

MSc Agriculture students working with ex-campus stakeholders: first experiences and challenges

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Abstract: In the MSc program in Agriculture at University of Copenhagen we experience that both domestic and international students increasingly enter the programme without a contextual background of “agriculture” and with solid, but fragmented disciplinary and applied knowledge acquired in other courses both on BSc and MSc level. For many students this results in concerns whether their knowledge, skills and competencies are sufficient when confronted with reality in a job, i.e. in a lack of professional confidence.

Therefore when revising the program we focused on competences in contextualizing general knowledge, in working systematically with complex problems and in reflection on the working process. In a mandatory 9 week full time course we team up with a partner enterprise (a large organic and conventional vegetable producer) with the aim of developing solutions and creating value in collaboration with stakeholders. Students are physically on the partner enterprise four times, altogether three weeks, and use Kolb’s learning cycle as a guiding reference through a structured work process. Deliverables from the course are a scientific group report, a group partner document, a group learning document and an individual learning document, all of which form the base for an individual oral exam.

Keywords: education, sustainability, off-campus, professionalism, value creation, Kolb

The need for farming and food system competencies

Graduates in agriculture and similar professional areas within farm and food systems are employed in work positions where they are expected to use the disciplinary knowledge and skills acquired during their studies to contribute to value-creation with for farmers, businesses, communities and society. Although graduate programs within agriculture are often perceived as broad, agriculture graduates typically see themselves as natural science professionals, with little skills in social science concepts and methods (e.g. qualitative research methods). Typically students graduating from MSc programs focused on agriculture in developing countries have competencies in social science, whereas many students in regions of industrialized agriculture have a strong focus on system components. In North European countries this has given rise to areas as Plant Science and Animal Science as distinct and largely decoupled core areas within Agriculture, in which focus is on optimizing the system parts (plants, animals) using natural science methods, removing the issues from the context. These areas are characterized by emphasis on basic natural science research and strong links to Life Science industries, satisfying the desire for universities to collaborate with commercial partners. Therefore it is a big challenge for us as educators to maintain and insist that at least some of the graduates from agricultural MSc programs should be educated to professionally enter into, understand and facilitate improvement of the many messy, complex and problematic situations characterizing farming and food systems today (Francis et al., 2010). Although there is a broad consensus among agroecology educators that education and research within farming and food systems must be interdisciplinary and use a systems approach (Hilimire et. Al, 2014) taking initiatives in this direction and actually getting courses up and run-

ning within the existing curricula is not straightforward. This paper reports on the work in progress at University of Copenhagen – “a beginner’s tale”.

The need for new learning activities

In the MSc program in Agriculture at University of Copenhagen we experience that both domestic and international students increasingly enter the programme without a contextual background of “agriculture”. They have a solid, but fragmented disciplinary and applied knowledge acquired in other courses on plants, soils, water, economy etc. both on BSc and MSc level, but they have difficulties applying their out-of-context knowledge (e.g. on soil processes or plant growth) in specific contexts. From the start of the bachelor level UCPH students do problem oriented work in many courses, doing projects starting with problem identification and analysis and finishing with a report. In the intensive courses projects make up a minor part of the learning activities, and students most often have to reduce the problems to something manageable by removing complexity due to time issues. This means that students are good at doing projects, stepping back and analyzing problems, and maybe suggesting a range of possible solutions or improvements to the analyzed situation. In other words, if illustrated with the Kolb’s circle (figure 1), they spend a little time in the divergent part (“What is here?”), they become proficient in the “assimilative corner” (“What does it mean?, “How can we understand it?””), they seldom spend much time in the idea and solution developing phase (convergent phase) and they rarely enter into the action phase (accommodative phase). One employer in the extension service phrased it like this: “They can analyse problems and present a number of available solutions (“knowing what could be done”) but they don’t dare to propose one of them as the best in the situation”. Students experience this as being “too academic” and have concerns whether their knowledge, skills and competencies are sufficient when confronted with reality in a job, i.e. in a lack of professional confidence.

A new course: European Farm and Food Systems (EFFS)

Faced with these challenges we developed a mandatory nine week full time course to the program, in which we collaborate with a partner enterprise (in both 2013 and 2014 a large organic and conventional vegetable producer) with the aim of developing solutions and creating value for them or other local stakeholders. The focus in the course is on competences in contextualizing general (out-of-context) knowledge, in working systematically with complex problems and in reflection on the working process. Students are physically on the partner enterprise four times within the 9 weeks: one day in week 1, all of week 3 and 5 and one day for the final presentation to the partner in week 7 before submitting their report in week 8. In between the field work students meet for classes on economy, regulation and different tools, integrated with their work on the area of focus with the partner. Students use Kolb’s learning cycle as a guiding reference through a structured work process. Deliverables from the course are a scientific group report, a group partner document, a group learning document and an individual learning document, all of which form the base for an individual oral exam.

