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1

Dear Michael, esteemed colleagues and friends, ladies and gentlemen.

It is a privilege and honour for me to give this presentation at this conference on vocational education and training. Especially since I have been working in and for and studying and publishing about vocational education and vocational education research since the year 1980. Today I will share a lot of material, and I will do that rather quickly as our time is precious. But I will make my presentation available, so that you can use it if you want to.

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So I am in VET since 35 years. Much has happened in that time frame, also within vocational education. But some things are still the same. One key feature of VET is its enormous diversity.

A couple of examples: the esteem of VET varies quite considerably across the world, as its labour market relevance. And vertical mobility in certain countries is better regulated than in others.

During the last 35 years there have also been a multitude of innovations, some with success, others not. A lot has been achieved in international cooperation. Comparisons of VET Systems have been made. Associations have been built for policy, practice and research. Furthermore, many theories have been developed which are relevant for VET.

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This slide gives an overview of a number of theories. Many of you know that activity theory has become popular and widely used. The same holds for agency theory. Alignment theory is of a more recent date, but has been important for outcome-based, or competence-based education. As you see in this overview of theories, I see competence theory as one theoretical approach, amongst many others, which are relevant for VET.

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I see competence-based education as a major global systems innovation in VET, which is not surprising, as our society needs a competent workforce. Raven and Stephenson stated that already more than 10 years ago, but that is still the case. And although competence and competence-based education are contested concepts, I think we all agree that education should not produce incompetent graduates. I also think that CBE is institutionalized, at least in Europe in the EQF.

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As said, the competence concept is largely contested, there are many reviews and critiques about it, strategies to develop it, as well as methods to model, develop and assess it. I have given some examples here, and I think the critique of Gerard Lum is the most essential. Critics like Hyland and Day use to cite his analysis as to why competence-based education is a no-brainer.

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The core observation of Lum was that competence-based education was not grounded on a strategy, nor on well-defined competencies as objectives of education. He went even further by saying that it is utterly impossible to define competencies as outcomes. As a consequence, he thought CBE and non-CBE could not be distinguished, and in CBE there is no causal relationship between CBE as aim and CBE as a strategy. I will leave these observations hanging during my talk, and will come back to them at the end.

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First of all I think it is important to review the literature a bit, and to go deeper into the notion of competence and competence-based education, and I will shortly point out a book project I am working on. This will show a lot of diversity in the competence concept, but maybe the field is ready for some synthesis.

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As I have often stated, competence-thinking is not new. It is probably as old as mankind. The oldest account of the concept of competence I found is from the code of Hammurabi in the 18<sup>th</sup> century BCE.

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In science, the concept is younger. As far as I have found out, White was the first one to introduce it in the academic literature, and made it a construct. He saw competence as a motive. Children want to become competent, they want to walk and speak just like adults. He saw competence as the ability to effectively interact with the environment.

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Chomsky developed his theory of syntax basically in the same period, and he differentiated competence and performance. He saw competence as the underlying ability to speak, and speech itself as performance. He also pointed at the fact that knowing language rules, so pure knowledge, does not guarantee the ability to speak. That ability, he stated, was language competence.

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McClelland applied the notion of competence to testing, and saw competence testing as being better than intelligence testing. He showed that testing what people actually can do is a better predictor of future performance than testing of intelligence. McClelland already warned that competencies should be seen as indicators of clusters of life outcomes, and should not be over-specified. Competencies should furthermore be identified by what superior performers do, and not by asking people what is important in job performance.

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But there are many more scholars who have contributed to the present state of competence-based strategy development, competence-management, competence-based education and competence assessment. Tom Gilbert, who saw competence in the framework of engineering worthy performance, Richard Boyatzis, who related competence to superior performance and applied this in the field of management selection and development, Prahalad and Hamel, who focused on the core competence of the organization in the context of corporate strategy development, and David Bartram, who developed the Great Eight competency framework.

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Many scholars and groups have developed competence frameworks, for instance Roth, Habermas, Erpenbeck, and others. I think it is important to note that, because these early frameworks have had their influence on later thinking.

