

Competence-Based Education as an Innovation in East-Africa

Prof. Martin Mulder, PhD

Head Chair Group of Education and Competence Studies
Wageningen University, Social Sciences Group – bode 68
PO Box 8130, NL-6700 EW Wageningen
Hollandseweg 1, building 201, 6706 KN Wageningen, office 4022
Netherlands
Phone: + 31 317 48 41 81; Fax: + 31 317 48 45 73; Mobile: + 31 6 20 677 340
Email: martin.mulder@wur.nl; Internet: www.ecs.wur.nl; Internet: www.mmulder.nl

Ir. Hansje Eppink

Wageningen University
Chair Group of Education and Competence Studies
hansje.eppink@wur.nl

Ir. Leonoor Akkermans

CINOP
's- Hertogenbosch
Netherlands
LAkkermans@cinop.nl
and formerly
Wageningen University
Chair Group of Education and Competence Studies

1. Introduction

Competence-based education has received a lot of attention in research and practice in Europe during the last decade. This education concept had not only entered the professional dialogue about educational innovation, but also the *acquis communautaire*. In 2008 the European Parliament approved the Recommendation regarding the European Qualification Framework (EQF), which is a reference framework for the national qualification frameworks of member states of the EU. Competence in the EQF ‘... means the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. In the context of the European Qualifications Framework, competence is described in terms of responsibility and autonomy.’

(http://europa.eu/legislation_summaries/education_training_youth/vocational_training/c11104_en.htm; 24-08-2011). There are lots of comments on this view on competence, basically on the point that competence is regarded to be the broad combination of knowledge, skills and attitudes which are necessary for effective performance, but we will let these comments rest here. The most important point regarding the EQF in relationship to our study is that the concept of competence is institutionalized. Within the EU this concept is also used for institutional rights of the EU-organisations; in this respect the EU speaks about the EU

competences (e.g. the competence of the European Court of Justice, or of the Committee of the Regions). Institutionalization of the competence-based education philosophy is also established in various national qualification frameworks, such as in the United Kingdom, the Republic of Ireland, Germany and the Netherlands. But also beyond the European scope, the competence-based education philosophy became quite popular, which went hand-in-hand with the vision about outcome-based education. The approach is not new and un-debated to say the least. Nevertheless, various international development organisations and consultancy firms have taken the competence-approach on board and are using it in their capacity development strategy and activities in Latin-America, Asia and African, in certain cases going beyond the cultural, judicial and socio-economic limitations.

The objective of this paper is to study the introduction of competence-based learning in higher education institutes in two East-African countries, Uganda and Ethiopia, and to evaluate the effectiveness of principles for competence-based higher education in the case of Uganda by looking into stakeholders' perceptions and labour market effects. Curricula with three educational institutions were developed. A strong emphasis was put on learning in authentic working situations. Various internships were planned throughout the programs.

The research questions in this study are:

1. *How do the various stakeholders perceive the implementation of competence-based learning, and*
2. *To what extent does this learning approach influence labour market entry and career perspectives of graduates?*

From a wider perspective, this study is part of a sector development project in the countries mentioned above (Mulder & Gulikers, 2011). The stakeholders in this project have an interest in the development of the sector to increase employment, income generation, the gross domestic product, and inflow of foreign currency.

The study is also part of a series of projects in the field of education development cooperation worldwide in which the applicability of principles for quality competence-based education is tested. Apart from labour market effects, special attention is given to health, gender and empowerment issues in these projects.

The sector concerned is floriculture in Uganda and horticulture (including floriculture) in Ethiopia. Large quantities of produce from these sectors are being exported to Europe in closed (cool) supply chains. Most of this is being traded via flower and food auctions in Western-Europe. The auctions in the Netherlands have a world-wide reputation in the flowers and plants business. They process 12 billion flowers and plants annually, with a total turnover of over 3,8 billion Euros; on a daily basis 20,000 different varieties are being traded.¹

2. Theoretical framework

As stated, the competence-based education movement is not new. Until recently there were only references to the American literature as far as the origins of competence- or competency-based education was concerned. But by coincidence we found a report (Reading, 1910) in

¹ www.floraholland.nl (09-03-2011)

which the notion of competence of farmers, school and teachers is used in different places. But competence-based education indeed started in the United States, especially to make educational programs more relevant for society (Grant et al, 1979). After severe criticisms new approaches on competence-based education were developed, especially inspired by studies on competence-profiles for top-performers (Boyatzis, 1982), the core competence of the organisation (Pralhad & Hamel, 1990) and Bartram (2005). To mark the differences in the approaches of competence development we differentiate between three levels of use of the concept, related to training, education and development. These three levels are: 1. functionalistic behaviorism, as in the competency-oriented training approaches in the seventies in the United States, which was also used in teacher training (e.g. Arends, Masla & Weber, 1971); the emphasis is on observable behavior and performance that students need to show to demonstrate that they master the detailed pre-defined competencies; 2. integrated occupationalism, as in competence-based vocational education in various countries, in which the attempt is to integrate knowledge, skills and attitudes in the learning process, and to use more comprehensive and authentic assessments to determine the mastery of larger parts of a vocation or profession (Wesselink, 2010); 3. situated professionalism, which is equivalent to professional development in authentic working contexts, in which job holders learn from practice (Eraut, 2011).

Practically all literature on competence development is about human resources or education in western societies, apart from the topic on intercultural competence. However, there is a growing of body of educational research in Eastern-Africa (Teferra, Dalelo and Kassaye, 2009).

But, attention for competence development in research is still limited, as the emphasis in education at least in Uganda and Ethiopia is on general education. All children should attend primary education and as many pupils should subsequently attend secondary education². However, attention for Technical-Vocational Education and Training (TVET), the apprenticeship system and workplace learning is increasing. Various international development programs use a competence-development approach, but they are not all successful and uncontroversial (Arguelles and Gonczi, 2000; Van Halsema, 2008).

It is remarkable that literature on extension is hardly used in the field of competence development and workplace learning, whereas it is a dominant field of practice in many developing countries. Grown from the field of adult learning, agricultural extension is well-known for its systems, professionals, strategies and practices. The field has its own societies, conferences and journals. An overview of the field is given by Van den Ban and Hawkins (1996), but also other authors actively contributed to the nature and position of agricultural extension (e.g. Swanson, 2006; Birner, 2009; Rivera, 2009). Being mainly focused on the development of sustainable workplace learning of farmers, much attention has been given to the multiple-stakeholder approach of social learning recently (Wals, 2007).

There is a strong feeling in the field of extension that sector development should be focused on informal and practical learning which leads to short and medium term income generation and poverty alleviation. Practical and social workplace learning of all stakeholders play an important role in development projects described in this contribution.

As mentioned above, education and learning in Uganda and Ethiopia is mainly of general nature. There is only limited attention for work-related competence development. This holds

² see the Education for All program of UNESCO: <http://www.unesco.org/en/efa/> (retrieved July 19, 2010)

for the primary and secondary level of education, but also for higher education. The emphasis on general education is related to the labour market structure. Many graduates pursue a position in governmental organizations in which they have a certain level of income security and employment protection; this is different in the private sector in which the labour market is considerably smaller and riskier. The largest part of the private economy is also informal, household or small-holder driven.

The effect of this is that graduates from higher education are knowledgeable about certain content matter areas, but that they are not really equipped with know-how to apply knowledge in practice. This limits their socio-economic potential.

The very essence of competence-movement in education is to equip students with knowledge, skills and professional attitudes which they can and learn to apply in authentic workplace contexts. Various researchers (Mulder, Lans, Verstegen, Biemans & Meijer, 2007; Mulder, Weigel and Collins 2007; Biemans, et al, 2004; Biemans, et al, 2009; Brinkman, et al 2007; Du Chatenier, 2007; Eraut, 2009; Hughes and Cairns, 2009; Karbasioun, et al, 2007; Lans, 2009; Lans, et al, 2009) have pointed at the essence, strengths, challenges and pitfalls of the concept of competence-based education and learning. The international critiques on the concepts and practices of competence-based education have resulted in using adjectives like 'holistic', 'new', 'integrative' or 'comprehensive' competence. These attempts have in common that the notion of competence-based education means that students are supported to acquire broad capabilities to perform in jobs and function in society according to set standards and expectations. This includes personal development, preparation for participation in life-long learning, and citizenship. Since the term competence-based education is so broad and differently defined, following Malloch and Cairns (2010), it might be good to use the term capability-oriented education, but it is questionable if this solves the problem of conceptual unclarity. In international education development cooperation the term capacity development is also very popular. All these terms (competence, capability and capacity development) have in common that they want to express that knowledge acquisition should be expanded by skills and attitude development, that competence refers to an integrative capability to perform tasks in jobs or professions, according to a set of standards and expectations.

