

# Competence-Based Vocational and Professional Education: A Global Overview

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## **Crossing Boundaries in Vocational Education and Training: Innovative Concepts for the 21<sup>st</sup> Century**

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# International VET

- Large diversity in VET
  - Esteem
  - Labour market relevance
  - Vertical mobility
- Many innovations during last decades
  - International cooperation
  - Competitions
  - Association development
- Wide range of theories for VET



# Wide range of theories for VET

- Activity theory
- Agency theory
- Alignment and transition theory
- Argumentation-based learning
- Authentic learning theory
- Blended learning theory
- Cognitive apprenticeship theory
- Cognitive load theory
- Communities of practice theory
- **Competence theory**
- Concept-context theory
- Educational effectiveness theory
- Expansion learning theory
- Experiential learning theory
- Flexibility-mobility theory
- Identity development theory
- Learning domain theory
- Personal epistemology theory
- Professional development theory
- Qualification theory
- Self-regulation theory
- Situated cognition theory
- Social learning theory
- Test theory
- Transfer theory
- Workplace learning theory



# Competence theory is the foundation of a major systems innovation in VET

- Society needs a competent workforce
- VET should not produce incompetent graduates
- CBE is institutionalized by EQF



# Reviews and critiques have shown problems inherent to CBE

- Ellström, 1997
- Lum, 1999
- Rothwell and Lindholm, 1999
- Westera, 2001
- Hager, 2004
- Delamare Le Deist & Winterton, 2005
- Hyland, 2006
- Mulder, Weigel and Collins, 2007
- Mulder, 2014



Gerard Lum (1999). Where's the competence in competence-based education and training? *Journal of philosophy of education*, 33(3), 403-418.

- Competence as goal of education is an empty platitude
- A generic notion of competence cannot differentiate between CBE and non-CBE
- It cannot specify curriculum design and assessment practice
- An insufficient distinction is being made between competence as aim and a competence-based education strategy
- There is no evidence of a causal relationship between competence as aim and strategy
- Need to emphasise 'learning to do' in VET is incontrovertible
- But desired outcomes cannot be precisely formulated



# Diversity in competence concept

- There is a *mer à boire* of theories, conceptions, strategies and methods to model, develop and assess competence.
- What are the origins?
- Which is the way to go?





# Code of Hammurabi, 1792-1750 BCE

`... Hammurabi, le roi compétent ...`

Code de Hammurabi,  
roi de Babylone  
Basalte  
1792-1750 av. J.-C.



## Épilogue

*« Telles sont les décisions de justice que Hammurabi, le roi compétent, a établies pour engager le pays conformément à la vérité et à l'ordre équitable [...] Que l'homme injustement traité, qui est impliqué dans une affaire, vienne devant l'image de moi-même, le roi de justice, et se fasse lire ma stèle écrite, qu'il entende ainsi mes précieuses ordonnances ; que ma stèle lui indique son affaire, qu'il voit son cas, que son cœur s'allège [...] Je suis Hammurabi, le roi de justice, à qui Shamash a octroyé la vérité. »*

Laws of justice which Hammurabi, the wise king, established. A righteous law, and pious statute did he teach the land.

Translated by L.W. King (1910); Edited by Richard Hooker



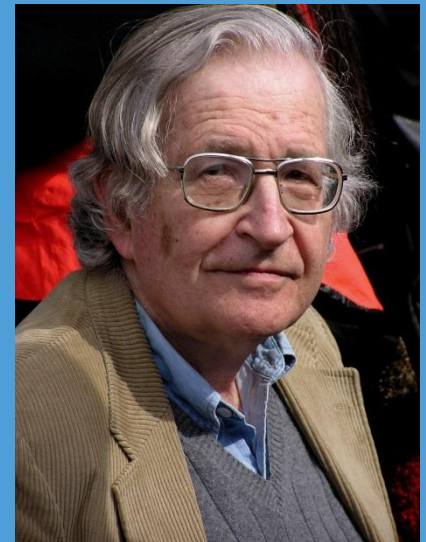
# Robert Winthrop White (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, 66, 5, pp. 297-333.

