

Can teaching be learned? Effectiveness of teacher education

13th Biennial Conference EARLI 2009
«Fostering Communities of Learners»

Amsterdam, August 25 – 29, 2009

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Financial Support

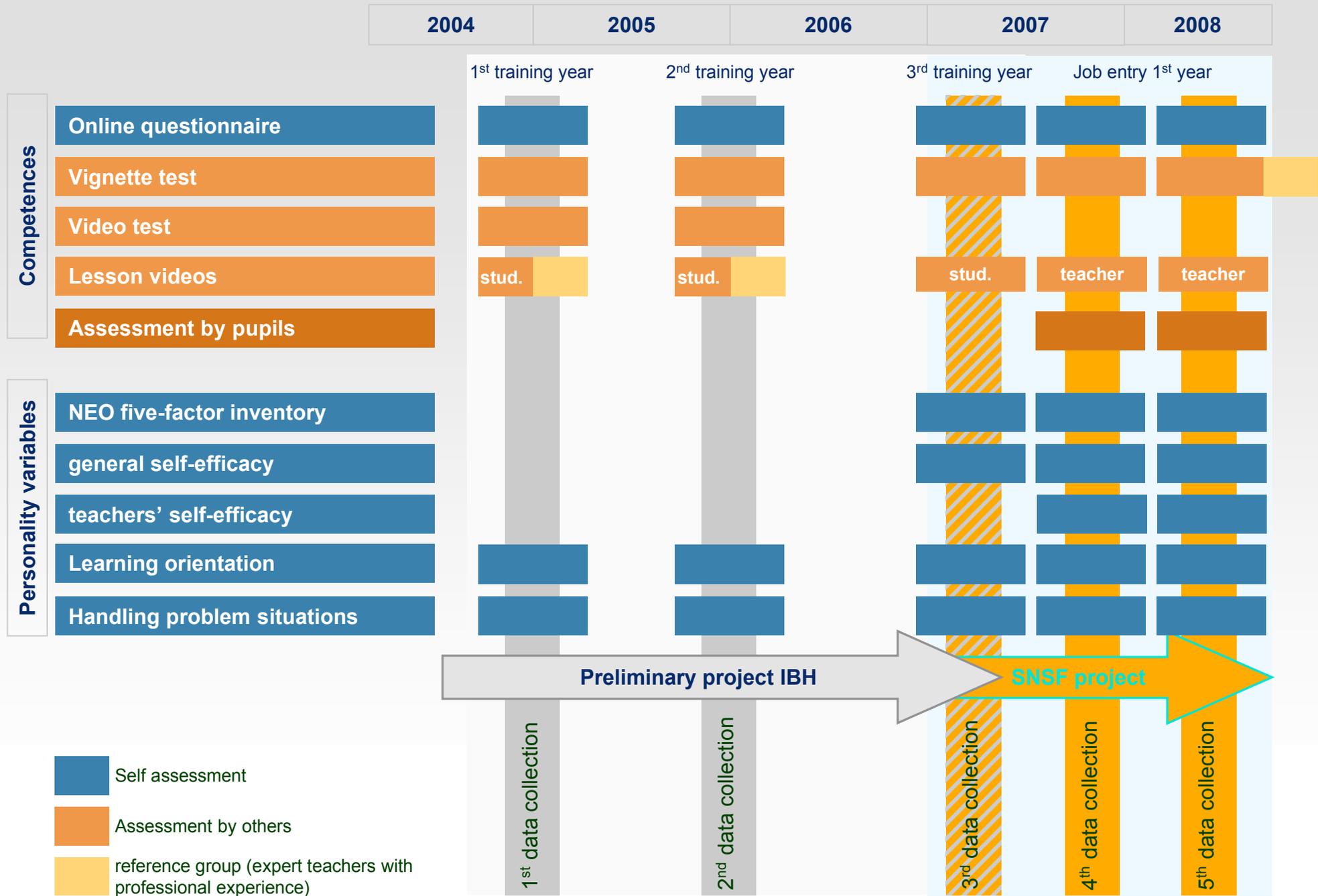
2004-2006 Internationale Bodensee Hochschule (IBH)
(= Lake of Constance University)
2006-2009 Swiss National Science Foundation (SNSF)

Research Questions

- ✎ How does the **development of competencies** for planning and implementation of instruction in teacher education (student teacher) and first year in profession (novice teacher) proceed?
- ✎ From which **level of competencies** do teacher students **start**? Which level of competencies do they **achieve** at the end of teacher education respectively at the end of first year in profession?
- ✓✎ How do **student teachers' and novice teachers' competencies compare to the competencies of experienced teachers?**
- ✓✎ How can we **measure the intended changes** in competencies?

