

# **Competence-based Education – about frequently asked questions**

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Highly esteemed Mr chairman, Mr. Vice President, Mr. Dean, speakers, JUCAVM staff, guest. Dear colleagues and friends.

It is an honour and pleasure for me to be here as guest from Wageningen University, the Department of Education and Competence Studies.

I feel privileged to be part of this important day, which is part of the important redesign of the programs of horticulture.

I am happy to share my expertise with the staff of JUCAVM, and I can say that I am learning a lot by doing this here in Jimma.

Let me turn to the topic of my presentation, which is as said on competence-based education. Today I thought I would discuss with you the frequently asked questions about this educational innovation. These questions are:

1. Why competence-based education?
2. What is competence-based education?
3. How is competence-based education related to outcome-based education?
4. What are the principles of competence-based education?
5. What promise does competence-based education have for Africa?
6. Is competence-based education possible in universities with limited resources?
7. What strategies can be used for competence-based curriculum development?
8. How to go from the competence-based curriculum to lesson plans and (active/argumentative) learning?

That is quite a list already, but if you have a pressing question which is not listed here, I invite you to pose this question at the end of my presentation, or after the session in the break.

### **1. So, the first question. Why competence-based education?**

The main reason for competence-based education is the alignment with needs in society, a sector, a region, a community, or a company. It intends to give graduates access to the world of work. It also wants to enable them to have added value for the economy, and to ensure them a good livelihood (in terms of self employment, employment in a farm or other organizations, or as an independent entrepreneur).

### **2. What is competence-based education?**

Competence development is a key educational philosophy. Competence is the core concept in this philosophy. What does that mean? There are many definitions of this concept circulating. In my opinion competence means the capability to perform actions which add value. A competent university graduate is able to perform effectively in his or her profession. That performance is not only about knowledge, but also about skills and attitudes. Let me give two examples. First of all from the field of crime. Picture a crime scene investigation, in which an laboratory assistant has to make a DNA profile of a piece of evidence. The assistant needs to have the appropriate knowledge to do this, but also the necessary skills to handle the equipment and the evidence so to not damage traces with the DNA material. The assistant also needs to do this with the right attitude (such as integrity, accuracy and the

ability to do the job under pressure), since a lot is at stake. The results may be decisive in a verdict and lead to a serious sentence.

Or let us take another example, of a floriculture entrepreneur. When a flower grower is going to take an important decision about an investment to enlarge the flower farm, or to buy an expensive but more sustainable energy conservation system, he needs the knowledge about these innovations. But not only that. He also needs the skills to effectively communicate his ideas with his partners, investors, experts or consultants. And he also needs to do this with the right attitude. He should convince his partners that the investment is worth the risk, and to use the right timing. For innovations to become profitable, entrepreneurs should use the opportunities at the right moment, not too early, but also not too late.

There are many lists of competencies, and there is a lot of research behind them (see for instance the great eight of Bartram, 2004). Basically there are the competencies which are behavior oriented (such as interaction competence, stress management, independency, self management, etc.) and task oriented (such as being able to supervise a greenhouse, integrated pest management, manage a flower farm, etcetera). Both types of competencies are important to achieve in my opinion.

### **3. How is competence-based education related to outcome-based education?**

Well, the needs of the sector (floriculture), an occupation (researcher, fertigation manager) are important inputs for the curriculum making process. Jobs are being analyzed, tasks are being reviewed and the question then is, what do students need to be able to be effective in those jobs and to be able to perform the essential tasks and solve rising problems.

It is different from the traditional input-driven educational development. In that kind of educational development teachers and experts determined the content of the curriculum by their own. There was a strong unilaterally science-driven approach. That led to overloaded and very often irrelevant programs. The teacher and the subject matter was the center of the education process. Graduates knew a lot, but could not always apply their knowledge in practice. And this application of knowledge is essential if we want to bring about change and development.

In competence-based education, a variety of outcome-based education, outcomes that are relevant for socio-economic development are leading. So teaching the students the necessary knowledge is not enough, they also need to learn to apply this knowledge in specific working situations. To enable this, more practice-oriented learning is needed, which takes place within the university, but which should also take place in internships, field trips, practicals, and the like.

### **4. What are the principles of competence-based education?**

We have distinguished eight principles which characterize good competence-based education. I will shortly mention and describe these principles.

1. The competencies that are basis for the curriculum are defined.

This principle means that a job competence profile is put together with participation of actors in the sector and occupation, and that this profile is frequently aligned with regional and local actors in practice, including and reviewed against the major trends. This job competence profile has been used during the (re)design of the curriculum. In an academic program one may have to deal with various occupational fields, from research to management, to teaching to extension. Then the program has to accommodate the variety of these occupational fields by internal differentiation based on interests of students in the program.

2. Vocational core problems are the organising unit for (re)designing the curriculum

This principle means that core professional problems or essential responsibilities and tasks in the occupations have been specified and that these are leading for the (re)design of the whole curriculum of a training program.