- An alternative for motivation psychology of Freud (unconscious sexual drives) and Hull (drive reduction)
- Children and adults are motivated to become competent in what they do
- Competence = the ability to interact effectively with the environment



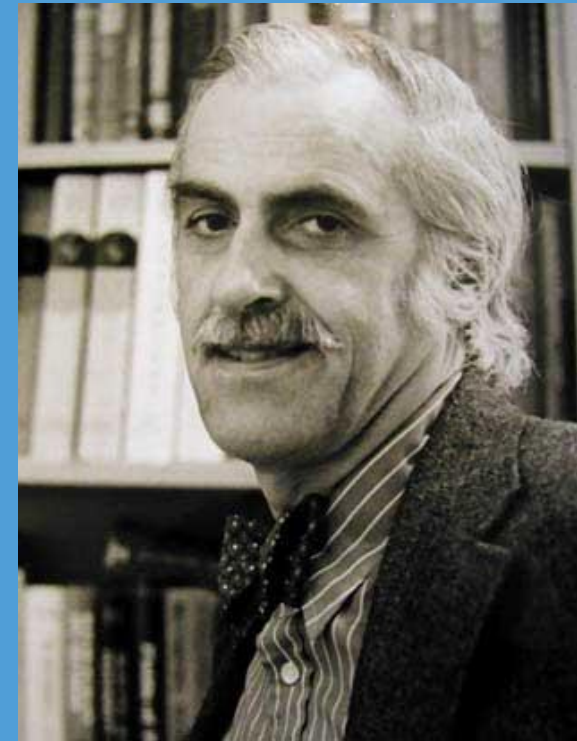
# Noam Chomsky (1965). *Aspects of the Theory of Syntax*. Cambridge: MIT Press

- Competence is a the underlying linguistic ability to create and understand sentences, including sentences never heard before
- Performance is the linguistic output
- Knowing rules does not automatically guarantee being able to speak correctly



# David C. McClelland (1973). Testing for competence rather than for intelligence. *American Psychologist*, 28, 1-14

- Limited prognostic validity of intelligence tests and school grades
- Testing what people actually can do shows a better result
- Competencies should try to measure clusters of life outcomes
- Criterion-based job analysis may lead to over-detailed tests
- Competencies should be identified by what superior performers do