Overview

- **Study 1: Self-Evaluation of Teaching Competencies**
 - Method: Online-Questionnaire
 - Results (Outline)
- **Study 2: Lesson Planning Competencies**
 - Method: Vignettes
 - Results (Outline)
- **Study 3: Teaching Competencies**
 - Method: Videographed Lessons
 - Results (Outline)

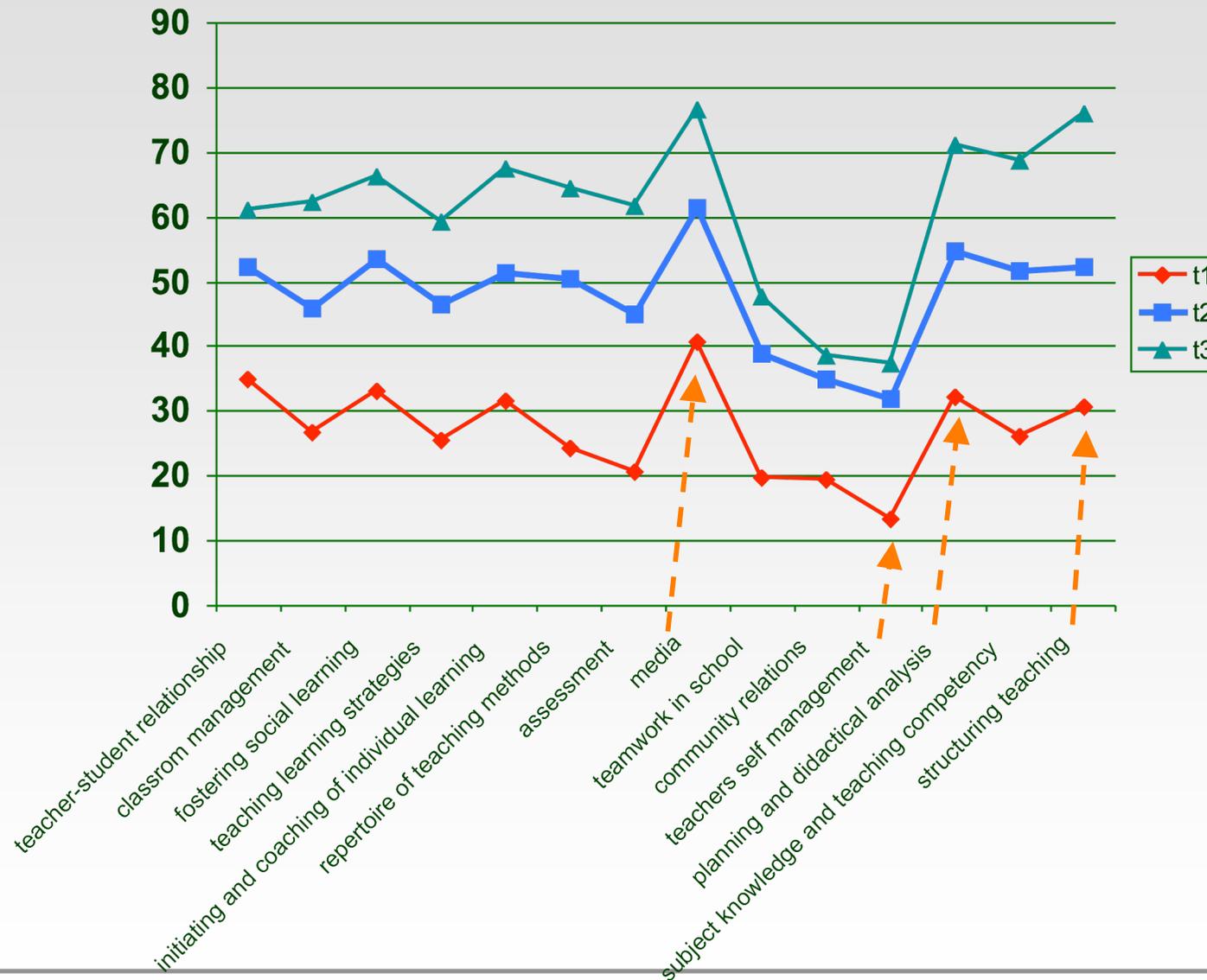


Study 1: Self-Evaluation of Teaching Competencies

Online-Questionnaire

The screenshot shows a web browser window displaying a questionnaire page. The browser's address bar shows the URL: <http://www.insign.ch/kunden/phzh.ch/de/>. The page header identifies the institution as 'pädagogische hochschule zürich' and 'Mitglied der Zürcher Fachhochschule'. The main content area is titled 'Teil 2 - Seite 1 von 24' and contains the following text: 'Angehende Lehrerinnen und Lehrer können lernen, ...den Schülern und Schülerinnen fördernde Rückmeldung zu geben.' Below this is a 'WEITER' button. The questionnaire consists of three sections: 1. 'Diese Kompetenz habe ich bis zum gegenwärtigen Zeitpunkt erworben:' with a horizontal scale from 'gar nicht' to 'in sehr hohem Masse'. 2. 'Diese Kompetenz in den nächsten Jahren zu erwerben ist mir...' with a horizontal scale from 'gar nicht wichtig' to 'sehr wichtig'. 3. 'Diese Kompetenz wird meines Erachtens vor allem so erworben (Mehrfachantwort möglich):' with four checkboxes: 'ausserschulischer Bereich', 'Vorlesungen, Lektüre', 'Seminare, Projekte, Trainings', and 'Praktika'. A fifth checkbox, 'Berufspraxis', is also present but not checked. To the right of the questionnaire, four green arrows point to labels: 'Item', 'Competence acquired?', 'Competence desired?', and 'Where was the competence acquired?'. The footer of the page includes links for 'logout', 'kontakt', 'website der phzh', and 'realized by insign gmbh'. The browser's status bar at the bottom shows 'Fertig' and 'Internet'.

Study 1: Self-Evaluation of Teaching Competencies Results (t₁-t₃)



Study 2: Lesson Planning Competencies Vignettes

- Two problem situations focused on lesson planning on which teacher students express their opinion and propose their solutions.
- Subjects' written proposals were – on the basis of an elaborated content-focused category system – rated with regards to their quality.