In workplace education and learning competence refers to the minimum level of mastery needed in a certain sector of society or the economy. This implies that there is a large room for expanding professional expertise in the direction of excellence and even brilliance. In education capability-oriented education most frequently is used for referring to individual expertise. However, there are also higher levels of aggregation on which the concept of competence is being used, such as teams, work units, departments, organizations, regions, cities, and even nations.

Wesselink (2010) and her co-workers have developed a matrix of comprehensive competence-based vocational education, which consists of eight principles and four implementation levels. The combined set of principles should contribute to the development of quality vocational or professional education. Sturing (2008) recently expanded the matrix in her PhD-project and made it more specific for the current context of competence-based vocational education. The principles which are included in the matrix are essentially principles for qualitatively good vocational education and training.

The notions of professional development, multi-stakeholder social learning, and the principles of competence-based education have been employed during the study which is reported in this paper.

3. Methods and techniques

Curricula of three educational institutions were developed and implemented based on labour market research and task analysis. These institutions are the Mountains of the Moon University (MMU) in Fort Portal and Bukalasa Agricultural College (BAC) in Wobulenzi, both in Uganda, and the Jimma University College of Agriculture and Veterinary Medicine (JUCAVM) in Ethiopia. MMU is a young private university, whereas BAC is a public school for secondary agricultural-vocational education. With MMU and BAC new (2-year) Diploma and (1-year) Certificate level education programs were developed in the field of Floriculture. This development project started in 2006, and finished in the summer of 2010. With JUCAVM a new Master of Science program on Horticulture was developed, and an existing Bachelor of Science Horticulture was re-designed. This project started in 2007 and will last until 2011. The curriculum development methodology in these three cases was similar. A small number of staff of the institutions has been trained in the principles of competence-based education and learning in the Netherlands. The course they took lasted several weeks, and existed for the larger part of content-oriented information and extension. Experts in the field of competence-based workplace education and learning travelled frequently to the three locations to give workshops and to cooperate with the local staff. The missions were preceded by the joint development of Terms of Agreement, so that – ideally – both parties were well-prepared for the events to happen. The first students of the Diploma course in Uganda started in September 2007. The start of the Certificate course started later because the institutions doubted whether they should start this course parallel to the Diploma course. After a long period of deliberations the first group of Certificate students started in spring 2010 (in BAC). The first MSc students in JUCAVM started in 2008. The redesigned BSc course started in 2009.

As mentioned, theoretically founded principles for competence-based curriculum (re-) design were employed. The programs were evaluated using qualitative interviews with students, interns, graduates, internship supervisors, employers and teachers. Topic lists and pre-structured questionnaires were used for the interviews.

4. Data sources and materials

Data were collected about the labour market needs, tasks of workers, labour market entry of graduates, the perceptions of the various stakeholders with the training programs, the workplace learning component and its effects, and the sustainability of the workplace learning approach. Data was analyzed using descriptive quantitative and qualitative analysis techniques.

Labour market analysis (in Ethiopia) was conducted using a weighted stratified sampling matrix based on the flow of graduates to the labour market. Proportionate numbers of interviews were held with representatives of the employment categories, such as primary producers, processing companies, extension agencies, governmental agencies, educational institutions, research institutes, and non-governmental organizations. Labour market needs in Uganda were analyzed by desk research.

Tasks of workers in the sector were analyzed by site visits and in-depth interviews. In certain cases job descriptions were shared, but these cases were rare. The task list was categorized by

type of jobs, and results of every interview were assimilated in a task overview (job profile). The tasks lists were completed with an overview of key competencies which were regarded as essential by the interviewees. The final product was shared with the response-group, but only a limited number of reactions were received (-mobile- telephone communication is difficult, post is slow or ineffective, email is often not available).

Interns were asked fourteen questions about the following topics: how many internships they took; for how many weeks/months; the location of their internship(s); the level of satisfaction with the internship; the quality of the communication between teachers and internship supervisors; the information of internship supervisor about what competencies the interns needed to develop; the match between the expectations of teachers and of internship supervisors; the opportunity to do the tasks their teachers expected them to do; the activity(ies)/responsibility(ies) of which they learned most; the extent to which they explicitly worked on developing their competencies; the competencies they needed to be successful during their internship; the support of the teacher; The internship supervisor gave support during my internship; the level of interest of the supervisor in the curriculum; the way the assessment took place.

The graduates were asked a series of questions, part of which were also asked to students. The questions were about the following topics. There were questions on background information, including a question about what had triggered the graduate to subscribe to the program as a student; what the pre-assumptions were regarding the program; their awareness of the fact that the program would be a competence-based. Next they were asked a series of questions, regarding: whether they passed the program; how long this took; what the marks were of the students; reasons for not passing the program; satisfaction with the program; the experiences balance between theory and practice; their description of the practical activities in the program; the extent to which the program gave a good idea of what the job and tasks of a supervisor/manager at a flower farm entails; their view on the effect of the competence-based program on themselves; competencies did developed during your competence-based curriculum; aspects of the program that had most impact; elements in the curriculum they disliked; opportunities they got to change the diploma course program; hurdles experienced during the diploma course program; their opinion to keep the program competence-based; the program fee; the maximum feel level they would be willing to pay. The following topics were included in questions about their current job: the activities they did after they finished the study program; how easy or difficult it was to find a job; how long it took to find a job; the name of the company were they were employed; the title of their job; the kind of activities/responsibilities they get in their job; the transition from your education to work; the extent to which they can develop in their current job; the opportunity to learn new things; their ambitions?

Internship supervisors were partly asked the same questions as the employers. Other questions for them were about the following topics: their supervision of students; their satisfaction with the students and graduates; activities given to the intern; the amount of observing, co-working or independent work by the intern; the amount of supervisory/managerial tasks performed by the intern; kinds of responsibilities given to the intern; the extent to which the interns could deal with their responsibility; their perceived differences between interns from this competence-based programs and those from other programs; the extent to which this had an influence on the tasks/responsibilities they received; the way in which support was given to the interns (discussing competencies, formulating learning goals, answering questions, reflection and evaluation meetings); the extent to which they experienced difficulties with

supporting the interns; the way in which they assessed the interns; the extent to which the internship supervisor is interested in having new interns from the programs.

Employers (general managers or owners) were asked fourteen questions. First they were asked whether it was correct that some of their employees graduated from the floriculture diploma course of the partner institutes. They were also asked whether they were aware of the fact that this program was a competence-based educational program, and how they would define a competence-based education program, and what characteristics they saw as being important in a competence-based curriculum. Next various questions were asked about the graduates: how long they were working at their organization; whether the graduates were properly prepared to work at their flower farm and whether they could smoothly start working; whether they are working as a supervisor or manager; whether they were competent to work as a supervisor or manager at the flower farm; competencies they have, and competencies they are they lacking; the professional attitude of the graduates; the general satisfaction with the graduates; whether they saw a difference between these graduates and other employees; whether the graduates were missing any knowledge of skills; whether they were interested in hiring one or more of those graduates; whether they were involved in the development of the competence-based curriculum at the educational institution; their satisfaction with their relationship with the educational institution.

The interviews with the teachers consisted of twenty-one questions. Apart from a number of background variables regarding the teachers, questions were asked about the following topics: the extent to which they felt they understood the various aspects of a competence-based curriculum; their definition of competence-based education; their opinion about the most important characteristics of a competence-based curriculum; their satisfaction with the program; the aspects of the curriculum they appreciated and depreciated; the balance (ratio) between theory and practice in the program; their description of the practical activities in the program; their opinion about the extent to which the program offered students a good picture of what the job and tasks of a supervisor/manager at a flower farm entails; their perception regarding their ability to design educational or training programmes connected to the demands and tendencies in the labour market and society; whether the competence-based education program as learned during the project was relevant for their own context; their perception regarding their ability to implement CBL successfully; their feeling about the question whether the curriculum had a positive effect on students; the effects of the program they saw on students; observed differences between students who did and did not follow the competence-based program; the competencies students develop during the program; hurdles experienced during the implementation of the program; the way the program changed their teaching; the way in which the relationship/communication/collaboration the flower farms changed due to the program; their satisfaction with their relationship with the flower farms; the use the evaluation and quality assurance system; and the opportunities for changing the CBL program.

The labour market entry of the first fifteen graduates of the first Diploma group (from BAC) was studied in-depth by visiting all employers of the thirteen graduates who were working in flower farms after graduation. These graduates could be traced via the Uganda Flower Exporters Association (UFEA) in Kampala, the employer association which coordinated the project in Uganda. The UFEA places the interns in workplace learning places for both MMU and BAC.

Other stakeholders were: the employers, the management of the educational institutes and the teachers. They were all interviewed during different missions. Reports were written and agreed after each mission.

5. Results and conclusions

In this section the results and conclusions of the research will be presented. First the results of the labour market research are described. Next the research results on the occupational profiles of the workers will be presented. In the next section the stakeholder perceptions of the study program will be elaborated. After that the impact of the educational program on employment will be described. Finally the conclusions of the study will be presented.