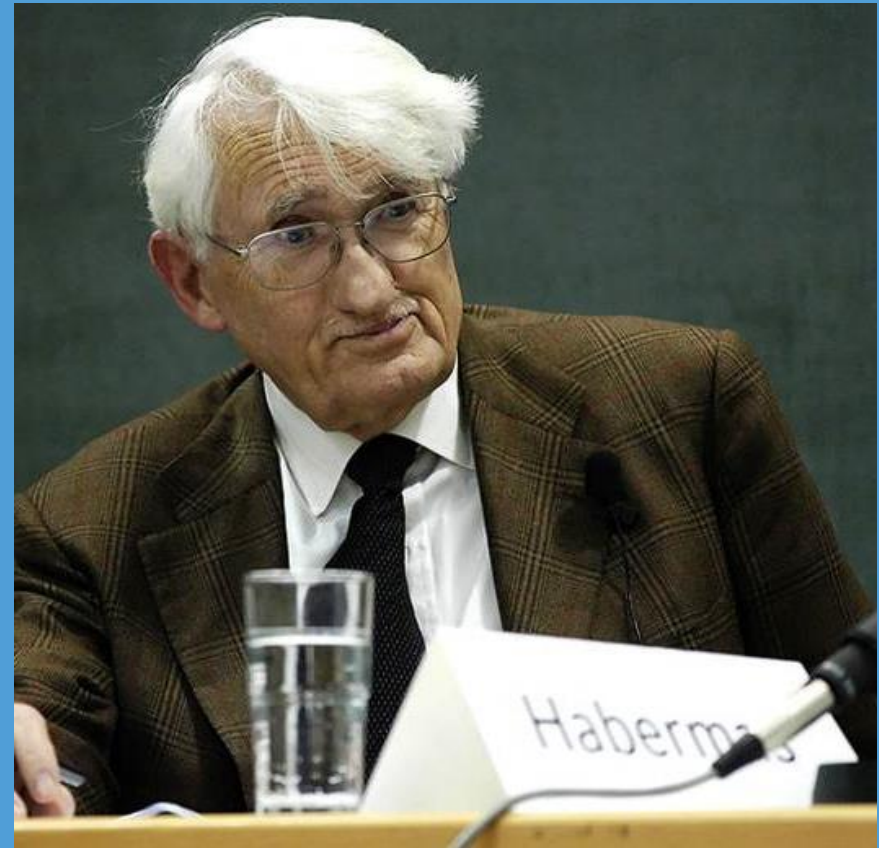
# Further theory and research

- Engineering worthy performance – Tom Gilbert (1978)
- The competent manager – Richard Boyatzis (1982)
- Core competence – CK Prahalad and Gary Hamel (1990)
- The Great Eight – David Bartram (2005)



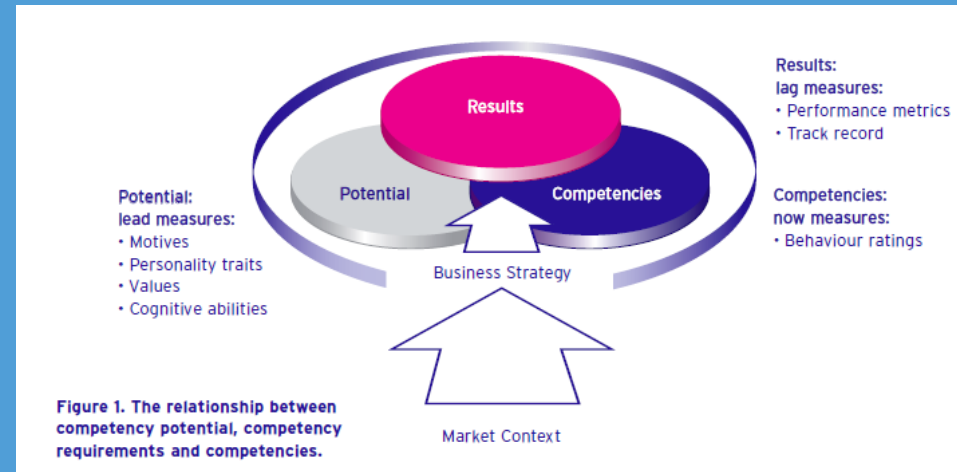
# Early competence frameworks

- Roth, 1971
  - Object competence
  - Social competence
  - Self-competence
- Habermas, 1984
  - Cognitive competence
  - Linguistic competence
  - Interactive competence
- Erpenbeck, Heyse, 1999
  - Subject-specific competence
  - Methods competence
  - Social competence
  - Reflection competence



# Bartram – The great eight Competency Framework (2005)

- Leading and Deciding
- Supporting and Co-operating
- Interacting and Presenting
- Analysing and Interpreting
- Creating and Conceptualising
- Organising and Executing
- Adapting and Coping
- Enterprising and Performing



Source: <http://www.shl.com/OurScience/Documents/SHLUniversalCompetencyFramework.pdf>



# Domain-specific competence frameworks

- Purchasing - Mulder et al (2005)
- Agricultural extension - Karbasioun et al (2007)
- HIV/AIDS in agricultural advisory work - Brinkman et al (2007)
- Entrepreneurship - Mulder et al (2007), Lans (2009), Lans et al (2008; 2010; 2011)
- Horticulture - Van der Heide et al (2008); Mulder et al (2011; 2013)
- Interdisciplinarity in higher education - Spelt et al (2009)
- Open innovation - Du Chatenier (2009) and Du Chatenier et al (2009, 2010)
- Sustainable development - Wesselink and Wals (2011)
- Argumentation competence - Noroozi (2013)
- Multicultural cooperation - Popov et al (2013)
- Competence of beginning elementary school teachers - Alake-Tuenter (2014)
- Competence development in practical training - Khaled (2014)