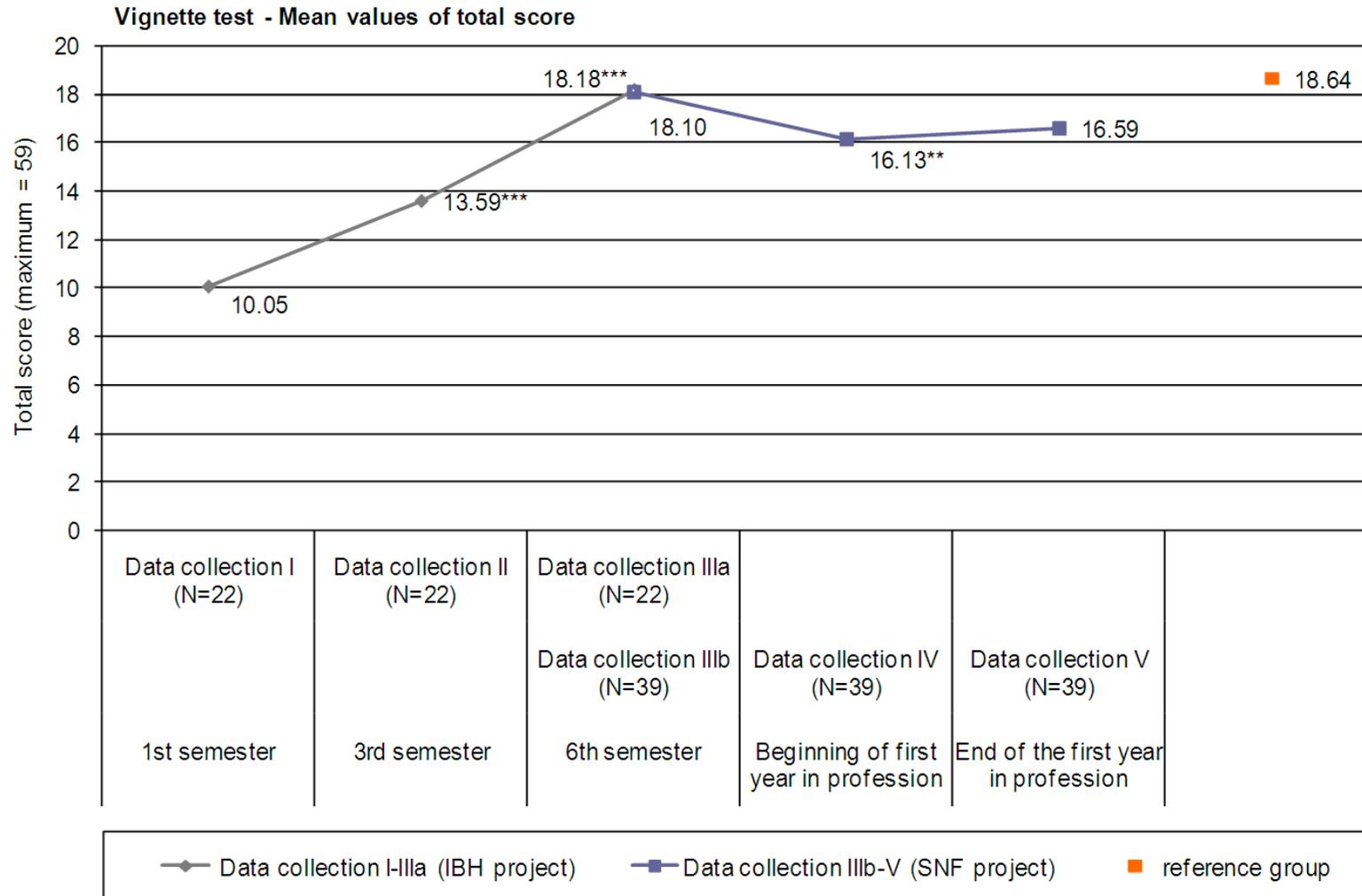
Study 2: Example of a Vignette

David Wagner, a student teacher, is uncertain about lesson planning. He asks himself whether his pupils really can attain the main learning objectives. Especially in Mathematics / German Language he doubts whether his lesson planning is professional enough. Please, describe for David Wagner how he could proceed in preparing a lesson in Mathematics / German Language. Give attention to all steps in preparing a lesson and give reasons for each step.

Study 2: Vignettes – Manual for Data Analyses (Outline)

Dimension	Item
Didactical knowledge	Didactics preliminary thinking
	New knowledge developed
	Integrate new knowledge
Diagnostical knowledge	Review of previous knowledge
	Learning analysis
	Check the understanding
Classroom management knowledge	Initiate organizational form
	Clarify rules and arrangements
	Interaction between teacher – learning group
Content knowledge	Available expert knowledge

Study 2: Lesson Planning Competencies Results



Study 3: Teaching Competencies Videographed Lessons

- **Longitudinal**
A total of 170 videographed lessons (lesson videos) from beginning to end of teacher education, respectively end of first year in profession, *plus* one videographed lesson from each experienced teacher
- **Expert-Novice-Comparisons**
- **Softwaretool**
„Videograph“

The screenshot displays the Videograph software interface. The main window shows a video of a teacher standing in a classroom, addressing a group of students. The interface includes a menu bar (Datei, Ansicht, Fenster, Transkript, Kodierung, Optionen), a toolbar, and several panels:

- Transkript Mediaclip 1:** A list of coding categories and their values.

