

## A developmental questionnaire on teaching and learning

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## Challenges

- Student development in higher education: providing opportunity to develop capabilities needed for our time
- Teacher development and support in daily work
- Individualize support and challenges in education
- Many models that measures conceptions of learning and teaching require time consuming scoring procedures

## Developmental Questionnaires with in the field of learning?

- Few existing questionnaires aim to measure development
- The existing tools aim to measure different types of world views on learning (ways of knowing), and the underlying development is :
  - actively rejected, with researchers assuming that students can move freely from one type of knowing to another as the situation requires
  - not presumed explicitly, but dimensions of complexity of thought are recognized

## Our goal and purpose

### GOAL

- To to construct a web based questionnaire that measures views of learning and teaching
- The questionnaire should measure developmental levels in interpreting educational situations

### PURPOSE TODAY

- The purpose is to present a newly constructed questionnaire of views on learning and teaching.

## Design and method

- A quantitative design
- A web based survey including
  - Socio demographic and professional teaching questions
  - New questionnaire with items formulated to represent developmental levels
  - Value system questionnaire approach
  - Open ended question on responsibility for student learning.
- In Swedish and English

## New questionnaire on learning and teaching

- The questionnaire addresses 6 domains
  - a good study book\*
  - discussions\*
  - application of knowledge\* (example given below)
  - responsibility for learning
  - understanding\*
  - the best education\*

\*Item formulation informed by Van Rossum-Hamer developmental model of learning-teaching conceptions (see next slide)

Van Rossum-Hamer model of learning-teaching conceptions

Van Rossum, E.J. & Hamer, R.N. (2010). The Meaning of Learning and Knowing. Rotterdam: Sense Publishers

Learning	Good teaching	Good understanding	applying	Purpose of discussion	Good textbook (EARLI 2013)
Increase of knowledge	Clear transfer of knowledge	recognise	recognise and reproduce (when asked)	To hear what the experts think	-
Memorisation	Knowledge transfer consider recipient	reproduce (at test)	reproduce (at test)	To discuss the right answer for the test	Clear structured text Key words in margin Summary and test questions at end
Reproductive application (multiplication)	Interaction & shaping	solving known problems	follow recipe / steps / methods	To hear other opinions, other experiences	Clear presentation/font/colours Images and pictures to aid recall Summaries and key concepts Examples from practice
Learning reasoned thinking	Modelling a way of thinking	solving unknown problems;	systemic thinking; flexible use of knowledge	To support your opinion, to convince others of the evidence	Book makes you think Chapters increase in depth Examples and images to aid understanding
Seeing multiple perspectives	Dialogue and empathy for other perspectives	formulating own arguments	Formulating arguments from different perspectives	To see a problem from a different perspective and understand the evidence	Leading to more questions, not answers Complex structure aids engagement See things differently
Awareness of self	Authentic relationship and mutual respect	personal relevance and wisdom	Using knowledge for greater good		You decide what to include Follow your own inquiry

## Example scale (application)

### Being able to apply knowledge means to

- pass one's exams. (L2)
- look at a problem from multiple perspectives. (L5)
- be able to solve familiar problems using what you have learnt. (L4+)
- be able to solve real life problems by combining knowledge and skills in new ways. (L4)
- support your own point of view on an issue using evidence and facts. (L4)
- use your knowledge to make the world a better place for those around you (society, human kind and/or nature). (L6)

INSTRUCTION: RATE AND RANK THESE STATEMENTS

## Participants

- A web based questionnaire was sent to all teachers and researchers at Jönköping University, about 500 teachers
- The teachers received 3 reminders during a period of 6 weeks.
- Response rate, N= 340 (68%) opened the questionnaire
- Response rate, n = 232 (46%) answered all rating questions

## Participants

- Socio demographic and professional teaching data
- Sex: Male 45,3 %; Female 54,7
- Age: (-29, 30-39, 40-49, 50-59, 60+)
- Education (indicate the highest level attained)
- Teaching Time (percent of time last year)
- Teaching Experience (number of years)
- Teaching Level (basic, advanced and doctoral)
- Faculty at Jönköping University

## Analysis and interpretation

### Create a total score from factor analysis

1. Perform a factor analysis

The analysis resulted in 10 factors that explained 55% of the variance

## 10 factors

Variable cluster	Learning and teaching concepts mean
Exam focus	2
Knowledge dissemination	2,5
Own interest and simple application	3,3
Evidence and facts	3,3
Motivation and formal knowledge logic	3,5
Application in new contexts	3,7
Rational own learning	4
Reflection och questioning	4,5
Perspective awareness	5,0
Relativism and wholeness	5,5

### Calculate a total score

- 1) Calculate a value for each factor
- 2) Add the values for all factor into a total score
- 3) Normalize the scores on a scale from 0 to 1.

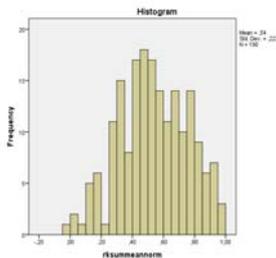
A high total score stands for high priority of items that indicate high complexity of thinking

### Calculate a total score

Component 2	Factor load	Learning level	Median	Mean
Perspectives			5	5
P1. Different solutions are illustrated from multiple perspectives	.660	5		
P2. Look at a problem from multiple perspectives	.590	5		
P3. Presents alternative conclusions, shows different interpretations within a subject matter of clarifies different perspectives on a content	.540	5		

Calculate the score for each factor (Individual X) = (P1 X-rank\*.660) + (P2 X-rank\*.590) + (P3 X-rank\*.540)  
 Calculate the total score = (Comp1 \*4) + (Comp2\*5) + (Komp3\*2) + ...