3. Competence-development of students is assessed frequently (before, during and after the learning process).

This principle implies that assessment of the experiences of students is done before they enter a program or even a course, during the courses, and at the end of the courses or at the end of a semester, year or program. Assessment at the entrance of a program can help to accommodate the study trajectory or even learning tasks for the individual student. Assessment during the courses is taking place all the time, and helps the teacher to fine-tune feedback and next learning steps for the students. Assessment after the course is also taking place already, because those are the exams. Competence-based assessments however may be of a different nature than the traditional paper-and-pencil exams.

4. Learning activities take place in several authentic situations.

This principle means that learning activities take place in a diversity of authentic settings (which means: in practice) as much as possible. These learning activities should be clearly related with the theoretical learning activities in the classrooms. This kind of practical learning increases the practical experience of students which can increase their motivation significantly.

5. In learning and assessment processes knowledge, skills and attitudes are integrated.

This principle means that graduates will perform learning tasks in which they will develop theoretical knowledge, practical skills and working attitudes together. These three aspects of competence will

have to come back in the curriculum design process, in the learning process and during the assessment.

6. Self-responsibility and (self)reflection of students are stimulated.

This principle means that students are responsible for their own learning process based on their own learning needs. Approaching students in this way, as self-responsible adults, will increase their ownership of the educational program and their motivation.

7. Teachers both in schools and practice fulfil their roles as coach and expert in balance.

This principle means that teachers stimulate students to formulate learning needs and to manage their own learning processes based on careful self reflection. For many teachers this is not easy, since they are trained as stand-up deliverers of knowledge. Much research has shown that plenary instruction for large groups is not always very effective. How to change this, to act as coach, within programs with limited resources, is not easy, but certainly feasible in my opinion.

8. A basis is realised for a lifelong learning attitude for students.

This principle means that during the educational program learning skills and (labor) identity are developed, that reflection on the future career of the students has taken place, and the willingness for further professional development is a natural given. The diploma of an MSc, or BSc should not be perceived as the license to perform for a life-time, but that it is just the entry point for a further life-time learning itinerary.<sup>1</sup>

## 5. What promise does competence-based education have for Africa?

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<sup>1</sup> Basically we are thus distinguishing four elements of competence-based education, which all belong together:

- a. The Curriculum element about what to teach and learn? What to teach and learn should be relevant. (I will use the metaphor of the Ethiopian national flag here, and would say that this constitutes the Green element)
- b. The Learning and Instruction element on how to support the learning of the students. Here we need activating and argumentative teaching approaches and Learner-centered education. (The yellow element)
- c. The Organisation element of the learning, mainly about giving students opportunities for self-responsibility and cooperation with the sector about the practical part of the program, which will enable good internship places, practicals, community-oriented projects, site visits, guest lectures, etcetera. (The red element)
- d. The fourth and last element last cornerstone: the Competence Assessment element, which needs to answer the question how good students master the core competencies of the program? The Pyramid of Miller can be used here (the Blue element; together that makes the total flag; the metaphor is that if you change one element, or one colour, you change the whole education system, or the flag).

In my opinion the same as in other countries: a more relevant curriculum. Graduates who are better prepared. Professionals who are adding more value to development. And university, college and training programs which are more satisfying for students, teachers and potential employers.

The competence trail, if I may call it that way, goes around the world. There are many projects on this way of education Africa-wide, in Asia, Australia, the Southern Americas and Europe. It is not just a Dutch (let alone a Wageningen) invention. Recently, a conference was held in Rwanda, in which a PhD student of mine, Wybe van Halsema took the lead. His PhD research topic is to what extent competence-based education is a commodity that serves or does not serve African society, in all its diversity. He studies education projects like ours here at Jimma University in various countries, in which he has been the education specialist. We expect his results in about three years. A PhD graduate from Wageningen, Paul Kibwika, presented his thesis there, which was on the change of higher education towards more relevance. Also a project partner from our project in Uganda presented our project on competence-based floriculture training there. Around the globe, many educational designers use this or comparable design strategies nowadays.

Evaluations show that various practices are being implemented behind the phrase competence-based education. That is also why we developed the principles of competence-based education, to help program teams determine the extent to which their educational program is competence-based, and what development priorities they want to set in that respect.

No educational innovation goes without criticism. This also holds for the competence-based education philosophy. Together with colleagues we have made overviews of the critiques. We have published this in the Journal of Vocational Education and Training. Some of the fears are about diminishing the scientific part of the curriculum, diminishing the contact hours with students, let them on their own and solve their problems without any quality feedback, adding a lot to the bureaucracy of education, by filling out all kinds of competence forms, the costs of this innovation, the lacking capacity for competence assessment by teachers and representatives from the world of work, etc. To all these points of critique we have said: 'It is good to be aware of them, and it is possible to overcome them, if you pay the right attention to them'. After all, keeping the traditional kind of teaching is also no solution, that also goes with plenty of bureaucracy, lack of quality, and dissatisfaction on the side of students, teachers, administrators, governors, politicians, employers and other stakeholders.