Gbezugsn	3	Soziale Bezugsnorm
	2	Individuelle Bezugsnorm
	1	Kriteriale Bezugsnormen
	0	Keine
Gschüler	3	Andere Funktion
	2	Gleichberechtigte Äusserung
	1	Stichwortgeber/Ergänzung zur Lehrperson
	0	Keine Schüleräusserung
Gbewert	3	persönliche Herabsetzung
	2	Tadel
	1	Bestärkung/Ermutigung
	0	Keine
Gstrukt	10	Andere
	9	Rückschau
	8	Zusammenfassen
	7	Aufklärung
	6	Anforderungen
	5	organisatorische Instruktion
	4	inhaltlich Instruktion
	3	Ziel und Ablauf weiterer Stunden
	2	Ziel und Ablauf der Stunde
- Timeline Clip 1 (10054 pia rieser.mpg):** A timeline showing the video's duration from 0:36:40 to 0:37:00. It includes a playhead and a list of events (Uafornen, Uaktivit).
- Transcript Window:** A text area showing the transcript of the video, including the following text:

0:36:40 - 0:36:50 T nicht. Machs bitte nochmals.
S Am. Lars.
SN Ruhe.
S Ja.
T Wu-
T nderbar. Seht ihr, wie das funktioniert? Und kein einziger hat irginein Wort benutzt da vorne.
Ja?
S Einen Nachteil hat die Zeichensprache. Man kann beim anderen nicht drein

Study 3: Videographed Lessons – Manuals for Data Analyses (Outline)

Analysis of videographed lessons in two different ways:

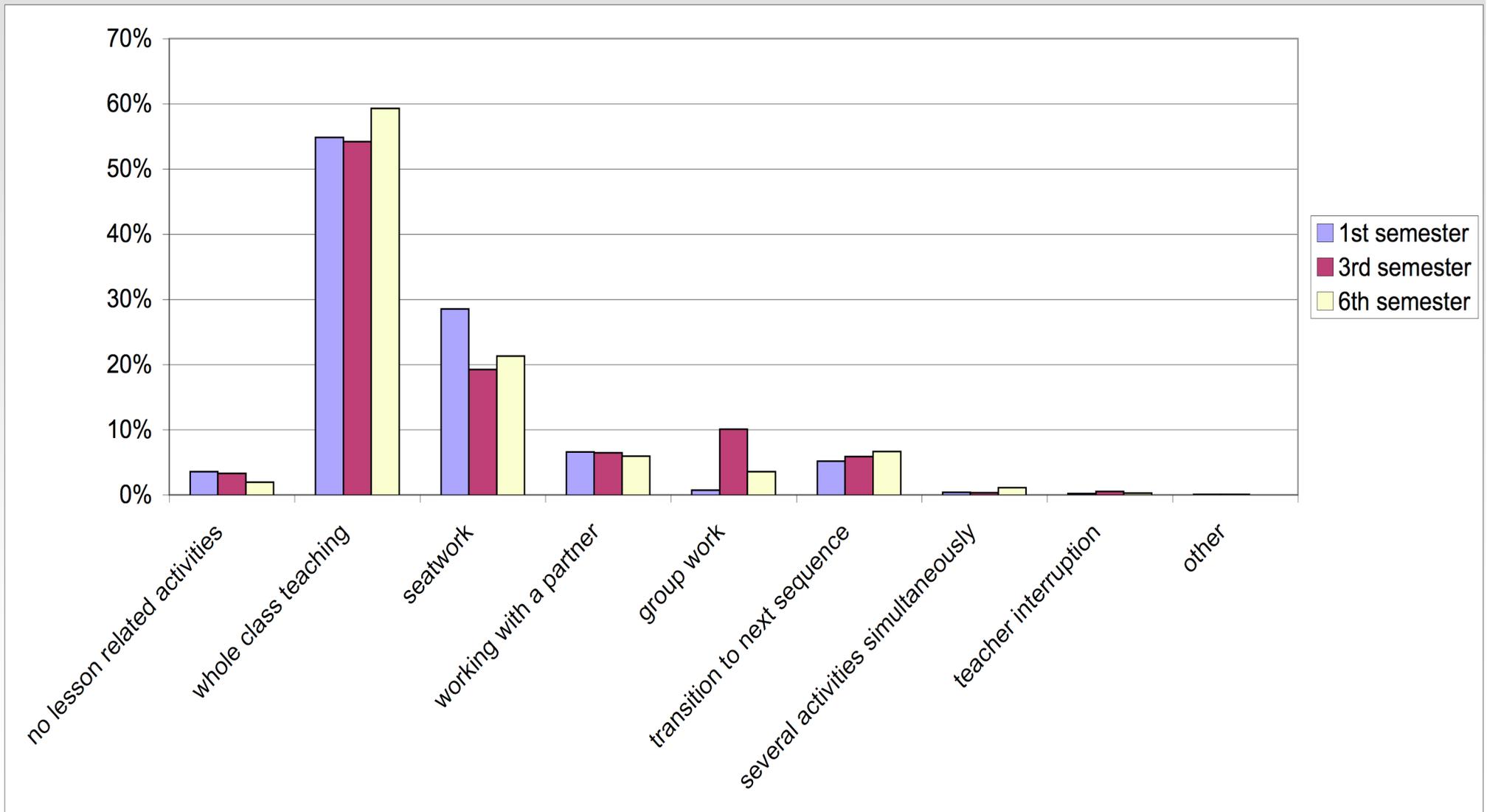
Code System

- **low-inferent**
- observation of *sight structures*
- unit of analysis: *10 sec. Steps*
- **quantitative analysis**
e.g. time proportions between teaching the whole class and group work, or amount of disruptions

Rater-Inventory

- **high-inferent**
- measuring teaching quality
