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Educational innovations in agroecology: Learning-centred open-ended cases

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Open-ended cases present students with learning situations where a particular dilemma on the farm or in the community food system has not been resolved. With minimal but focused prior preparations, students interview farmers and food system stakeholders to build context for the case and to discover the philosophy, goals, and major challenges faced by clients. Student teams build a rich picture of the current reality, including major elements, interactions, and driving forces both internal and external. Instead of reaching prescriptive recommendations, students develop multiple potential future scenarios that could be used by stakeholders to resolve the situation, and evaluate *a priori* the most likely outcomes of following each scenario. These are presented back to the farmer or community, and a visioning session is held to bring all the players to the table and decide on the most constructive future course of action. We have found this method to be highly stimulating to students, as they work in a team with instructors and clients to plan a desirable future. Students report that the learning experience has been valuable to their subsequent thesis research as well as contributing to their effectiveness on jobs after the university.

Keywords: agroecology, systems learning, action learning, education for responsible action, organic farming systems

1 Introduction

Thoughtful university instructors are continuously seeking educational methods that will stimulate students to take responsibility for their own academic and practical growth, and to provide relevant guidance down the path that leads to autonomous future learning. We have explored a number of alternative strategies including phenomenon-based learning (Francis et al., 2012), integrating action learning and research (Lieblein et al., 2012), and establishing closer links between students and stakeholders in the field (Eksvärd et al., 2014). Observations of students in classroom lectures, large and small group discussions, and field trips, as well as review of their reflective learner documents reveal that over the semester students develop a strong appreciation for what can be learned through direct involvement with stakeholders while also distinguishing between this participatory approach and learning in a more conventional course. We recognize that students arrive with diverse points of view, some expecting to learn by farming and hands-on activities, not from lectures and research, some comfortable with more traditional academics building on strong theoretical background. We put these students in teams and direct them to interact with stakeholders and find out what they can learn outside the conventional university educational setting, while applying theory to practice.

When student teams have the opportunity to visit farms and communities, to interview key actors in the food system, and to immerse in the farm and community context they report the value of learning first-hand about challenges facing farm families and people intent on

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improving the food system. This experience motivates students to seek possible solutions to current dilemmas and to involve themselves in responsible action, both on their class projects and in future research and job opportunities (Lieblein and Francis, 2007). Our experience as instructors has led to development of an 'open-ended case approach' to study of farming and food systems (Francis et al., 2009), an educational strategy that we describe here in some detail.

2 Material and Methods

The MSc Agroecology Programme was initiated in 2000 at the Norwegian University of Life Sciences (NMBU, which was then the Norges Landbrukshøgskole, NLH) with the goal of bridging agriculture, nature and society. The goal was also to link practice and science in describing, analysing, and managing complex agroecosystems. At that time, agroecology was conceived as integrating ecology, agriculture, socio-economics and culture with the goal of sustaining production, food security, community and environmental health. Broadening the focus from farming practices and systems, to interactions with the local community, to involvement with the food system (Lieblein et al., 2000), we arrived at a definition of agroecology as the ecology of food systems (Francis et al., 2003) which describes our current food systems focus and provides boundaries for designing a relevant context and learning environment.

The first key element in a two-year MSc degree programme at NMBU is a full-time course in Agroecology: Farming and Food Systems (PAE302, 30 ECTS) in the autumn semester. With a combination of interactive lectures, spirited discussions, group exercises in classroom and field, we prepare students for their in-depth projects to interview farmers and key actors in a community food system. They live in the project communities for two periods of one week each, establish their key contacts and schedules to interview relevant stakeholders, and immerse in the local farm and food system context. From extensive team discussions and frequent mentoring with instructors, the students develop potential future scenarios to present back to their key farmer client and to the food system actors in the community. This allows a fine-tuning of ideas, and provides some indications of potential outcomes of implementing their established scenarios. A visioning session is held with the farmer and another with food system stakeholders, and students prepare a final written report as well as a presentation to the whole class and instructors as a learning community. Their individual growth is described in a personal learner document, and its preparation occupies the last week of the 16-week semester. This document is a product of individual reflection, and instructions suggest that it should be 'personal but not private'; throughout the semester, we have included short reflection sessions and consider this an integral part of the learning process. As with other components of the open-ended approach, this is a new activity for many students but one to which they adapt well.