# CANMEDS (2005) - Key Competencies:

*Physicians are able to...*

1. Function effectively as consultants, integrating all of the CanMEDS Roles to provide optimal, ethical and patient-centered medical care;
2. Establish and maintain clinical knowledge, skills and attitudes appropriate to their practice;
3. Perform a complete and appropriate assessment of a patient;
4. Use preventive and therapeutic interventions effectively;
5. Demonstrate proficient and appropriate use of procedural skills, both diagnostic and therapeutic;
6. Seek appropriate consultation from other health professionals, recognizing the limits of their expertise.



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# What is competence?

## Towards synthesis



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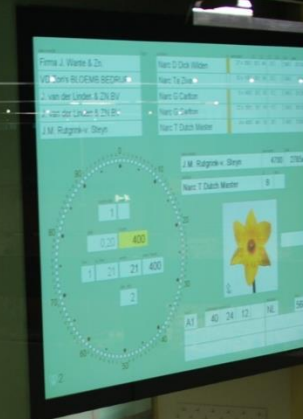
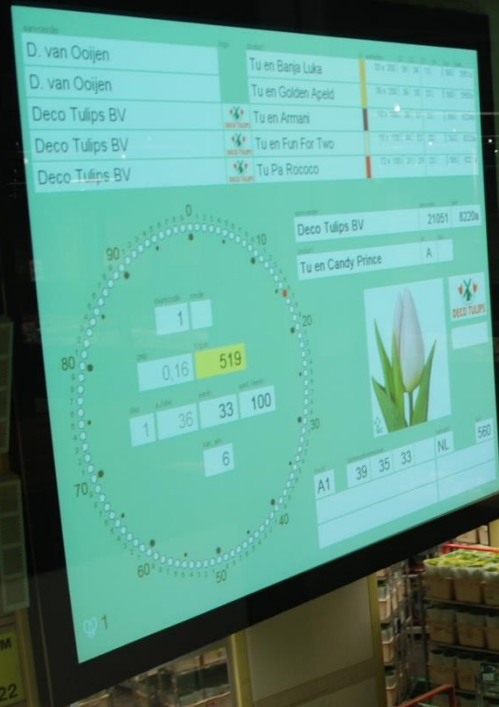
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# Flowers







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# Trading at Flower Auction

Workplace requires competent professionals:

- Knowledge
  - product
  - quality
  - market
- Skills
  - multi-tasking
  - processing information
  - instant decision making
- Attitudes
  - stress-tolerance
  - feeling for sales



# My understanding of competence

1. integrated capabilities
2. consisting of clusters of knowledge, skills, and attitudes
3. conditional for sustainable effective performance, including
  - problem solving
  - realizing innovation
  - creating transformation
4. in a certain profession, occupation, job, role, organisation, or situation





# Competence as binary concept

- Proficiency, mastery, ability
  - Practical capability to perform
  
- Authority, licensure
  - Legal, institutional, organizational, cultural or regulated right, power, approval or assignment to act, decide, (dis)approve or regulate



# Three competence theory approaches

1. Functional behaviourism - Training
2. Integrated occupationalism - Education
3. Situated professionalism - Development



# Book project

## Competence-based Vocational and Professional Education: Bridging the World of Work and Education



# Objectives of the book

- To collect the diverse viewpoints regarding CBE
- To unravel controversies in CBE debates
- To deepen the understanding of CBE theory
- To review policies and practices regarding CBE
- To assess the value added of CBE
- To point at research priorities in the field of CBE