5.1 Labour market research

Labour market needs were studied in Uganda and Ethiopia. In Uganda the quantitative data were derived from sector studies which indicated that the floriculture sector was expanding and that more trained workers were needed. In the case of Ethiopia primary data were collected.

As stated interviews were held with employers of the graduates. Data collection appeared to be very difficult. It was advised by the educational institutions not to include farms in the sample that were visited recently in the framework of the national Business Process Review (BPR) in order to prevent 'respondent fatigue'. Therefore we focused on organizations that were not yet (enough) covered in earlier research: vegetable and fruit farms, processing companies and development organizations.

National data on employment in the horticultural sector is unfortunately not (yet) available. The Horticulture Development Agency is currently conducting a quantitative research, covering the flower, fruit and vegetable farms.

To collect data from farmers site visits were needed. Organized appointments upfront were practically impossible because of the frequent inaccessibility or absence of internet for email communication and interrupted availability of the mobile communication networks. Because farms are in rural areas, long drives were necessary to visit the farms. This consumed a lot of time and quite often resulted in only making an appointment for an interview which would then take place during the second visit. In some cases the second visit was not effective because of the fact that the key informant was not present. Regarding corporate visits in the food processing sector and visits to public employers the interesting situation was that respondents had difficulties in predicting the development of labour needed because this is in most cases decided in the head offices in Addis Ababa. Decentralized units do not have information about the employment plants in the organizations.

It must be noted that the sample of the interviews was limited and that preference was given to certain disciplines and geographic regions; this may have influenced the results of the research. Furthermore, the experiences of the labour market with respect to the graduates they currently employ, are not easily comparable with the new graduates. Therefore, the gaps that were identified in the competencies of the graduates do not necessarily reflect the gaps in the current curriculum. Furthermore, most of the quantitative data for the longer term is based on estimations since hard data is often not available. Last, it is often hard to compare the data of different organizations since they use different criteria. For those reasons it is difficult to draw valid conclusions out of the quantitative data on employment needs.

Labour market analysis Ethiopia

Eventually, twenty-three interviews were conducted on farms, processing companies, departments of Ministries, research institutes and development organizations. The interviewees were asked to answer questions about the relevant occupations and jobs for BSc graduates at their organization, the current needs concerning employees, their plans for expansion both in size as in new disciplines and replacement expectations. Also, they could give comments on the current curriculum based on a list of the courses. Furthermore, they were asked to prioritize the tasks of a draft occupational profile. Some organizations could supply written job descriptions that helped to design the occupational profile. In the interviews, companies were asked for their cooperation in the supply of internship places and if possible per diem and/or accommodation.

Next to this eight organizations were consulted by email with similar questions. A graduate survey will be carried out by the educational institution, which can serve as a continuous method of quality assurance. Results of the analysis were discussed during a meeting with representatives of the labour market.

Sector development

Within the horticultural sector there are several trends that affect the labour force for certain horticultural products.

In Ethiopia most farms used to be owned by the state. Nowadays more and more land is sold or hired to private entrepreneurs, mostly foreign investors. Where most of the food for own consumption or the local market is still produced by smallholders, the commercial farms focus mainly on export.

The flower industry, especially roses, has been a booming business in Ethiopia. Around Addis Ababa and Debre Zeyit large greenhouses were emerging, often with very advanced computer systems. There are also farms that go beyond one specific sector.

The flower farms create jobs for many especially unskilled workers. Most of the interviewed farm managers were each employing between 200 and 400 persons in total of which only 1 to 5 were BSc-graduates. One farm even employed around 1100 people. In 2008, the sales of flowers began to decrease due to the economic crisis. Therefore, flower farm managers were looking for expansion areas within the flower industry next to production, such as breeding and research. This shift would imply labour force needs at a higher skills level. One rose farm cooperates with Wageningen UR, and another one provides the opportunity for other entrepreneurs from all over the world to perform farm trials.

As for flowers, certification such as GlobalGAP (this is an international code for Good Agricultural Practices in farm management which is being applied by various farms) and Fair Trade (one of the food processing companies in this study was applying for this) is becoming of increased importance for the export market. Some farms will specialize more in processing and marketing rather than only production. There was only one flower farm that applied integrated pest control. Quality control received increased attention due to stricter regulations or certification criteria of the importing countries.

BSc-graduates can be employed at the flower farms as supervisors or managers for a certain division (for example production, spraying, packaging, trials). For the flower industry it can be concluded that the labour force for BSc graduates will remain stable but the subjects that are most important might change.

Vegetable and fruit production for export is relatively new in Ethiopia but has good perspectives for export to Europe and the Middle East. Recently, large farms have been established and they are still expanding. For vegetables, the focus is mostly on pulses (peas, green beans, sugar snaps), pepper, baby maize and cabbage for export, and tomatoes and

onions for the local market. Where fruit production in the past focused mainly on tropical fruits for the local and international market (including mangoes, papaya, bananas, and pineapples) on a small scale, the attention shifts to temperate fruits such as table and wine grapes, apples, avocados and strawberry for export. Also passion fruit and citrus are now produced as tropical fruits for the export market.

It is expected that the labour force as a whole in this sector will increase due to growing and newly established farms. The amount of BSc-graduates among them however is generally small. One of the organizations in Debre Zeyit has over 800 employees of which fifteen are BSc-graduates. The other farms employ only between one and five BSc-graduates in horticulture or with a similar background.

Spices are a relatively small business and the labour force will most likely have a slight growth but mainly at production level for unskilled workers. Spice-growing is mostly done by smallholders especially in the south of Ethiopia or combined with fruits and vegetables on a commercial farm.

Coffee production is very important for Ethiopia (as the country in which making coffee was invented) because of its big size, especially in the Western part of Ethiopia. For example Limu has seven farms, 4,000 employees and 10,000-20,000 seasonal workers. Out of them an estimated thirty to forty are BSc-graduates with a degree in horticulture or a similar field. In Addis, 200-250 staff members work for a coffee production development enterprise. For new BSc-employees this company uses two hiring approaches: the first is to provide training for Diploma-holders to become BSc-graduate; the policy is to upgrade ten persons a year in this way. The other option is to recruit new BSc-holders from the market. The replacement of BSc staff is generally low so it is expected that most of the new staff is recruited with diploma level. It is expected that the sector will remain stable.

Tea production is relatively big in Ethiopia but the plantations are in remote areas. Therefore, not much focus attention has been given to tea and no tea plantations or processing companies have been visited. It is expected that this sector will remain stable.

A fact which complicates extrapolation of present labour market and sector data is that there is no linear relationship between the growth of the sector and the demand for BSc-graduates. Some farm managers were mentioning that they would rather hire BSc-graduates or diploma holders from other disciplines than horticulture or workers who do not have a degree but passed grade twelve. It was stated that those workers receive in-house training and are generally more committed to stay for a longer period of time than BSc-graduates in horticulture who are offered several jobs and tend to leave soon to another company that is paying higher salaries. Other farm managers mentioned that working experience and performance level is more important than having the degree. For farm managers on-farm performance and relevant working experience has more weight than educational level. The fact whether a farm is expanding or not thus does not necessarily reflect the need for new employees. Expansion in production often means an increase in the demand of unskilled workers or people at the diploma-level. For BSc-students there are more opportunities if a farm expands in new disciplines, such as breeding, IPM or research.

Processing and quality control

Vegetables and fruits were mainly exported fresh. However, value can be added through processing. Grapes were already processed for some time into wine. Small factories for processing fruit and tomatoes also existed already. One farm which is in hands of Dutch and German entrepreneurs plans to expand processing by producing tomato paste and fruit juice. It is expected that more persons will be hired for this, but on the large scale this will be candidates with a background in food science or engineering rather than horticulture.

Another important discipline is the grading and quality control of coffee and tea. The quality control unit of the coffee quality control in Addis Ababa established seven new laboratories where forty-three bachelors can be employed for research.

Government

Graduates with a background in horticulture will most likely be employed at the Ministry of Agriculture, which also includes rural capacity building. Governmental agencies generally employ people with at least two to three years of working experience and with a BSc-education as minimum requirement. At the department of entomology, however, recently ten people out of sixty are employed as new graduates, just like at the extension department where five out of around thirty are employed just after graduation. Although the need for extension workers and people working at the Ministry of Agriculture seems to be high, it is mentioned by those organizations that they find it very important that graduates have practical experience through working on a farm before they start as a trainer or policy maker.

Extension

New employment needs of the extension service is specified by the budget that is determined by the sub-district. In the Jimma zone, currently 1,000 people are employed as extension professional, of which around $\frac{3}{4}$ have a BSc-degree or above; the rest are diploma-holders. The organization has the policy to employ as much in-service persons as possible and upgrade their education if necessary. In order to train farmers on new technologies, a strong relation with research institutes is necessary.

One extension worker mentioned that the crops in the curriculum often focus on the crops interesting for commercial farms. He pointed at the importance to do research for the indigenous crops such as enset (false banana), occra and anchote. They have most potential for smallholders because of their resistance to drought and pests. It is very crucial to meet the demands of the poor because of its socio-economic importance.