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A recent framework is the the Great Eight Competency framework as I just said. It includes generic and behavioural competencies, like leading and deciding, supporting and co-operating, etc. These overarching competencies are further specified and defined. The problem with these generic and behavioural frameworks is that it is hard to link them to work processes and content of vocational education. Still, they are very important for professional work. I think that if professionals do not possess most of these competencies, they can hardly be successful.

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There are also various domain-specific competence frameworks. In my research group alone we have developed frameworks for purchasing, agricultural extension, entrepreneurship, open innovation, etc. etc. Most of these frameworks were by-products of doctoral dissertations and used for research purposes. But there are many more.

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The medical professional organization CANMEDS has taken a content-driven approach, which I like a lot. They defined roles of medical specialists, and defined key competencies and more specific competencies, all related to the tasks specialists are supposed to do. So what is included in their competency framework are statements that doctors need to be able to do an assessment of a patient, and use interventions. I must say that I am personally very happy that they precisely specified those competencies. In my university we did something similar by defining the core competencies and linking them to programs and courses. That worked very well.

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Given the insights and overviews we have now, I think the time is right to establish a synthesis of the competence-based education field.

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To start explaining the basic notion of what competence is, I tend to start with this picture. Some of you have seen these slides more often, I think, but my question is: what is this, what do you see, and what are these people doing? In most cases people say this is a modern conference room or a lecture room, but it isn't. These people are thinking about this:

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Large quantities of flowers. What you just saw was one of the auction rooms of Flora Holland, the largest flower auction in the Netherlands, and maybe in the world. They trade 1/3<sup>rd</sup> of the world volume of flowers and plants.

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This is the other side of the trading room, where large screens and moving carts show the products to be sold. The big auction clock shows the price. The people in the room are the buyers and there is a sell about every 10 seconds.

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The point of my story is not to market the Dutch flower auction, but to show that the traders in the room need professional competence, which consists of various knowledge elements, skills and attitudes. They need to know about the products, quality and market, they have to have the skill of multi-tasking, processing information and quick decision making, and have sufficient stress-tolerance and feeling for sales.

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My understanding of competence is that they are

- Integrated capabilities
- Which consist of clusters of knowledge, skills and attitudes
- These clusters should be related to meaningful segments of professional practice, like critical problem situations.
- Competence in my view is conditional for sustainable effective performance
- It is not just learning to perform job tasks, but also about taking responsibility, problem solving, realizing innovation, and creating transformation

- And as we are in the field of professional competence, I see competence related to professions, occupations, jobs, roles, organisations, or situations.

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Furthermore, I see competence as a binary concept, a concept with two sides: the first is related to what people actually can do. The second what they are allowed to do. In many professions both go together, as more and more professionals are being held accountable for what they are doing and why.

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Furthermore, I see there are three theoretical approaches in competence thinking.

1. Functional behaviourism, especially developed in the training context. It puts emphasis on detailed behaviour.
2. Integrated occupationalism, especially developed in the context of vocational and professional education, with an emphasis on competence clusters related to work processes.
3. and Situated professionalism, especially relevant in the organizational and professional development context, with an emphasis on the contextual meaning of competence.

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Given the diversity and the recurrent discussions in the field, I took the initiative to develop a book as a collection of chapters by various authors from around the globe. I am doing this with colleague Jonathan Winterton. The book will be called Competence-based Vocational and Professional Education: Bridging the World of Work and Education, and is scheduled to appear in 2016. I am going to give you a short preview of the content.

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The objectives of the book are

- To collect the diverse viewpoints

- To unravel controversies
- To deepen the understanding
- To review policies and practices
- To assess the value added
- To point at research priorities
- Of course, all in the field of CBE

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There are 5 Parts in the book, which I will shortly describe.

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The first part addresses theories of competence.

#### 1. Introduction

#### I.I Conceptual foundations

2. Professional expertise – this chapters states that competence in essence is synonymous to expertise.
3. Domains of occupational competence – this chapter addresses the personal domain of knowledge, personal learning experiences and personal mediation, active mimetic learning and individuals' personal epistemologies.
4. Qualification and action theory, and stresses the need for a better theoretical foundation of the construct of competence, and provides that based on action theory.