# Parts of the book

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- I Theory
- II Competence-based Education as a Global Innovation
- III Competence and Key Aspects of Education Systems
- IV Competence Domains
- V Quality and Outcomes



# Part I Theory

## 1. Introduction

### I.I Conceptual foundations

2. Professional expertise
3. Domains of occupational competence
4. Qualification and action theory

### I.II Critical considerations

5. The epistemology
6. Mindful working and skillful means
7. Teacher professional development
8. The role of knowledge



# Part I Theory

## I.III Emerging perspectives

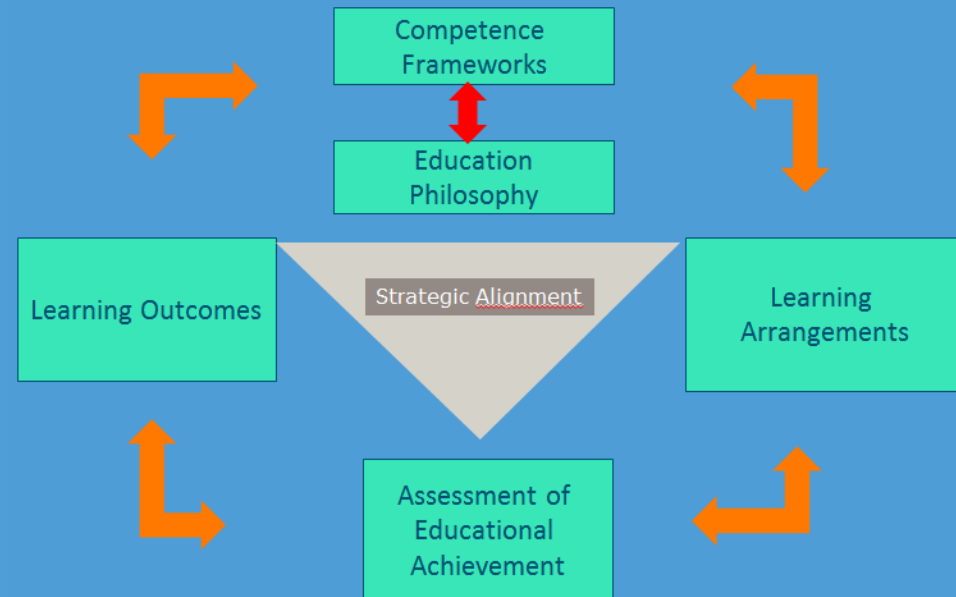
9. The integrated view

10. Capabilities and graduate attributes

11. Alignment of education and work

12. Work, neoliberalism and the economy

## Alignment of work and education





# Part II Competence-based Education as a Global Innovation

## II.I The USA: where it all began

### 13. Competence-based education in the USA

## II.II Diverse European approaches

### 14. The competence debate in the European Union

### 15. National Vocational Qualifications and competence in the UK

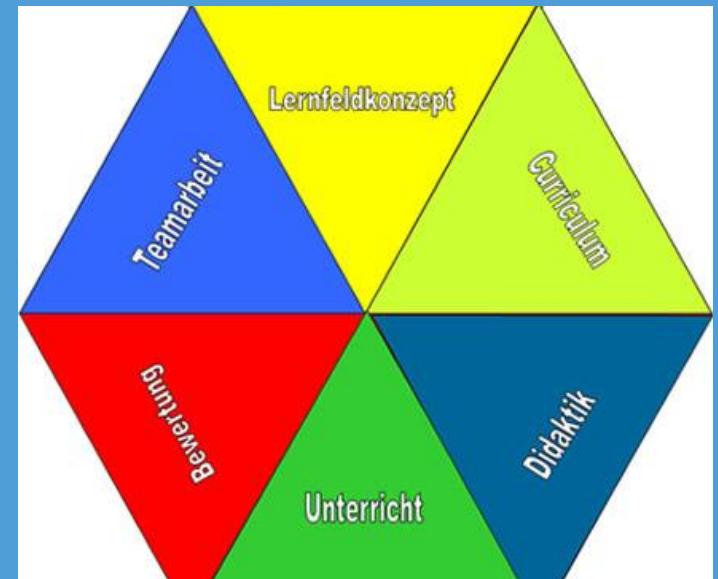