Development organizations

Staff of development organizations are often divided in staff at the head-quarters, who are mostly policy makers, and in the field, who are mostly extension workers. One organization that provides technical assistance throughout the value chain to private sector exporters now employs thirty-five staff of which five are BSc-holders with a background in horticulture or a similar discipline. Another organization employs twenty people of which ten are BSc-graduates. Due to the expansion of projects seven new employees were to be hired extra. Still another organization had 6 persons at the headquarters on issues related to horticulture, but in every district they hire facilitators. In UN organizations like FAO and the Economic Commission for Africa (UNEFA) new graduates can become research-assistants or project-supporters, but they said they generally hire only one or two BSc-graduates from horticulture or related fields per year. The FAO, however, appeared to be interested in having a fellowship with the educational institutions. The development organizations are attractive for graduates because of the high salaries and training opportunities.

Teachers

Teachers with a background in horticulture can be employed at TVET- (technical-vocational education and training) and ATVET- (agricultural technical-vocational education and training) colleges and universities. The ministries of Education and Agriculture determine employment needs in both TVET and ATVET.

Research institutes

The general policy in Ethiopia for public institutes is to upgrade the educational level of employees. This implies a ‘scaling up’ of the educational qualifications for a specific job function. The tasks that Bachelor-graduates are currently carrying out will be taking over by MSc-students. In the same time, tasks that are carried out by diploma-holders may change to become tasks for Bachelor-graduates. The agricultural research institutes decided to hire MSc-graduates only.

Internships

Organizations that were interviewed were asked about the possibility to host students for a field attachment (=internship). Most organizations were enthusiastic about this and were willing to host, supervise and in some cases accommodate about two to four students. However, because of the limitation of the government to pay a per diem, hosts are requested to pay per diem and/or provide accommodation. The education institution wanted to make long-term agreements with companies who are willing to host students to pay the students full per diem or provide accommodation and pay part of the per diem. The producers and export association could take a leading role in the facilitation of internship placements and give training to potential supervisors of the interns. The association (EPHEA) covers flower, fruit and vegetable farms.

5.2 Occupational profiles of workers

Regarding the tasks of workers, an occupational profile analysis was carried out which was aimed at identifying and structuring task and competence areas which could serve as the basis for the curricula of the programs in the projects.

Based on the site visits and in-depth interviews in the projects in Uganda as well as in Ethiopia overviews of different jobs, important areas of responsibility and tasks and activities could be identified and structured in fields. Various job descriptions were shared, but essentially work-processes were studied in workplaces and activities which were performed by workers were analyzed. An important step in the process was the stratification of jobs. In the case of Uganda it appeared that six different jobs could be identified. These six jobs were divided over two levels, a managerial level and a supervisory level. On a managerial level there were two different kinds of jobs: the farm manager, and the production manager. On a supervisory level there were four different jobs: the greenhouse supervisor, the fertigation supervisor, the spraying supervisor, and the post-harvest supervisor. In the case of Ethiopia in total eight different occupations could be identified. These were researchers, trainers/teachers, consultants, extension officers, private investors/entrepreneurs, managers, development workers, and policy makers. These eight different occupations have been put together in three groups because of the fact that many of the tasks and competencies of the occupations were overlapping. Group 1 were researchers, working in a variety of research institutes. Group 2 consisted of occupations that were mainly aimed at collaborative learning and co-constructing knowledge and/or innovative policies and practices. These were trainers/teachers, extension agents, development workers, policy makers, and consultants. Group 3 represented the occupations that strongly relate to managing a business. Identified occupations in this group are managers and private investors/entrepreneurs.

Using the occupational and competence profiles enabled a strong workplace orientation of the education programs. During the curriculum development and subsequent course development and even teaching guide development process deliberate attempts were made to increase the

practical nature of the program as much as possible. This was done by adhering to the principles behind the matrix of competence-based vocational education as developed by Wesselink, 2010).

5.3 Stakeholder perceptions of the study program

From the various educational institutions, at the moment of data collection the Diploma-course students of one agricultural college in Uganda were the only group that graduated at the time of data collection. Therefore the stakeholder perceptions regarding the study program and the employment impact study were limited to the case of the agricultural college in Uganda.

Interns and graduates

During the field work companies of the graduates and interns were visited. In total twenty-one interns and graduates were interviewed. Of these 11 graduates (start September 2007) and 4 interns (start September 2008) came from the agricultural college, and 6 interns (2 start September 2008; 4 start September 2009) were from the university (the university program had not yet finished during the period of data collection).

Table 1 presents the general perception of the interns and graduates who were included in this part of the research. All topics for evaluation were asked using a 5-point Likert-scale, of which 1 was the maximum positive score.

Table 1 Averages of graduate evaluations by course evaluation topic (total n=21)

Evaluation topic	Average
Satisfaction program	2.19
Tasks of supervisor	1.67
Tasks of manager	2.14
Satisfaction with the internship	2.05
Communication teacher-internship supervisor	2.48
Supervisor aware of which competencies needed to be developed	2.43
Expectation teacher and supervisor matched (1-5)	2.19
During internship I was able to develop my competencies	2.00
Teacher gave support during internship	2.10
Supervisor at farm gave support	2.24
Internship supervisor involved and interested in CB program	2.29
Ranking of current job (n=15)	2.00
Total average	2.15

The total average score on all evaluation topics is 2.15. That equals a total satisfaction score of 77/100, which is a good average.

Teaching staff

In total fourteen teachers were interviewed, seven from the agricultural college and seven from the university.

Their understanding of the concept of competence-based education differed significantly. The university staff members who were included stated on average that their understanding was 1.86 (=83/100; good) whereas the college staff members included stated on average that their understanding was 3.14 (=57/100; sufficient). This may be the effect of the involvement of teachers in special Teaching of Trainers which took place in the Netherlands and of participation in workshops and the design of the competence-based program. One of the college staff members included here was participating in the design of the program and the related activities, whereas three of the staff members of the university participated. These three teachers scored their understanding of the principles of competence-based education as maximal.

The satisfaction with the program of all teachers included was 2.07 (=79/100). This score is equal to good. The relevance of the competence-based curriculum was rated high. All teachers rated this as 1.00 (100/100) (data for two teachers are missing). The teachers at the university reported on average quite successful implementation of the program 2.33 (73/100; data from one teacher missing). The teachers of the college did not really answer this question. The teachers from the university stated the program had very positive effects on the students (average 1.00; 100/100). The teachers from the college stated that they do not see a big difference between the competence-based program as it is implemented currently and the other programs they are teaching. Two of the college teachers reported good effects on the students, and one teacher reported that during the project he learned to be a teacher at the course.

The relationships of the university teachers included in the study with the flower farms is poorly developed (average 4.33; 33/100). Most teachers never visit a flower farm, which is related to the fact that most flower farms are around Entebbe, as explained above. Teachers from the college are more positive about their relationship with flower farms (average 3.34; 67/100).

It was striking to see that the college did not have a student evaluation and quality management system in place. The university had a student evaluation system by which courses were evaluated. The respondents however reported that the data were not used by several teachers.

Employers

As indicated above, as many farms as possible were visited to hold interviews with managers and supervisors. In total fifteen farms were visited and interviews were held with twenty-two representatives. These representatives held a range of jobs: (general, location or farm) manager, production manager, cultivation manager, field manager, supervisor, supervisor propagation, and HRM staff worker (see Table 2). One of the respondents was also a project member; she participated in the Training of Trainers in the Netherlands and contributed to the curriculum development. As can be seen in Table 2 the number of graduates employed and the number of interns varied by farm.