Table 1: Learning goals for the course

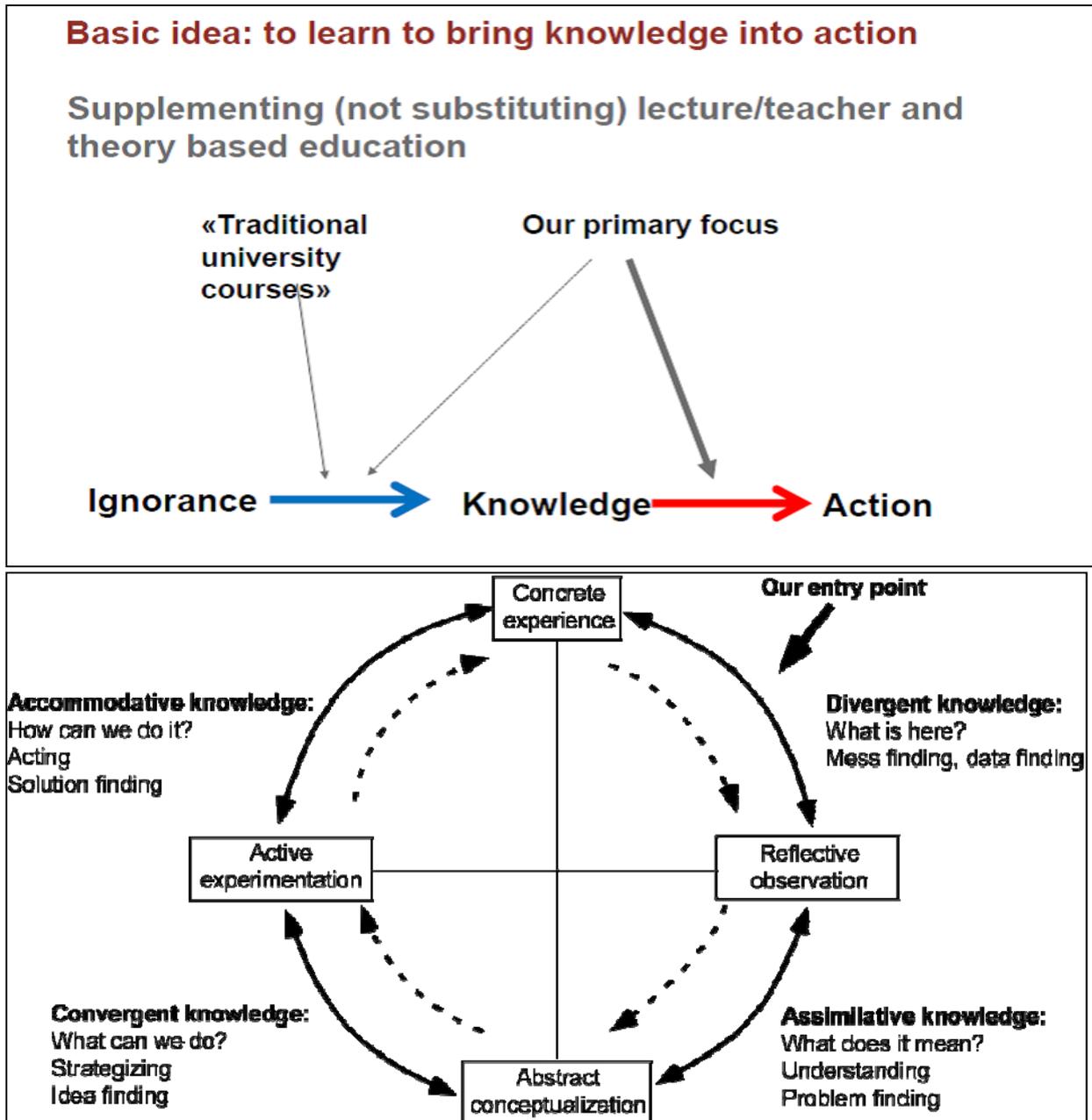
<p>Knowledge:</p> <ul style="list-style-type: none">- show overview of relevant conditions forming the context for European farm and food systems (e.g. biophysical, legal, economic and institutional) <p>Skills:</p> <ul style="list-style-type: none">- demonstrate ability to select and apply appropriate methods to describe, analyse and develop viable solutions to problems within agriculture, food and environment <p>Competences:</p> <ul style="list-style-type: none">- show capacity to work systematically and professionally to create value within agriculture, food and environment,- demonstrate awareness of own and other's professional capacities,- communicate ideas efficiently to peers and stakeholders

During the first round of the course (spring 2013) we experienced three main challenges. They concern student learning, others concern the personal and structural barriers for us as teachers and educators, which may constrain the advancement of this way of teaching and learning. At the workshop we would like to discuss whether and how these challenges limit our progress as university teachers in creating courses with ex-campus student work and how we may draw on our common pool of experience and help each other get started.