#### I.II Critical considerations

In this part we purposely placed fundamental critiques on the competence movement.

5. The epistemology – this chapter argues for competence based on progressivism, and based on a constructivist epistemology

6. Mindful Working and Skilful Means. This chapter rejects any form of competence-based vocational and professional education. The author dislikes the idea of having pre-specified statements to be assessed by performance criteria with the aim of achieving competence outcomes.
7. Teacher professional development – This chapter follows this argument, and states that teacher professional development should go far beyond competence standards, which are seen as a kind of minimum standards.
8. The role of knowledge – This chapter goes into the heated debate about the role of knowledge in CBE.

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In this part and the rest of the book we included chapters of which we think they go beyond the policies and practices that were so heavily criticized. First of all we included four chapters on emerging perspectives, focusing on the

### I.III Emerging perspectives

9. The integrated view on competence
10. The notion of competence as capabilities and graduate attributes
11. The strategic issues of alignment of education and work by competence frameworks
12. The economic analysis of competence based education, with an analysis of work, neoliberalism and the economy

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Regarding CBE as a Global Innovation, we have included chapters from the USA, the UK, Germany, France, Estonia and Italy.

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and from China, South Asia, and Rwanda. We also invited some authors from Latin America but they did not accept our invitation.

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Regarding the unique features of CBE in terms of the Education System we included chapters on the Academic Competencies and Quality Assurance (ACQA) framework, on the matrix to evaluate vocational curricula on the extent to which they comply with principles of competence-based education, and ‘4C your way’, a competence framework for measuring competence growth at various levels of vocational and professional education.

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Furthermore we included chapters on Recognition of Prior Learning (RPL), and Competence assessment as learner support, as well as various chapters regarding aspects of teaching and learning, such as Professional development in teacher teams, Areas of Learning, Self-regulation, Gamification and Argumentation.

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Part IV comprises chapters on specific Competence Domains, such as Engineering, Teacher Education, and Medical Education. The latter is interesting as it describes the concept of ‘entrustable professional activities’, which after assessment gives a license to perform that specific professional activity. But this part also includes chapters about transversal competence domains, such as Green skills, Complex problem solving, Intuition, Entrepreneurship, Global (or intercultural) competence, Social competence, and Computational thinking.

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The last Part of the book is on Quality and Outcomes, and is the shortest part of the book. It addresses Quality management, Assuring quality in competence assessments, Social competence and employability, and Competence-based education and educational effectiveness. Especially the last chapter shows that there is very limited evidence that CBE is effective. This is of course quite disturbing, and will come back in my conclusion in a minute.

Finally there will be a synthesizing conclusion chapter. We are still in the process of writing that.

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At least I think we can now settle a number of controversies in competence debates. Based on what I have seen until now I think I can say that:

- Competence is a necessary performance requirement
- Its meaning is context-specific
- The highest level of it is excellence
- It can only be inferred by performance assessments
- It is a driver of learning and predictor of performance
- Competence = capability = attribute = expertise
- Competencies are clusters of knowledge, skills and attitudes
- Competencies can be learned – at variable costs
- Over-specification of competencies by too detailed job analyses should be avoided
- Competence has a limited expiration date

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16 years after the critical article of Gerard Lum there is significantly more competence theory and research and much more practical experience with forms of CBE than in the late 1990s

- Desired outcomes of CBE are now defined in competence frameworks
- Therefore, competence as the goal of education is not an empty platitude anymore
- 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 now operational
- This implies a causal relationship between competence as aim and the CBE strategy
- CBE and non-CBE practice can now be clearly distinguished

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What is still disturbing is that there is hardly any good research on the effectiveness of CBE - Lorenz Lassnigg did a nice literature analysis of that.

His first search showed:

- 16% of hits on competence (and related terms) mentioned issues of effectiveness, with an increase to almost 40% during the years 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

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So this leads to my final conclusion

- CBE is a global trend with various waves
- With a lot of diversity and discussion, but also with progression and opportunity for synthesis
- There is little evidence of the *effectiveness* of CBE
- So we need a big *research effort* to show the added value of CBE

With this I conclude my presentation. Thank you very much for your attention. I wish you a very fruitful further conference. Thank you very much.