Table 2 Evaluations of different farm representatives regarding the competiveness of the program (CB), competence (Comp) and Professional Attitude (ProAtt) of Graduates (Grad) and Interns (Int) and relationships with the college (COLL) and university (UNIV) by farm

Flower farm	Job title of farm representative	Number of graduates employed	Interns/Graduates	CB	Graduate		Intern		Relationship of farm with	
					Comp	ProAtt	Comp	ProAtt	COLL	UNIV
1	Prod mngr	0	Intern	5			2	3	3	3
	Loc mngr		Intern	5			2	2	4	4
	Loc mngr		Intern	5			2	2	4	4
	Loc mngr		Intern	5			2	2	3	3
2	Superv	Farm went bankrupt		3			2	2	4	4
3	HRM staff	5	Grad (COL 1st batch)	2			1	2	2	4
			Grad (COL 1st batch)							
			Grad (COL 1st batch)							
			Grad (COL 1st batch)							
			Grad (COL 1st batch)							
4	Prod mngr	0	Nn	5	2	2	3	2	2	4
	HRM staff			5	2	3	2	2	3	3
5	HRM staff	4	Grad (COL 1st batch)	5	3	1	3	2	4	4
			Grad (COL 1st batch)							
			Grad (UNI 1st batch)							
			Grad (UNI 1st batch)							
6	Cultiv mngr	1	Grad (COL 1st batch)	2	4	2	4	2	4	4
7	HRM staff	0	Int	5					5	5
	Manager		Int	2	2	2	2	2	4	3
	Manager		Int	4	1	1	2	2	5	5
8		1	Grad (COL 1st batch)	4	1	1				
9	Superv prop	2	Grad (COL 1st batch)							
	Prod mngr		Grad (COL 2nd batch)							
10	Superv	0	Int	5			2	2	5	5
11	HRM staff	1	Grad (COL 2nd batch)	4	2	1	3	2,5	2	4
	Prod mngr			4			2,5	2	2	2
12	Field mngr	0	Int	4			2		2	4
13	ToT-participant	1	Grad (COL 1st batch)	2	1	1	1	1	2	2
14	Farm mngr	1	Grad (COL 2nd batch)	3	1	1	2	3	4	4
15	Farm mngr	1	Grad (COL 1st batch)	5	2	2			5	5
Total averages (corrected for partial non-response)				4	1.91	1.55	2.19	2.35	3.45	3.8

The farm representatives were not very well informed about the competence-based nature of the floriculture curriculum (average 4.00; score: 20/100). However, respondents were quite satisfied with the competence level of the graduates (average 1.91; score: 82/100) and their professional attitude (average 1.55; score 89/100). The satisfaction with the interns was lower, but still satisfying: their competence level was rated on average 2.19 (score: 76/100) and their professional attitude on average 2.35 (score: 73/100).

The relationship of the farm with the educational institutes was low. During the data collection some respondents made a distinction between the college and the university. On average scores for the college (average 3.45; score 51/100) were slightly more positive than for the university (average 3.8; score: 44/100). This again may be caused by the fact that the flower farms are at a large distance from the university.

Competentiveness of the program

The perceptions reported above can be corroborated by the analysis of the so-called 'competentiveness' of the program. By this we mean the degree to which a study program complies with a given set of principles of competence-based education. These principles have been reported in various publications (and in Wesselink, 2010) and as stated, recently expanded by Sturing et al (2011). In the case of Uganda seven principles were used to analyze the implementation of the course program. The principles were used as criteria to evaluate the level of implementation of the competence-based education approach. The same analysis method is and was used in studies on the implementation of competence-based vocational education in the Netherlands (Sturing, op cit) and higher education in Indonesia (Nederstigt & Mulder, 2011).

The results of this analysis are presented in Table 3.

Table 3 Analysis of the 'competentiveness' of the education programs in the case of Uganda

Principles CB	Description	Challenges
<p>1. The competencies, that are the basis for the curriculum are defined</p>	<p><i>A job capability profile was put together by partners of Wageningen UR, teachers of the Ugandan college and university and employers of flower farms.</i></p> <p><i>Flower farms express the need of educated peoples; most people they work with are not able to speak English, which is causing a lot of miscommunication.</i></p>	<p>Developing the diploma course opened doors to do commercial flower farms industry</p> <p>The current connection with Flower farms and HEI can still be defined as not strong.</p> <p>There is no feedback structure established, which makes it questionable if the curriculum will be improved according the needs of the labor market.</p> <p>Many employees in the flower farms are not aware of the diploma course.</p> <p>Prior learning of the diploma graduates is not recognized; the graduates are trained on the farm for a period of 4 to 14 months and they get a salary between 80.000 Ush and 260.000 Ush.</p> <p>Graduates swap from one farm to another, since they experience harsh working conditions.</p> <p>Reason expressed by students for choosing the course, was the high possibility of finding a job.</p>
<p>2. Vocational core problems are the organizing unit for (re)designing the curriculum (learning and assessment)</p>	<p><i>Core problems were used as the organizing unit for (re)designing the curriculum</i></p>	<p>Most of the teachers are not knowledgeable about the flower industry. Some never went to a flower farm themselves. They got training through the project. Some students said that the teachers were also students. And the teachers said that they learned a lot from the students when they came back from their internships. The core problems are used for designing the curriculum but if they are used for teaching is questionable.</p>
<p>3. Capability-development of students is assessed before, during and after the learning process</p>	<p><i>The students are assessed during and after the learning process; Case studies, presentation, reports, oral exams and written exams.</i></p>	<p>The floriculture diploma course is the only course using this type of assessments in both HEIs. Teachers are experiencing difficulties to give marks for the formative assessments. You can't fail the formative assessments, if failed, you can retry directly. Teachers do not always check students during their internships. The farm managers and supervisors are not always aware what students should be doing at their farm.</p>
<p>4. Learning activities take place in different authentic situations</p>	<p><i>Learning takes place at Greenhouse, classroom and at different flower farms There are 3 internships in the curriculum; The 1st internship is 2 weeks and is an orientation for students. The 2nd internship is 1 month, and students should specialize in 2 departments. The 3rd internship is 2 months and is a kind of research that should carried out at a flower</i></p>	<p>Learning at the flower farms is not always checked by teachers. Supervisors at the farm learned by experience and are not always capable to answer the technical questions of the students. During the 1st and 2nd internship students go to all departments The 3rd internship (research) is done at the college due to not being able to pay for the costs. Previous the project was being for the cost made during the internship.</p>

	<i>farm</i>	
5. In learning and assessment processes, knowledge, skills and attitudes are integrated	<i>All graduates were satisfied with the curriculum. They learned what they needed to learn to be able to work in the flower farms. They enjoyed the practical's and the interaction with the teachers.</i>	High turn-over of staff. Most of the teachers of ToT left. The current teachers are less capable of doing integrated learning.
6. Self-responsibility and (self)-reflection of students are stimulated	<i>At the College students are working independently in the greenhouses. Interaction is stimulated by the teachers at the University and the College</i>	There is no strategy to pass on the gained capabilities of CBE/L to future teachers. Flower farms are used to work with low educated people, very capable of doing the work but not always knowing why they do what they are doing. As said by one of the employees; " <i>Sometimes it is more easy not to be challenges by your workers</i> ".
7. Teachers both in school and practice fulfill their roles as coach and expert equally	<i>Teachers are not coaching the students At the flower farms the workplace learners are not always aware of what the students need to be doing at their farm.</i>	The workplace learns are not aware of what is demanded from them. The Flower farms are commercial businesses if they don't see the benefit they don't want to invest time into it.
8. A basis for a lifelong learning attitude for students is realized	<i>The teachers are not always aware of the working conditions in the flower farms. There is no module on career development in the curriculum. Teachers told students, after graduation you can become a supervisor or manager in a commercial flower farm and earn around 500.000 Ush.</i>	There is a mismatch between what was told to the students about their future career prospects and what the graduates are experiencing themselves working in the flower farms.

5.4 Impact on employment

As explained, the impact study was also limited to the Diploma-study program of the Agricultural college in Uganda. The final two-year Diploma-curriculum of the agricultural college, which was revised based on the NCDC (National Curriculum Development Center) comments, was not yet delivered for approval to the Ministry of Education and Sports. So the formal national approval was still pending.

Workplace learning was an integral part of the curriculum. It was seen as essential to include this to make the education program relevant for the students and the future employers. The Uganda Flower Export Association, which represents the majority of the international flower farms in Uganda, was heavily involved in securing this. All parts of the courses had a practical component of around 30-40%.

The Diploma course was set up as a private course and had delivered fifteen graduates of the first batch, of which thirteen were working in the field of the program. There were twelve students in the 2nd year but only five in the 1st year. The low number of students in the first year is attributed to the worldwide economic crisis which has also hit the floriculture sector in Uganda.

As to the first labour market entry results and the position of graduates, the first signs are positive. As stated, thirteen out of fifteen of the graduates from the first graduate generation of the partner institutions are working in the flower sector. Amongst these employers are Wagagai (near Entebbe; Dutch owner), Exclusive Cuttings (Dutch owner), Aurum (Indian owner), Jambo Roses (Ugandan owner), Maireye Estates (Indian Owner), Royal van Zanten (Dutch owner), Fiduga, Uganda Hortec, Scools (golf course) and Pearlflower. One graduate was employed by the college itself, and two are dealing in agricultural products and independent entrepreneurs. One graduate is enrolled in further studies.

A first meeting was held with a small delegation of the group of graduates. This meeting showed that the graduates were very dissatisfied with the labour conditions in the farms in which they were working. It appeared that the salaries paid by the farms were very different, and in general very low considering that the graduates have a Diploma-level. Some farms pay a monthly salary of as little as 80.000 Ugandan shillings a month for the graduates (100,000 Ush = US\$ 41,49; 14-03-2011). Regarding their career development they fear they will have to wait several years (5-7) before they will be promoted to a higher level with significantly more income.

