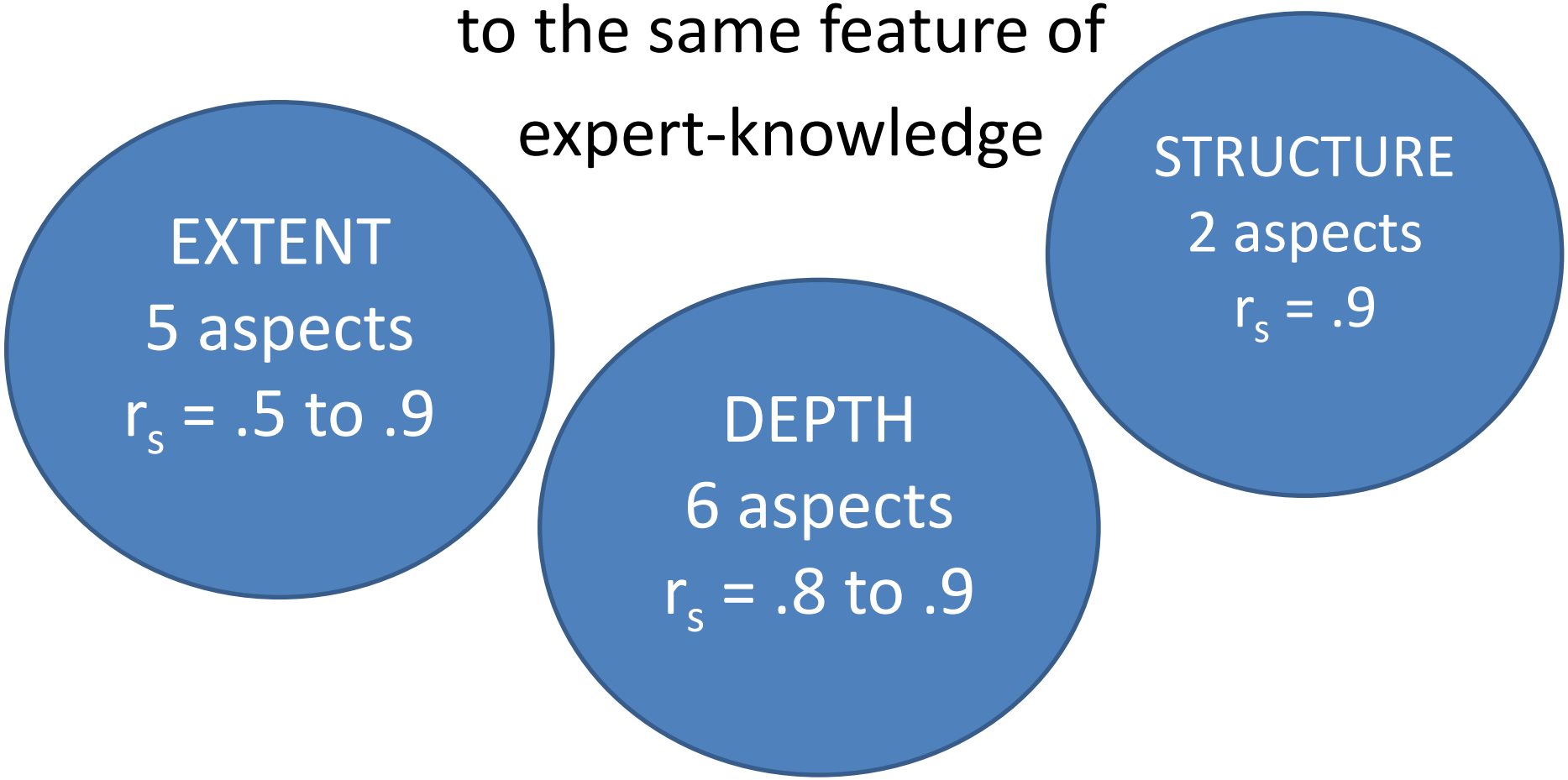


14 knowledge aspects emerged from qualitative analysis

Extent	3 aspects	2 aspects
Depth	4 aspects	
Structure	3 aspects	
Critical control	1 aspect	
Fit core of profession	1 aspect	