3 Results

The autumn course generally enrolls 20-25 students from up to a dozen different countries, representing the Nordic Region, the E.U., Canada and the U.S., and each year a few students from Africa, Latin America and Asia. The mix of cultures and native languages presents communication challenges, both in the classroom and in the student teams, and these are reflected in extensive discussions about instructor expectations, different learning styles, student team leadership models, concepts of time and responsibility, and how to organize team activities. Many of these were described by Wezel and Francis (2014). At the same time, the in-depth conversations that reflect obvious differences in cultures bring a rich quality of prior experiences and current world views that would not emerge from a homogeneous group of students from one country. To be sure, there are conflicts and misunderstandings in the classroom and especially in student teams, and a part of the team building and education process is for the learning community to explore and resolve these issues to the extent possible, and to encourage everyone to focus on the team goals as well

as on their individual learning. Collective professional experience in education of the five instructors sums to over 130 years, and includes extensive involvement with universities in Europe, Africa, Asia, and the Americas. Our prior activities in research, classroom teaching, and extension/outreach provide an extensive background of information and field experience that have proven useful to students with specific questions on farming and food systems.

Students frequently arrive unprepared for the 'open learning' environment that involves substantial participation in discussion and active involvement by each person, since many come from a structured and primarily lecture-based university undergraduate experience. We observe that they are anxious to get the information delivered in a clear and understandable way, and expect that instructors are the major 'keepers of the right answers' and their own task is to write down what they hear to be ready for an exam. It is disconcerting and even confusing to hear that we do not necessarily have the answers, that relevant information is highly dependent on place and context, that situations in the field are complex and continuously changing, and that 'one size definitely does not fit all situations.' With time and experience, most are convinced that we are sincere in saying we are not necessarily seeking a single or correct answer, but rather we want each student as part of the learning community to explore alternatives in learning, and we are more interested in this search than in the final result. As we have said in class, "the process is the product." It is easy to see why many are confused.

As part of the learning process, we have employed a number of activities such as transect walks across the landscape, prepared students for their interviews by doing a preliminary and abbreviated farm visit project the second week of class in a 'safe environment' with farmers well known through previous class visits, preparations for interviews, use of metaphors to describe observations in the field, mind mapping exercises, and preparation for visioning sessions with stakeholders. Many of these have been described and published in the NACTA Journal (http://www.nactateachers.org/journal.html).

Over the term, students become adjusted to this new learning environment, and their near-total confusion at the outset evolves for most into a serious learning quest to understand the complexity of each farm and each community food system, as represented by their team project sites. They are exposed to additional unique contexts when other teams present their results of farm and community exploration in our plenary sessions, and the interchange within the class raises more questions that may have not been considered in the initial interviews and walks on farm and in community. Student comfort with the case study and with interview techniques are reflected in their frequent choice of this method for later research in the individual MSc thesis projects.

In fact, one of the challenges we have encountered in the adoption of open-ended teaching methods and placing more responsibility with students in developing skills for autonomous learning has been convincing instructors in traditional educational institutions that they are not the only source of valuable information, and that effective mentoring for responsible involvement of students may mean moderating some of the 'power of the professor position' to become a co-learner in this new form of learning community (Lieblein and Francis, 2013). In fact, we are changing ideas about the purpose of pedagogy and shifting the balance toward mutual learning and respect for everyone's ideas.

4 Conclusions

Based on over 15 years' experience in the Norway Agroecology MSc programme, we conclude that the open-ended case learning approach is both stimulating for students, instructors, and stakeholders, and exciting as a method that the students can employ in their thesis research and future educational and other opportunities. Among the key reasons for this success:

- Students find themselves in a learning situation where both methods and outcomes are not clear and they take responsibility for their own learning.

- Teams of students learn to build on their collective experiences and talents and to develop group dynamics that promote a positive dependence on each other and on strengths of the group.
- Interactions of student teams with stakeholders are enriched by the extended times spend with farmers and food system actors, and the students returning for visioning sessions.
- Establishing a feeling of co-learning among students, stakeholders, and instructors to seek answers to difficult challenges where answers are not known becomes a unique challenge to all.

Having observed students using this method in their thesis research with interviews, focus groups and surveys, we are convinced that reducing the physical and social distance between those in academia and people in the food system, and between teachers and students, can be achieved by this open-ended case approach to learning. Testimonials from students confirm the value of what they can learn and achieve with this method of education. We continue to learn from our students and from stakeholders in the field about the effectiveness of this educational method, and each year the course is modified to reflect the feedback from everyone who is involved in the learning community. Recently we have initiated weekly meetings of instructors to more tightly plan the educational activity agenda for the coming autumn course, and we also schedule at least two short retreat activities for instructors each year. We consider this vital to our strategy of 'adaptive management' of the course in action education, and the team is certainly a 'learning organization.'

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