During the on-site in-depth interviews with graduates, supervisors and managers it appeared to be very difficult to get reliable information about the salaries of the graduates. Many did not want to share information about their income. Nevertheless, information on contracts and salaries could be collected from around ten graduates. Individual graduates confirmed that their salaries as Diploma-holders were low, in fact about the same as for uneducated supervisors. The maximum reported salary was 260.000 Ush per month with accommodation, breakfast and lunch. This was in fact an outlier. Excluding this case, the average monthly salary of the graduates reported is 143,785 Ush (=59,66 US\$; 14-03-2011).

When asked for the salaries of other job categories, in one farm it was reported that general workers were earning 70,000 – 80,000 Ush, supervisors 200,000 – 300,000 Ush, local manager 500,000 – 1,000,000 Ush. Asking the graduate working at this farm about his salary, he told that he earned 100,000 Ush while he was working as a supervisor. The manager told that this graduate was paid 250,000 Ush.

In another farm HRM was asked about salaries; it was stated that general workers were earning 180,000 Ush and supervisors 220,000 Ush. One of the managers at the same farm however reported that general workers earned 68,000 Ush, whereas supervisors earned 150,000 – 170,000 Ush. In this case the Diploma-graduates were earning 100,000 Ush.

In still another farm a manager stated: ‘Employing a graduate we put them on a training with a salary of 250,000 Ush. After three months we will have an evaluation and increase the salary to 550,000 Ush’. Asking the graduate, working at the farm for longer than one year, he said that he earns 200,000 Ush.

A graduate working for seven months at the same farm, is working as assistant manager (on paper it is supervisor). He is earning 200,000 Ush. The probation period would be six months, but nothing had been changed yet.

In still another farm, the HRM manager stated: ‘For a diploma holder we pay them 180,000 – 250,000 Ush. The graduate working at the farm for two months however mentioned he earns 150,000 Ush.

Regarding contracts and payment there is little or no transparency. These citations from the interview confirm that.

- *‘You get a contract, you need to sign it, but the title is not specified. ... In the field I am called supervisor but I am still on probation period as a general worker. (You have a title in the field, but the salary doesn’t fit with the title)’*

What is more, students have experienced that farm supervisors do not all want to share their knowledge. The supervisors who have many years of experience (and in many cases no or little education) want to protect their jobs, and may prevent Diploma-graduates to have a faster careers than themselves.

- *‘I went to the General Manager and he told me that he is happy with my performance and would like to increase my salary, but he had to talk with my manager first. You have to sort things out with your immediate manager. They saw us coming and it seems they fear us. They don’t want us to get near to their position. Since we will maybe take over their job. My salary is not increased yet (3 months).’*

Nevertheless the graduates are positive about the Diploma course on Floriculture, and all of them who were present would take the course again and recommend it to others.

Apart from formal aspect regarding employment, graduates were also dissatisfied with their physical working conditions. They were complaining about spraying practices for instance. Although safety regulations apply, these are not always followed up, which means that workers in greenhouses can be exposed to hazardous chemicals.

5.5 Conclusions

In this section the conclusions regarding the whole study are presented.

The research questions of the study were how the various stakeholders perceive the implementation of competence-based workplace learning, and to what extent this learning approach influence labour market entry and career perspectives of the graduates.

First of all we have to state that the results above and the conclusions are tentative since the study is still going on and the final impact study Ethiopia was difficult to conduct because of the fact that the data collection was included in the bigger horticulture development project, which however ended not long after the first few graduate can on the labour market. More time is needed to enable data collection with more students, interns, supervisors and managers in work organisations. In the case of Uganda the labour market entry of only the first group of students could be studied at the time of the data collection, because other groups were not ready yet with their study programs. Longer-term impact studies need to be conducted to get more information about the larger-scale effects of the competence-based education programs. These can be related to the tracer studies, and can also be linked to implementation research, in which the sustained application of the principles of competence-based education can be studied.

Nevertheless there are first impressions which give good insight in what the perceptions of the stakeholders and the impact of the (first) program are. Larger studies on the longer run may not yield different observations and may also be even more difficult to implement because of weak (or literally absent) alumni administration.

Labour market entry and career perspective of graduates

To begin with the answer on the second research question, which is probably the most important outcome of the study, it can be stated that the outcome at the short term of the first group of students were very positive since nearly all students had a paid job in the sector after graduation. Some students could stay at the place where they did their internship, which is a good sign for the quality of the program.

However, there were many complaints about remuneration and labour conditions which make employment after graduation from this program not very attractive. On the other hand, graduates would recommend the program to other students. Career perspectives are present but only on the longer term. Most graduates were appointed as unskilled workers and they will have to wait for promotion to assistant-supervisor or supervisor. Foremen and supervisors who are at present mainly unskilled and got their positions by workplace learning are protecting their jobs and many of them do not give proper instructions and information to the graduates. This easily leads to demotivation and frustration. Employers should agree on and implement a Code of Conduct. This will make income and career development more transparent and fair. This will also have a great impact on the attractiveness of the education program, since students and candidate students are keen on labour market effects of the education program, and they already know that this is problematic, which may will most likely affect their motivation for choosing this program.

Another threat for the program is the development of international trade and subsequently the labour market development. The flower sector in Uganda is also hit by the global economic crisis. The implication of this is that the demand for labour is decreasing, which will also hurt the inflow of students. Much of the sector development is depending on the price-quality ratio

of the products; if competing countries outperform Uganda, it will be more difficult to maintain the sector at its current level. Solid national economic structure policy, security of logistic chains, and further global developments are also important. Finally, the development of competing hubs and regional auctions are threats.

Regarding the workplace learning component in the program, deliberate attempts have been made to incorporate this as much as possible. In the Diploma-curriculum in Uganda this was done by including practicals, and distributed internships of 2, 4, and 8 weeks during the course of study. Regarding the placement of students in internships, UFEA plays an important role. UFEA contacted all members of the association about the possibility of placing internships. Many farms reacted in a positive way. One farm for instance wanted six interns; another farm, which was expanding, wanted as many as were available. Placement of the students in internships appeared to be very easy. Even a farm which was not very positive about Ugandan education and their interns and graduates asked for two students for internships. In general there was a good match between the interests and professional profile of the Diploma graduates and the supervisor employment needs of the farms.

The three moments of internships throughout the program are distributed as follows:

- an internship of 2 weeks in the first year; UFEA placed the students without asking for preferences of students because they did not know the farms yet;
- an internship of 4 weeks in the first year; then students had already an idea about flower farms and the topic they would like to work on. Therefore students were invited to express their preference for a certain farm. In any case they were advised to go to a different farm than the one they visited during the first internship. This was a conscious choice, as research had shown that variation in internship places is more effective than staying a longer time in one internship place. If student preferences could not be met, UFEA looked at other places with similar crops and where students could work on their preferred topics.
- an internship of 8 weeks in the second year.

Without the workplace learning component, the study program would not have been that successful.

However, the practical workplace learning component of the education programs appears to be difficult to sustain, as there is no funding for after the project. Although being the quintessence of workplace learning, the question is whether students (or their families) can raise the required money for travel, housing and food. Effective measures, probably at the level of the sector, are needed to thwart the elimination of the workplace learning components from the programs.

Stakeholders' perceptions

Coming back to the first question, stakeholders in general, are positive about most of the elements of the program. In the study in-depth interviews have been held with teachers, students, interns, graduates, supervisors and employers. As far as stakeholders were informed about the capability-driven nature of the approach, they were enthusiastic about it.

During this project of four years the teachers got the possibility to participate in several training sessions on capability-oriented. Unfortunately most of the teachers involved in those sessions left for further studies or other job opportunities. The current teachers are concerned about the future, since no training will be provided on this type of education in the near future.

Their understanding of capability-oriented education is '*... to teach students on what is demanded in the commercial flower industry*'. This includes lots of practical work. Practical work includes work in the greenhouse, internships, presentations and discussion groups. How much practical work given in a module varies enormously per teacher. It ranges from 90%-20% theory in a module. The teachers understand this type of education as being very relevant, by stating that '*... it forces you to teach and learn the students what they need to be able to perform successfully in the labour market. You teach the students to become self-reliant*'.

Most teachers are also teaching in other study programs, for example horticulture study program. Some of the teachers shared that they would like to introduce this practice and student-centered approach in the other courses, since this type of education is increasing the participation of the students. Although, because of the high numbers of students they experience difficulties, not only in teaching practice, but also in the field of assessment.

6. Discussion

During the data collection for the effectiveness study various critical questions were raised.

A question is whether the floriculture diploma program is well-placed in the west of Uganda. There are no flower farms in the region: they are mainly around Entebbe (where the international airport is which is needed for transporting flowers to Europe). In the beginning of the project however the idea was that the region could be developed for the floriculture sector. The climate is good, the soil is fertile, there is an airport, lorries could be used, so a cold chain could be developed. The credit crisis made this impossible, although the university staff had discussed these ideas with the regional authorities. There are two options to distinguish in the policy regarding the regional horticulture sector development: a small-holder approach in which alumni could work as a team of independent flower growers, using national loans, or an international chain approach, concentrating on large-scale green-house floriculture. Both options seem to have potential, and if a choice had been made, the university should develop a development strategy, and students should be trained for the best option (being either self-employed small-holders or employees of larger flower farms).