- unit of analysis: rating the *whole lesson*
- **qualitative analysis**
e.g. pacing of instruction, or diagnostic competence, or dealing with students' mistakes

Study 3: Teaching Competencies – Results of Low-inferent Coding (Quantitative Analysis)



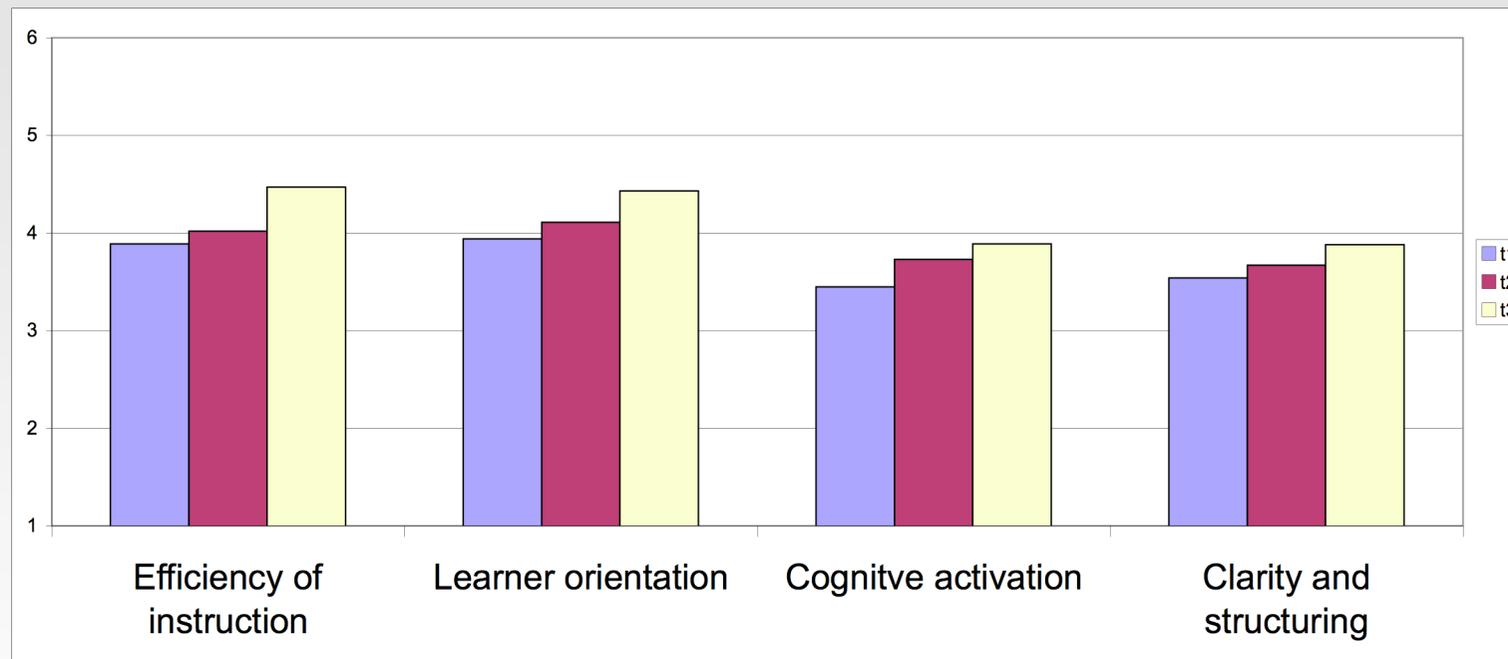
Study 3: Manual for Qualitative Data Analysis (Outline)