#### 6. Is competence-based education possible in universities with limited resources (large groups)?

This is probably the most difficult question, but I would not be too negative about it. For: resources are always limited. Of course the comparison is not completely just, but there is also a lot of dissatisfaction with the educational resources in the Netherlands. Some of the project partners have been trained in the Training of Trainers program in the Netherlands, and have seen the facilities of the PTC+ and the University. Personally I would say they are in a quite good condition, but within PTC, Wageningen University, and all other educational organizations, there are loud complaints about the teacher salaries, budgets for programs, and resources for innovation. So, I think that the limitation of resources is not the key

problem here. The key is to imagine better programs and improved ways of teaching, in the interest of the working generations of tomorrow, the students of today.

7. What strategies can be used for competence-based curriculum development?

This in fact is an extensive question, and I can only briefly go into this. Let me give a short summary of what we have done in the project on the redesign of the MSC curriculum on horticulture here at JUCAVM.

- a. First of all we conducted an informal curriculum evaluation with key representatives of the horticulture program. For JUCAVM has been teaching this program already. Several points of attention and suggestions for improvement were identified and documented.
- b. Also stakeholders were identified, such as producers, the export association, research institutes, governmental bodies, ngos.
- c. Various representatives of these stakeholder categories were identified and selected for site visits and interviews. We called this the needs assessment, basically it is the review of future tasks and competencies of MSc alumni in the organizations these persons represent. This led to occupational profiles and competence lists. A labour market analysis was incorporated in this study.
- d. Also, opinions of expert were collected via interviews and literature study, and model practices were detected.
- e. A further literature analysis was done to see what is going around in the field of horticulture training and development.
- f. The next step in the methodology is to have an invited curriculum deliberation about the proposals, with sector and education quality issues as background information (which is the national curriculum workshop of today).
- g. Then we envisage continuous interactive alignment with stakeholder needs and preferences. This will be established by the staff of JUCAVM.

Of course, many variations are possible on this model. I have tested many of them, and even did my dissertation on the effectiveness of informed curriculum deliberation. And if the results would have been disappointing, I would not have engaged in this part of the strategy of course.

8. Finally, how to go from the competence-based curriculum to lesson plans and active/argumentative/student-centered learning. I would just like to repeat that this way of learning adds to the motivation of the students. We have to not see the student population as mute children, they are grown-up, have their own opinion, have good suggestions, and are different than us – at least me - who grew up decades ago.

For this, PTC+ in cooperation with teaching staff of JUCAVM have developed teaching guides and selected and even developed learning materials. This is an ongoing process as you may understand. But at present, the whole curriculum is drafted, thanks to the many efforts of Ms Corine van

der Heide, who unfortunately has left to project to pursue a career as geography teacher, the Curriculum Development Team and other staff from JUCAVM. Also, the teaching guides are underway. In participatory workshops, the Training of Trainer participants are made aware of interactive teaching methods, and they have practiced these. Also, this is an ongoing process of professional development. The first results are being implemented already, in student projects and other courses, which is very rewarding to notice.

Ladies and gentlemen, let me summarize my contribution and give a short outlook on the next steps in the project we are doing.

I have tried to give you an overview of the ins and outs of competence-based education. I maintain that it is a promising educational innovation, provided that it is really competence-based, and not just a phrase. That can be clarified by applying the principles of competence-based education to the program. Until now I believe that the horticulture program of JUCAVM will benefit from this approach. Of course we will have to wait a couple of years to see whether this innovation is sustainable and indeed effective, but I have all trust in that.

Regarding the next steps, I will be short and then end my presentation. We will:

- Design and implement a quality management and development program.
- Part of this will be an integrated evaluation system (course, semester, year, program, by teachers, students, alumni and other external stakeholders)
- We will develop a BSc-program: this program will be more practical than the MSc program. The MSc program should also lead to a qualification as researcher and a qualification to enter a PhD trajectory abroad. Contact with the Plant Sciences Group (PSG) and the respective Graduate School, the Graduate School for Experimental Plant Sciences (EPS) of Wageningen University and Research Center seems to be essential here. The BSc program should prepare for managerial jobs in farms and other relevant organizations. It should also prepare for entrepreneurship. As I said, JUCAVM already has a flourishing BSc program on horticulture, so we will have to carefully look at how to redesign this curriculum. This is a short-term priority.
- Parallel to this, a lot of attention is being paid to short practical courses for workers at farms and other interested persons. This should be arranged in such a way that trainees can build up a portfolio that gives them the opportunity to get a certificate or diploma qualification with exemptions. Models for the accreditation of prior learning and competence assessment can help to achieve this. Needless to say that intensive interaction for this is needed between all stakeholders

Why are we doing all this and conduct the whole project? For me that is obvious: to serve the needs of all stakeholders, the sector and whole Ethiopia.



Thank you for your attention. Thank you very much.