Critics also wondered why an industry should be supported which lacks transparency and which knows harsh working conditions. The public knows this, and therefore the sector is less attractive for students, which leads to difficulties of recruiting students for the course. This is due to those circumstances on the farms.

Another critical remark concerns the sustainability of human resources in the project. Many staff members who were trained in capability-oriented floriculture education received grants for further education at MSc or PhD level. Whereas this active further education practice is rewarding at the micro-economic level, the project suffers from the discontinuity it incurs. There are also accusations regarding using project money for private investments made by a staff member. The investment appeared not to be profitable in the long-run. One of the other partners made an allegation that the person involved probably got some money out of the project fund for his private investment.

Then there is the issue of the acknowledgement of previous learning. Flower farms do not do this. They are mainly focussing on the attitude towards work of workers. If they are able to

work long hours, if they show they can perform, they will employ that person. They are not yet used to people who have prior knowledge and skills. Most workers are learning on the job, and start as casual worker; after 5 to 15 years they can may become supervisor and/or local manager. It appears to be difficult to determine the position a diploma holder should get since he or she is mostly much younger than the casual workers, supervisors and local managers.

Regarding labour absorption, the question is how many graduates the sector can employ. The flower farms together are producing on an area of approximate 210 hectares; they typically employ one supervisor per hectare and one local manager or senior supervisor per five hectares. This means that commercial flower farms employ 210 supervisors and 42 senior supervisors. The question is whether they can provided sufficient employment for the graduates of the educational institutions. The institutes together stated that 15 graduates per year would be sustainable, which is not a lot to sustain a special program for it, especially also because the jobs the graduates can fulfil can also be taken by horticulture graduates from the institutes in the project and from other universities and colleges.

Finally, trust in the diploma course by expatriates, for instance from India or Kenya, who are employed as farm or production managers, needs to be build. Since most of the teachers never went to a flower farm themselves, the input of these managers in the course is necessary if the study programme wants to educate people to become managers in the flower farms.

Questions regarding the project remain.³ Was it worth it? Are the results sustainable? Did the project have added value the stakeholders? Was the flow of project activities efficient? Was the project sufficiently demand-driven, what was the real demand, and whose demand was mainly fulfilled? For the project-workers involved the project meant employment. For the educational institutions who participated the project meant new students. During the project period the course had a private status, and this means direct income for the educational institution with perhaps lesser public and accountability, although a private education approach can also contribute to a higher level of labour market relevance.

Public approval

When it comes to public approval of educational programs, it is certainly important to have a good understanding of the institutional arrangements regarding approval of curricula. In our case we were dealing with a university and a college. The national approval, or accreditation, of the diploma and of the certificate course were different for both institutions. Regarding the diploma course, the university had to comply with the regulations of the National Council of Higher Education, and the college with the National Curriculum Development Center. Both are advisory organizations for the Ministry of Education and Sports, which at the end of the day approves curricula (or not). Regarding the certificate course, the university does not have to get accreditation. It will run as a private training program apart from the undergraduate and graduate courses. For the college this is different; it indeed needs approval of the national authorities. Next to this, there are the institution-internal regulations for course approval. These are also quite different for / in case of the university and the college. If both institutions develop a curriculum for identical courses, this is quite confusing.

Also, when working together with two different educational institutions, terminology is becoming an issue. This seems futile, but communication is severely challenged when staff from one institute calls a course unit a course unit, and the other a course unit a module. This

³ This analysis is based on the Editorial in the Journal of Agricultural Education and Extension of 2010, Issue 3.

is only one example, but there are many of them. Some agreement on standardization of terms is helpful here.

Education, labour market and internships

A complicating factor in projects like these is the lacking labour-market structure. There may be sector organizations, such as producers or exporters associations, but what is their real structuring power? Are they more than interests groups which are defending their markets and develop their industry? Do they have a code of conduct which is monitored? Do they employ standards of corporate social responsibility? Given the large salary differential we have observed in the group of graduates one may have doubts here. On the other hand, in the long run a certain educational structure will have an ordering effect on the labour market.

Regarding the quality of learning and working places in the industry, there should be attention for the guidance of interns. Students and graduates repeatedly reported that their uneducated superiors are protecting their jobs and that they give little information to them, which is of course understandable. But it is in the interest of the sector that these malpractices are overcome, and that measures will be taken which are in the interest of both uneducated and educated workers. This however may require a stronger labour law, which is an issue of governance, which in turn is not so easy to realize.

A challenge related to internships is financial sustainability. The first internships in this project were financed out of the project budget. The state does not finance this (we are speaking about private courses until now). Yet, internships are being perceived as being essential course components. Families, however, see this as a burden. They are now expected to pay for the internships, on top of the tuition fees. Furthermore, the general public is ignorant as far as the international flower business is concerned. Some react in an at best skeptical way: 'Can you eat flowers?' They fear that students will not find employment in that sector and that the chances for self-employment are quite limited. Rather they advocate horticulture in general, including vegetables, fruits, coffee, tea, spices, herbs and medicinal plants. Following this path however may result in despecialisation and thus more superficial training in a broader field. It would go against the intention of the collective sector to expand the market, to improve quality, and to compete with other floriculture clusters in the world (like Latin-America).

In the first article of this journal which is about North-South partnerships, differences in ideology and values and differences in financial sustainability and independence are also important aspects. It underlines the need for professionalization and mutual understanding in development cooperation projects and partnerships.

To summarize, we think in education development cooperation projects like these, a new set of principles is needed to make the projects effective. In future publications we hope to substantiate that.

Human resource management

Then there is the issue of human resource management in the educational institution. It is important to understand what drives the members of the teams. Is it reputation of senior staff, micro-economic interests, employment opportunities of lecturers, development interests of junior and mid-career lecturers, or professional interests of individual project team members? In many cases there will be a mix of interests. It is good to know about positions of project team members involved, and to know about remuneration structures of various job levels in the educational institutions, but also of graduates. We have found salary differences of starting graduates (within one year after graduation at diploma level) in flower farms of 300%,

the top-end nearly equaling the salary of lecturers in technical-vocational education and training colleges. If remuneration or other primary labour conditions are not fair or market-conform, a course will fall apart.

Next to human resources issues there are evaluation issues, which also concern lecturer (yes: and management) appraisals. It is helpful to know whether those personnel evaluations exist, and what the mechanisms of them are. This equally holds for curriculum, semester, course and module evaluations. Do they exist? Is there a close internal quality management mechanism which results in continuous quality improvement? If not, this might need attention, before anything else can be done. Because: how will the sustained quality improvement of courses be effective if there is no quality management system of some kind?

Teacher education

The key professional group which influences the quality of learning to the largest extent, is the lecturers. In agricultural education in Uganda, teacher preparation for colleges and universities was virtually absent. The preparation of lecturers was content-driven; a BSc in horticulture or agriculture was required and teaching was appreciated as an activity that one would learn on the job, with or without coaching and supervision. Is it a wonder that workshops on competence-based education and assessment, activating teaching methods, student self-responsibility are received as if in another language? Recently however the Ministry of Education and Sports requires teachers in agricultural education to be prepared for the teaching profession. There are several specialized places where agricultural education is being taught. This however, as general technical-vocational education and training, is an area that has been largely neglected for a very long time.

This is very important, because it will enable lecturers to better understand principles of education, teaching and learning which are instrumental for preparing young graduates. These students find this interesting and it has added value for their employability and future career opportunities. In my group we tend to refer to these principles as principles for competence-based education and learning. This is just a label to indicate that the students need to acquire relevant knowledge, skills and attitudes which they themselves find important, but which are also expected of them in the world of work.

A group of lecturers in our project have been trained in these principles of competence-based education. It is quite challenging for them to facilitate the learning process of colleague-lecturers who have not been exposed to the international floriculture chain and related performance requirements. Educational imagination regarding inspiring active socio-constructivist teaching methods, scaffolding learning of complex concepts, and implementing authentic assessment methods is particularly hampered when large group teaching with scarce resources (a limited number of books, individual learning materials a lack of broadband internet) is concerned.

Sequencing project activities

Curriculum development needs quite a long time, especially when institutional and national approval is required. Many stakeholders are involved, and all have their specific institutional, professional and personal interests. Sequencing curriculum development and the development of teaching guides hence is a major issue. In a relatively short project period, there is a lot of pressure to start the courses as soon as possible. But proper curriculum development should be preceded by a profound labour market and needs analysis. In a country where there is irregular electrical power, unreliable telephone traffic, and limited or no internet, meeting stakeholders and interviewing relevant respondents, it is quite often a matter of physically going to the locations of the stakeholders. This to see if the required

persons are available, to make an appointment and come back, or to stay and have a rather unprepared (that is: from the point of view of the respondent) meeting. On top of that, visits to farmers in an attempt to articulate their needs may end up in a tricky situation that suboptimal business models and work processes are in place which certainly should not serve as role model for the sector or the students. This would imply that job and competency analysis would yield information which one would not want to use as a foundation of the curriculum. Rather, productive and quality business models would need to be taken as a starting point, and job synthesis would be the better alternative compared to job analysis.