Dimension	Facet	Item
A) efficiency of instruction	time on task	
	quality of organization	
B) learner orientation	handling of mistakes	
	motivation	
C) cognitive activation	pacing	
	teacher as facilitator	
D) clarity and structuring	quality of teacher language	
	classroom discussion	
	learning targets	

Study 3: Manual for Qualitative Data Analysis (Outline)

Dimension	Facet	Item
C) cognitive activation	pacing	<ul style="list-style-type: none"> - <i>Teacher introduces new subject matter without overtaxing students</i> - <i>Students get enough time for completing tasks</i> - <i>Teacher supports students learning during phases of self-directed learning</i> - <i>Teacher adjusts instruction to students' needs</i>
	teacher as facilitator	<ul style="list-style-type: none"> - <i>Teacher helps students to formulate or realize their own ideas</i> - <i>Teacher asks – without judging – if student formulates unclear or incomplete ideas</i> - <i>Teacher supports students solving problems</i> - <i>Teacher gives individual feedback</i> - <i>Teacher uses scaffolding and coaching techniques</i>

Study 3: Results of High-inferent Rating (Qualitative Analysis)



Conclusions

Study 1

- Significant increase from the beginning to the end of teacher education
- Differences between the three universities, especially for the third year of teacher education

Study 2

- Positive developments in acquiring competencies for lesson planning from beginning to the end of teacher education
- A broad range for further competency acquisition since the maximum scores are by far not reached
- High variance within all variables and a tendency for increased variance towards the end of teacher education

Conclusions

Study 3

- Interrater-Reliability is difficult at following facets:
 - Structuring, Teacher as facilitator, Learning targets
- Traditional versus „modern“ teaching-learning arrangements
- More detailed analyses needed: to compare groups at the end of either spectrum and to conduct case studies

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Thank you for your attention

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Study 1: Self-Evaluation of Teaching Competencies

Online-Questionnaire

- Based on a selection of Oser's (1997a, 1997b) 88 Standards concerning teacher education (circa 60 standards in 14 thematic scales)
- Sample: All students; participation rate 30-60%, depending on location and year
- Realization of Survey: Online
- Quality of Data: Self-estimations of competencies

Definitions

Teaching competence

- Knowledge and expertise to be applied in the context of a school.

Standard

- Standards are complex, professional competencies, which lead to theory-directed action in teaching. They relate to scientific research and form a precondition for an analytic and thereby critically reflected practice.

Vignettes – Example II

In her teacher education classes Simone Landolt, a student teacher, has learned that a good diagnosis of pupils' pre-knowledge is important for lesson planning and lesson implementation. Therefore, Simone aims at regularly diagnosing pupils' understanding while teaching a lesson in Mathematics / German Language. Please explain to Simone how she can consider diagnosing pupils' pre-knowledge in her lesson planning and how she could use the results of her diagnoses for controlling her instruction and for continuous planning. Give reasons for your answer.