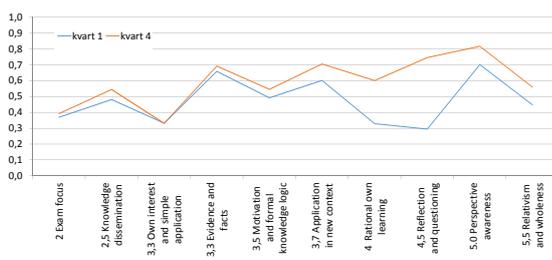
### Distribution of total scores in the sample



### Relation to socio-demographic and teaching factors

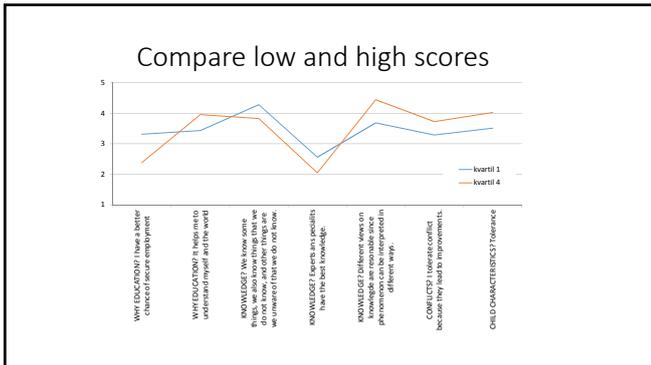
- Strongest significant score to teaching experience (longer experiences higher scores)
- A weak positive (but not significant relation) to being female and having a high percentage of teaching time
- Unrelated to the total score: Age, Academic title, teaching level

### A high total score means that complex learning and teaching concepts rank higher



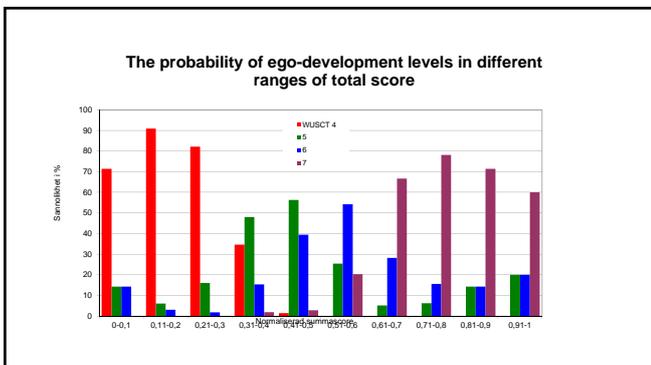
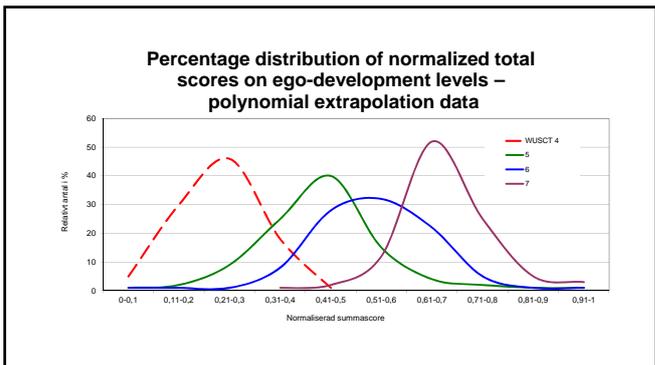
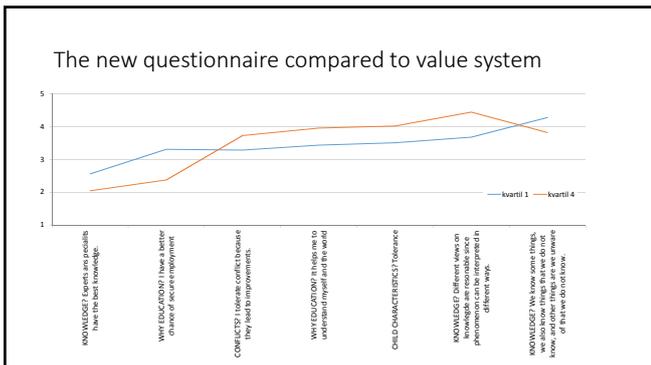
### Compare low and high scores

Variable cluster	p ANOVA	Learning and teaching concepts mean
Exam focus	>0.05	2
Knowledge dissemination	>0.05	2,5
Own interest and simple application	>0.05	3,3
Evidence and facts	>0.05	3,3
Motivation and formal knowledge logic	>0.05	3,5
Application in new contexts	0,008	3,7
Rational own learning	0,000	4
Reflection och questioning	0,000	4,5
Perspective awareness	0,000	5,0
Relativism and wholeness	0,005	5,5



### Do the new questionnaire measure developmental dimensions/stages?

- Indirect support that the total score is related to developmental dimensions/stages in two ways:
  - 1) compare the results to value system questionnaire (Sjölander et al 2014)
  - 2) Compare the results to Loevinger (1970). Washington Sentence Completion Test.



### Future

- Continue the work on validity
- Try the test in new context, cultures etc