### 16. Workplace learning in the UK

### 17. Competence Domains in Germany

### 18. Competence development in France

### 19. Competence in Lithuania and Estonia

### 20. The support by technology in the Italian context



# Part II Competence-based Education as a Global Innovation

## II.III Asian and African approaches

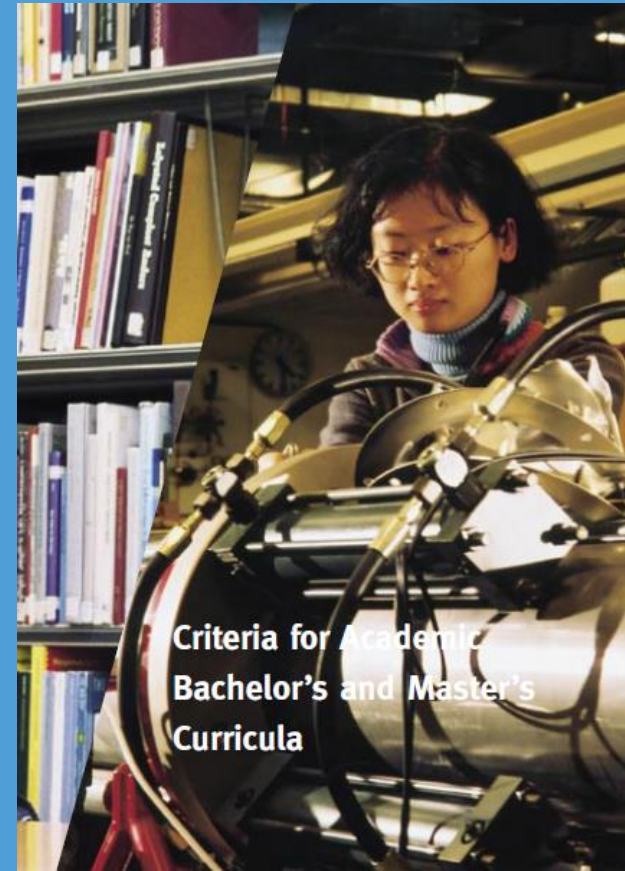
21. Competence-based education in China's Polytechnics
22. Competence-Based Training in South Asia
23. Competence and TVET-Innovation in Rwanda



# Part III Competence and Key Aspects of Education Systems

## III.I Generic Competence Frameworks for Education Systems

- 24. The Academic Competencies and Quality Assurance (ACQA) framework
- 25. Evaluating vocational curricula with principles of competence-based education
- 26. '4C your way': a framework for measuring competence growth at various levels



Criteria for Academic  
Bachelor's and Master's  
Curricula



# Part III Competence and Key Aspects of Education Systems

## III.II Recognition and Assessment

27. Recognition of Prior Learning (RPL)

28. Competence assessment

## III.III Competence, Teaching and Learning

29. Professional development

30. Areas of Learning

31. Self-regulation

32. Gamification

33. Scaffolding argumentation competence



### **Recognition of Prior Learning (RPL)**

Are you thinking about studying a Vocational Education and Training (VET) course at CDU? If you've ever studied or completed training, you might be entitled to apply for Recognition of Prior Learning (RPL).