Results (1): Correlations (Spearman's r)

High correlations between aspects belonging to the same feature of expert-knowledge



Results (2) Hierarchical cluster analysis

4 groups of students

scoring differently on knowledge aspects

4 students	OVERALL HIGH
2 students	HIGH / MEDIUM
7 students	MEDIUM
5 students	OVERALL LOW

Results (2): Overview

Stu-dent	Fit core of profession	Relevance of description	Scope roles + own role	Scope view points	Scope levels	Scope actions & deliber-ations	Nothing essential missing in description	Scope facts	Implicit knowledge in description	Scope concepts	Nothing essential missing in visual map	Perspective of visual map	Complexity of visual map	Professional language
Gr.1														
A	5	5	5	5	5	5	5	4	3	5	5	4	5	4
B	4	5	5	5	5	5	5	5	5	4	4	4	4	5
C	5	5	5	5	5	5	5	5	5	4	4	4	5	1
D	5	5	5	4	4	5	4	5	5	2	3	4	5	4
Gr.2														
E	4	5	5	4	4	5	4	2	4	2	2	4	4	2
F	5	5	4	4	3	4	4	4	4	3	3	1	1	3
Gr.3														
G	4	4	4	3	4	3	2	4	3	2	2	2	3	2
H	4	5	4	4	3	4	4	4	2	3	2	1	1	1
I	4	4	4	4	3	2	3	4	5	3	2	1	1	1
J	4	4	3	4	2	4	3	1	4	1	2	2	2	4
K	4	3	4	4	4	3	3	4	2	3	3	1	1	1
L	4	3	3	3	2	2	2	3	4	3	4	1	2	1
M	4	2	3	3	2	3	2	3	3	1	2	1	1	1
Gr.4														
N	3	2	2	1	1	1	1	1	1	3	2	2	2	2
O	1	1	2	3	2	1	1	2	3	2	2	1	1	1
P	2	3	1	1	1	1	2	1	2	2	2	1	1	2
Q	1	2	1	1	1	1	1	1	1	3	2	3	1	1
R	2	1	1	1	1	1	1	1	1	2	1	2	2	1

Results (2a) Fit core of profession:

adequate application in complex practice

Student	Fit core of profession
Group1	
A	5
B	4
C	5
D	5
Group 2	
E	4
F	5
Group 3	
G	4
H	4
I	4
J	4
K	4
L	4
M	4
Group 4	
N	3
O	1
P	2
Q	1
R	2