The three challenges:

1) Establishing the right balance between the **product and the process**, i.e. between “scientific quality” and learning to work with complexity. There is a seemingly inherent conflict between using time to understand the work process and the theory behind it sufficiently to apply it again when faced with the same professional task, and focusing on the professional knowledge and skills required in the actual context. In our course we communicated the ideas and the rationale behind the course and had the Kolb’s circle as a recurrent figure, which made it an almost intuitive joint frame of reference (figure 1). However, students did not read or discuss the theory behind, so it remains a superficial tool.

Figure 1: Slides presented at course start to communicate how we as teachers see the course as different than other courses in the MSc Agriculture curriculum (top), and Kolb's circle as a concept and a recurring tool to help structure student work processes and to use as a reference in joint discussions (bottom). In the evaluation students expressed that in the beginning Kolb's seemed too abstract to apply on a real farm, but gradually it became increasingly useful. By the end of the course we did not have to draw it, but could just make hand gestures. (Figures modified from Lieblein, pers. comm.).



2) Finding the **appropriate level of information** about the context to be made available for the students to ensure both process and content learning. This is the question whether students should start entirely “from scratch” and generate all data themselves when entering the field work, or if some information is made available. On the one hand in most professional cases some information (maps, statistics, client material) will be available at the start of a case work. On the other hand the value of going through the process of “what is here?” and “how can we understand this?” including identification of data needs and realizing the constraints of various data types and thus of tools, cannot be ignored. In our course students collected everything during the field stay,

leading to serious time constraints. This balance will be adjusted in the next round but will continue to be an issue of debate among the educators.

3) **Assessing the learning outcomes** (exam), especially the “capacity to work systematically and professionally to create value within agriculture, food and environment”. Just as in traditional individual oral exams at UCPH students were asked to in their report to support their proposed solutions with scientific knowledge. We found however that an oral exam is not well suited to assess whether they have acquired the competence to be able to carry out the structured working process when exposed to the next messy situation and whether they have become more competent in action. This will be an ongoing challenge.

Learning activities used

We see this course as “work in progress”, and although many of the applied methods and learning elements are well known some examples are given in Table 2.

Table 2. Learning elements and deliverables

Used in the first round:	Tools and skills	Types of deliverables
Building the learner community		
Competence modelling Learning styles assessment Making “Kolb’s circle” a common reference for process discussion	Interview techniques Video techniques Rich Pictures	Academic report Client document Learner document / individual Learner document/ group Client interaction and presentations
To be used next round:		
Belbin’s preferred group roles Peer feedback during project process More learning theory?	Pitching Multi criteria analysis Reflection skills Guided observation, e.g. transect walks Time plans	

Students’ learning evaluation

Students characterized the course as “a profound learning experience” and “one of the few courses which strengthens the relationship between knowledge from previous course with practice”. In addition to the regular course evaluation we did a two hour taped reflection session which was recorded. Students were asked to reflect upon what came first to their mind when they remember the 9 weeks, one by one. The most important lessons learned mentioned was that:

- Using Kolb changed from being an abstract construction into a common reference which was instrumental in appreciating the steps of the working process
- Good communication and collaboration with each other and especially with the partner needs preparation, anticipation of objections and concerns, active listening and asking, empathy and insight
- Getting data and information require skills (e.g. interviews)

Many of the students consider becoming advisors or in other ways to work with agricultural production and environment, and one of the additional outcomes was an identification of learning needs and resulting plans of doing internships.

Client feedback

The course was evaluated with the partner enterprise (<http://www.maanssons.dk/>) a month after the end of the course. The partners see themselves as partners more than as clients, i.e. they are comfortable with the main goal being students' learning and they see getting benefits for the enterprise as secondary. They have agreed to work with the course in the second round also. Partnering with the same enterprise raises issues of the role of the partner to be discussed: are they teachers or clients?

How to proceed in the future

For us as university teachers and program responsible with ambitions of “changing the game“ the constant development of learning activities is exciting but also challenging. A course with focus on working with complex situations requires collaboration between economists, agronomists, etc. among our university colleagues, and for courses like the one described to be successful and coherent, it is crucial that the teacher group subscribe at least to some extent to a common vision of experiential learning. Therefore the concrete process of including teachers from other disciplines and selling the idea of contributing with something which many colleagues would consider too superficial requires courage, mutual trust and professional respect.

References

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