# Part IV Competence Domains

## IV.I Discipline-Oriented Competence Domains

34. Industrial-technical professions

35. Engineering mechanics

36. Pre-service Teachers Education

37. Medical Education and Competency-Frameworks

## ■ IV.II Transversal Competence Domains

38. Green skills

39. Complex problem solving

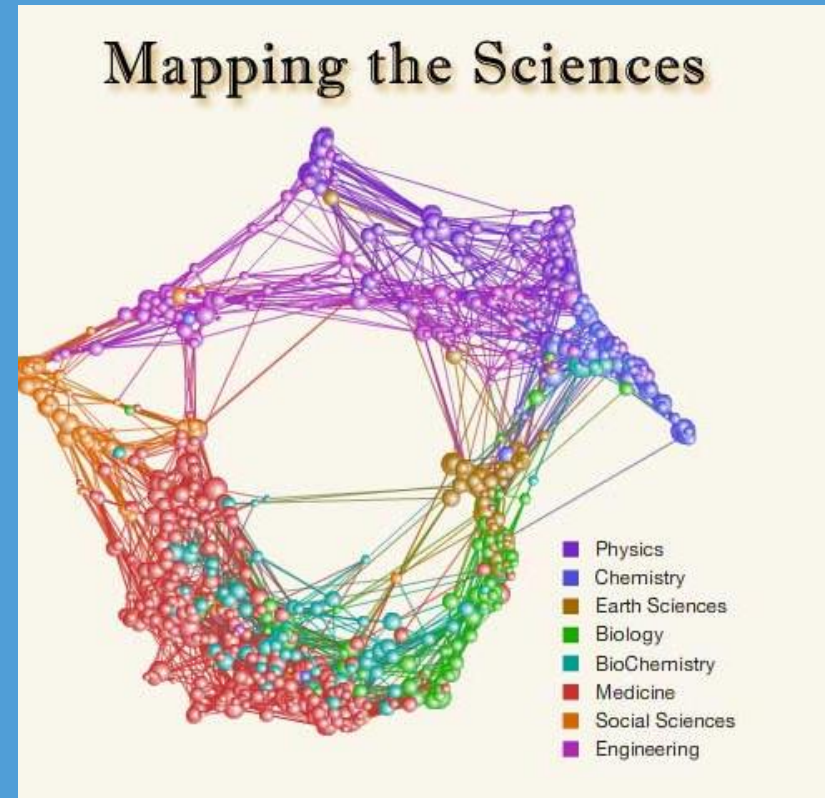
40. Intuition and professional competence

41. Competence in entrepreneurship courses

42. Global competence and student mobility

43. Social competence research

44. Computational thinking



# Part V Quality and Outcomes

- 45. Quality management of competence-based education
- 46. Assuring quality in competence assessments
- 47. Social competence and employability
- 48. Competence-based education and educational effectiveness

## Conclusions, Discussion and Future Trends

- 49. Conclusions, Discussion and Future Trends



# Settling controversies in competence debates – in my view:

- Competence is performance requirement
- The meaning of competence is context-specific
- Competencies are clusters of knowledge, skills and attitudes related to meaningful units of professional practice
- Competence = driver of learning + predictor of performance
- Competence = capability = attribute = expertise
- Competencies can be learned – at variable costs
- Highest level of competence is excellence
- Avoid over-specification of competencies by job analyses
- Competence is inferred by performance assessments
- Competence has a limited expiration date





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Opposing the views of Lum (1999) There is now significantly more competence in competence theory, research and practice

- Desired outcomes of CBE are defined in competence frameworks
- Therefore, competence as the goal of education is not an empty platitude
- There are operational strategies for CBE curriculum design and authentic assessment; they are specific for CBE
- So, the distinction between competence as aim and a competence-based education strategy is operational
- This implies a causal relationship between competence as aim and the CBE strategy
- Clearly, CBE and non-CBE practice can be distinguished



# Effectiveness of CBE - Lorenz Lassnigg

## Literature search:

- 16% of hits on competence (etc.) mentioned issues of effectiveness, with an increase to almost 40% during 2011-2014
- In the effectiveness literature there was no single reference which indicated an analysis of the effectiveness of CBE
- None of the studies found allows for a comparison of CB-learning with other forms of learning



# Final conclusion

- CBE is global trend with waves
- There is little evidence of the effectiveness of CBE
- A big research effort is needed to show the added value of CBE