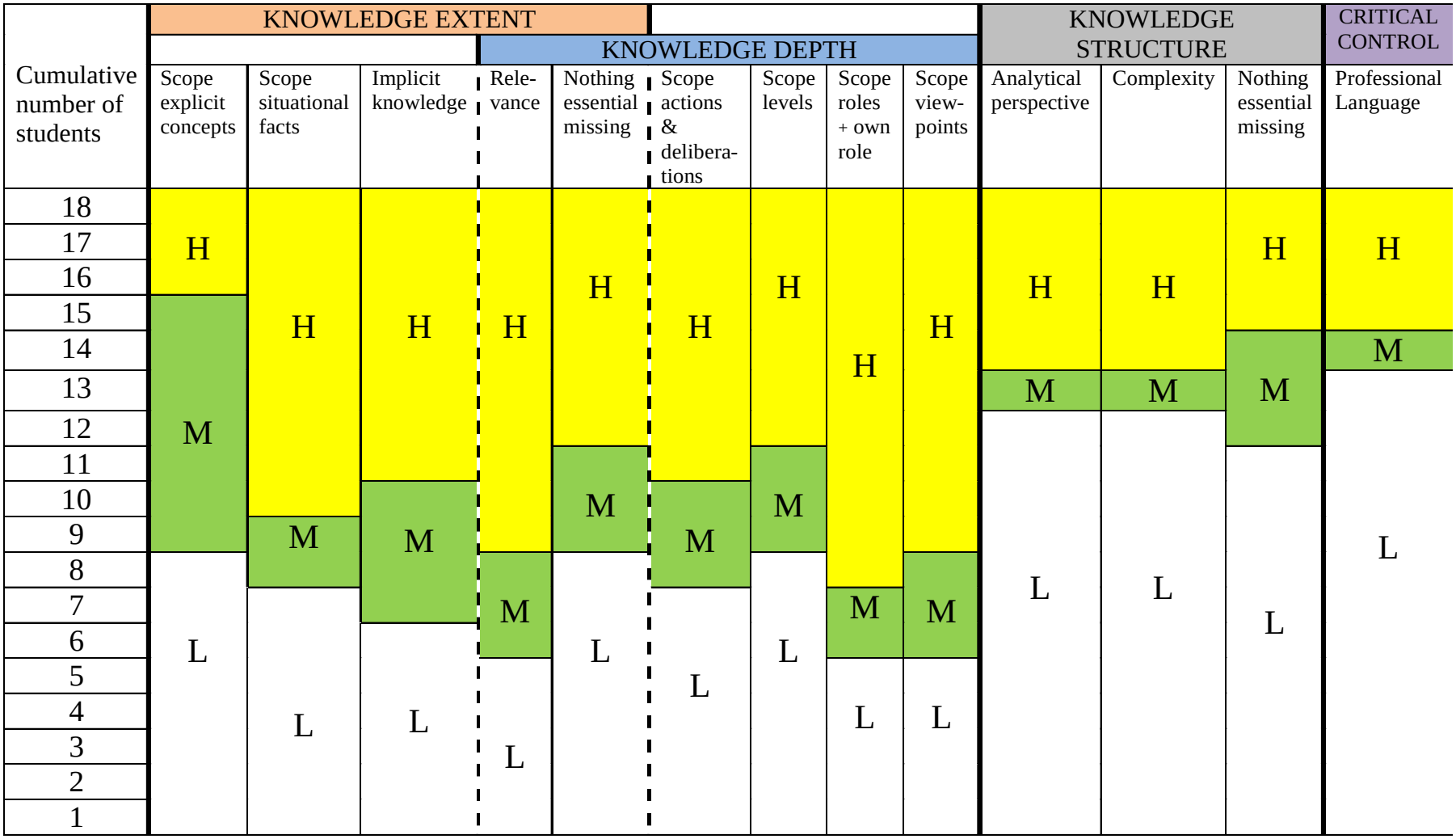
Implicit knowledge + informal language

Student	Implicit knowledge in description	Professional language
Group 1		
A	3	4
B	5	5
C	5	1
D	5	4
Group 2		
E	4	2
F	4	3
Group 3		
G	3	2
H	2	1
I	5	1
J	4	4
K	2	1
L	4	1
M	3	1
Group 4		
N	1	2
O	3	1
P	2	2
Q	1	1
R	1	1

Knowledge on own role: professional identity

Student	Knowledge on own role
Group 1	
A	5
B	5
C	5
D	5
Group 2	
E	5
F	4
Group 3	
G	4
H	4
I	4
J	3
K	4
L	3
M	4
Group 4	
N	2
O	2
P	1
Q	1
R	1

Results (3) Conceptual clustering



Discussion

- Limitations: explorative case study
- Students' actions and results reveal competent knowledge application *(except for students wrestling with own role)*
- Knowledge is (too) implicit: informal language
- Knowledge extent & depth: relatively easy
- Knowledge structure and critical control: relatively difficult

Conclusions

CBL-students' knowledge partly meets the demands

- Relevant knowledge is adequately applied in practice (= major asset for ill-structured domain)
- Insufficient awareness and professional presentation of underpinning knowledge for majority
- Knowledge structure and critical control need more/other instructional support.

Further research

- Implications for ill-structured domains: implicitness of knowledge

- Exploration of students' experience with instructional support
  → suggestions for improvement

- Experimental research of instructional improvements

Thank you for your attention