When there is a lot of pressure on starting courses, the synchronicity between curriculum development and the development of teaching guides could be compromised. The risk is that the development of teaching guides is decelerated because certain curriculum specifications are not done yet.

Towards activity-based output-financing and planning

Then there are issues regarding project financing. In our case this was basically program- and input-based. It might be better to divert to an activity and outcome-based financing structure. This will retain momentum in the project until the end, including the study of effectiveness of the courses, impact of the project on sector development, and the implementation of quality development. Obviously, these issues take a longer time to study.

Regarding project planning and organization the individual mission-approach which was chosen could be changed into a team-oriented mission-approach. A large series of consultants have been on several missions, in many cases working with small groups of staff. Concentrated missions of larger delegations may be more productive, but then these have to be planned in such a way that they would really fit in the working schedules of the educational institutions one works with.

If this would be taken up seriously, one may run into conflicts with the claims of availability of staff involved in other development-oriented programs, because in many cases universities and colleges, who are successful in finding donors for their projects, are likely to have several education development cooperation projects running simultaneously. A complexity involved in this is that different projects (often from different countries like Germany, Belgium, Canada, Japan, the United Kingdom or from international development institutions and ngo's) use different educational philosophies and terminologies. What one project calls a competence-approach is called by others an outcome-based approach or a modular-training approach.

An issue we may have been paying too little attention to is actual participation in educational practice, observing lecturers, and giving structured feedback. Also, tutoring sessions with individual students are important. The analysis of tests, exams and reports they made will give a deeper understanding of the quality of their work.

References

Arends, R.L., J.A. Masla & W.A. Weber (1971). *Handbook for the Development of Instructional Modules in Competency-Based Teacher Education Programs*. Syracuse: Center for the Study of Teaching.

- Arguelles, A. & Gonczi, A. (Eds.) (2000). *Competency Based Education and Training: A World Perspective*. Balderas, Mexico: Editorial Limusa S.A. de C.V. Grupo Noriego Editores.
- Arguelles, A. & Gonczi, A. (Eds.) (2000). *Competency Based Education and Training: A World Perspective*. Balderas, Mexico: Editorial Limusa S.A. de C.V. Grupo Noriego Editores.
- Author, T. Lans, J. Verstegen, H.J.A. Biemans & Y. Meijer (2007). Competence development of entrepreneurs in innovative horticulture. *Journal of Workplace Learning*, (19), 1, pp. 32-44.
- Author, T. Weigel & K. Collins (2007). The concept of competence concept in the development of vocational education and training in selected EU member states. A critical analysis. *Journal of Vocational Education and Training*, (59), 1, pp. 65-85.
- Bartram, D. (2005). The Great Eight Competencies: A Criterion-Centric Approach to Validation. *Journal of Applied Psychology*, Vol. 90, No. 6, pp. 1185–1203.
- Biemans, H., L. Nieuwenhuis, R. Poell, author & R. Wesselink (2004). Competence-based VET in The Netherlands: backgrounds and pitfalls. *Journal of Vocational Education and Training*, (56), 4, pp. 523-538.
- Biemans, H., Wesselink, R., Gulikers, J., Schaafsma, S., Verstegen, J. & author (2009). Towards Competence-Based VET: Dealing with the Pitfalls. *Journal of Vocational Education and Training*, 61(3), pp. 267-286.
- Birner, R., Davis, K, Pender, J., Nkonya, E., Anandajayasekeram, P., Ekboir, J., Mbabu, A., Spielman, D.J., Horna, D., Benin, S. and Cohen, M. (2009). From Best Practice to Best Fit: A Framework for Designing and Analyzing Pluralistic Agricultural Advisory Services Worldwide. *The Journal of Agricultural Education and Extension*, (15), 4, pp. 341 – 355.
- Boyatzis, R.E. (1982). *The Competent Manager: A Model for Effective Performance*. New York: Wiley
- Brinkman, B., Westendorp, A.M.B., Wals, A.E.J. & author (2007). Competencies for Rural Development Professionals in the Era of HIV/AIDS. *Compare: A journal of comparative education*, (37), 4, 493 – 511.
- Du Chatenier, E. (2009). *Open Innovation Competence. Towards a Competence Profile for Inter-Organizational Collaboration in Innovation Teams*. Dissertation. Wageningen: Wageningen University.
- Eraut, M. (2009). *Competences as Mediating Artifacts*. Paper presented at the ECER-conference in Vienna, September.
- Eraut, M. (2011). How Researching Learning at Work Can Lead to Tools for Enhancing Learning. Malloch, M., L. Cairns, K. Evans and B. O'Connor (Eds). *The SAGE Handbook of Workplace Learning*. London: SAGE, pp. 181-197.
- Grant, G., P. Elbow, T. Ewens, Z. Gamson, W. Kohli, W. Neumann, V. Olesen & D. Riesman (1979). *On Competence. A Critical Analysis of Competence-Based Reforms in Higher Education*. San Fransisco: Jossey-Bass.
- Hughes, L. and Cairns, L. (2009). *Competency-Based Training: Nostradamus's Nostrum: What happened and where might we "capably" go?* Paper presented at the ECER-conference in Vienna, September.
- Halsema, W. van (2008). *Proceedings of the expert meeting on educational reform. Towards Competence Based Learning in Higher Green Education in Africa*, Kigali, Rwanda. Wageningen: Van Hall Larenstein.
- Karbasioun, M., author & H. Biemans (2007). Towards a job competency profile for agricultural extension instructors: A survey of views of experts. *Human Resource Development International*, 10, 2, 137-151.

- Lans, L. (2009). *Entrepreneurial competence in agriculture: Characterization, identification, development and the role of the work environment*. Dissertation. Wageningen: Wageningen University.
- Lans, T. and author (2009). *Competence, empirical insights from a small-business perspective*. Paper presented at the ECER-conference in Vienna, September. Wageningen: Wageningen University, Education and Competence Studies
- Münk, D. & A. Schelten (2010) (Eds). *Kompetenzermittlung für die Berufsbildung. Verfahren, Probleme und Perspektiven im nationalen, europäischen und internationalen Raum*. Bonn: Bundesinstitut für Berufsbildung
- Malloch, M., L. Cairns, K. Evans and B. O'Connor (2010). *The SAGE Handbook of Workplace Learning*. London: SAGE.
- Nederstigt, W. & M. Mulder (2011). *The Matrix of Competence-Based Education Evaluated in Indonesian Higher Education*. Conference Paper. Wageningen: Wageningen University, chair group of Education and Competence Studies (forthcoming).
- Malloch, M. and Cairns, L.G (2010). *New Directions in Work, Place and Learning: An Australian Perspective*, Paper presented at the American Educational Research Association Annual Meeting, Denver, Colorado.
- Mulder, M. & J. Gulikers (2011). *Workplace Learning in East Africa: A Case Study*. The Sage Handbook of Workplace Learning. London: Sage, pp. 307-318.
- Prahalad, C.K. & G. Hamel (1990). The Core Competence of the Corporation. *Harvard Business Review*, May-June, 79-91.
- Reading (1910). *The problem of agricultural education in America and in England...* Report of a Deputation appointed by the Council of University College.... Reading: University College, 1910.
- Rivera, W.M. (2009). Production and Beyond: A Defining Moment for Public Sector Extension, *The Journal of Agricultural Education and Extension*, (15), 4, pp. 371 – 384.
- Sturing, L. (2008). *Promoting or impeding factors which influence the extent of competence-based education of programs in secondary vocational education*. Unpublished research proposal. Wageningen: Wageningen University, ECS.
- Sturing, L., H.J.A. Biemans, M. Mulder & E. de Bruijn (2011). The 'Competentiveness' of Study Programmes in Vocational Education: Evaluation of the model for Comprehensive Competence-Based Vocational Education. *Vocations and Learning: Studies in vocational and professional education* (forthcoming).
- Swanson, B.E. (2006). Extension Strategies for Poverty Alleviation: Lessons from China and India, *The Journal of Agricultural Education and Extension*, (12), 4, pp. 285 – 299.
- Teferra, T., A. Dalelo, M. Kassaye (2009) (Eds). *Proceedings of the 1st international conference on educational research for development*. May 13-15, Addis Ababa University, Akaki Campus, College of Education.
- Van den Ban, A.W. and H.S. Hawkins (1996). *Agricultural Extension*. Oxford: Blackwell Science.
- Wals, A.E.J. (Ed.) (2007). *Social Learning: Towards a Sustainable World*. Wageningen. Wageningen University Publishers.
- Wesselink, R. (2010). *Comprehensive competence-based vocational education. The development and use of a curriculum analysis and improvement model*. Dissertation. Wageningen: Wageningen University and Research Center.