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## When students faced rural realities: learning complexity in a rural region

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**Abstract:** This pedagogic experiment is carried out with students of the Ecole Nationale Supérieure d'Agronomie et des Industries Alimentaires of Nancy (France) in the last year of their formation ("ingénieur agronome"). Since five years, this pedagogic module is organized to teach them to confront with local stakeholders about rural and agricultural development. This module is divided in two formation sessions: a first session to learn methodological tools and technical data (roughly one week long) and a second session (one week) taking place away from the class-room in a rural area. Since five years, the originality of the chosen areas is that it presents new agricultural models that they did not approach before. They build a presentation which summarizes their local's interviews and diagnostic of the site using landscape agronomy methods. The aim is to train students to a collaborative approach through a multidisciplinary work applied on a same region with a single stakeholders question.

**Keywords:** collective learning, case-study management, landscape agronomy, surveys.

### Introduction

This pedagogic experiment is carried out with students of the Ecole Nationale Supérieure d'Agronomie et des Industries Alimentaires of Nancy (France) in the last year of their formation ("ingénieur agronome"). Since five years, this pedagogic module is organized to teach them to confront with local stakeholders about rural and agricultural development.

This module is divided in two formation sessions: a first session to learn methodological tools and technical data (roughly one week long) and a second session (one week) taking place away from the class-room in a rural area in a new region (case study) each year, and in Drôme Provençale (France) in 2006. The teacher team chooses each year a different rural area. All along their formation they have usual technical lectures but in these ones the becoming of agriculture and the stakeholders behaviours are regularly underlined but not developed as the main topic of the lecture. This particular case-study takes place at the end of the formation because (i) at this time the students will have acquired technical knowledge and (ii) it is more relevant to build answers to public's expectations for the local agriculture.

The pedagogic objectives are to increase the students' ability to answer to local expectations and to motivate students using methods in a collaborative learning group method in a completely different environment helping them to become the actors of the project. In this pedagogic part we use different teaching tools from the usual lecture to learning groups and oral presentation before and during the week in Drôme. The original part of this exercise is the common work that students need to provide together for a collective result: (i) a initial question formulated by local stakeholders, (ii) a final restitution (last evening of the week) for the local stakeholders (institutions, farmers, ...) on the subject of the future of their agriculture. To be relevant on this concrete aspect of the restitution, we have a learning objective to achieve with the students: they need to learn rapidly new themes that they did not study yet in their formation or training period like lavender production or apricot production for our particular case.

Since five years, the originality of the chosen areas is that it presents new agricultural models that they did not approach before. They build a presentation which summarizes their local's interviews and diagnostic of the site using landscape agronomy methods (Benoît *et al.*, 2006).

At the end of this case-study, we assess the pedagogic objectives with the students who tell us what their perceptions are of the exercise: what part of the learning are they able to use again, do they

appropriate themselves the methodological tools, do they feel more acute in front of local expectations? The assessment of the students was achieved by using criteria to evaluate their participation and motivation. The graduation was based on the group work and individual initiative (students have discussed and accepted these criteria before). With this case-study, we are also able to underline the required elements in term of pedagogic and methodological tools but also in term of number of students, length of the exercise and financial contents. This module is not so easy to implement in our own institutions!

The aim of this paper is to explain the chosen methods and teaching tools to prepare our students to answer complex agronomic question in the field of landscape agronomy.

## **Why using in situ case studies for young agronomists?**

This case study is organized for the third year students of the Ecole Nationale Supérieure d'Agronomie et des Industries Alimentaires (ENSAIA), the last year before their final training and graduation. So, studying real case study is a confrontation in short time to a question built by an agricultural advisory expert.

The group is composed of students who have had, since the beginning of their scholarship, partly the same lectures, organized in classical distinct disciplines (agronomy, economy, statistics, ...). At the end of this last year, they will have to work and answer to agronomic questions which are complex, characterized by links between public's expectations, agricultural practices, rural areas (with environmental and tourism issues) and food products.

So, to be efficient to answer to this kind of problem solving, a multidisciplinary approach is required. If this multidisciplinary approach is not proceeded, it will remain a gap between the classical disciplinary lectures distinctly taught and the global answer the students will have to improve in their future job.

Our objective is to reduce this gap and to develop a multidisciplinary approach with an original way of teaching for the students in their last year before their graduation,. The aim is to train students to a collaborative approach through a multidisciplinary work applied on a same region with a single stakeholders' question.

## **How to design this learning process on rural territories within a landscape agronomy framework?**

We use a framework explained in a synthetic book: « acteurs et territoires: vers une géoagronomie de l'aménagement » (Benoît *et al.*, 2006). This book was built after five years of training with UNESCO master students. The six main methods explained in this book to analyse a local rural question are:

- territory diagnosis, using available information (statistics, maps, ...)
- graphic modelling, translating these information in "chorèmes" ( graphs illustrating spatial behaviours)
- local knowledge mapping, using the stakeholders knowledge to catch their image of this region,
- landscape analysis, through landscape collective observations,
- land organization of a farm, through surveys with farmers explaining their logics building their territory
- Location of types of farming at a regional level, through location of statistics datas on a regional map.

The final part of this book explains the use of these methods in two real cases based on students work in two regions: Valdonnez community and Bassée-Montois.

To prepare our students to answer to complex questions, they need to acquire a method of work which cannot be taught only with classical lectures in classrooms. Furthermore, to reach our objectives of teaching, we think that the students must become actors of their formation, and we need their implication in the project of case study. This implication and motivation is stimulated by letting them build, firstly the complex question and secondly the designing of methods to answer it (Fresco,

2000). The complex question is on a subject linking society and agriculture for which they feel concerned. After a preparatory period (two weeks) at the school, mainly explaining the six above methods, the final step of the exercise is carried out in a pre-professional way: one week to answer to the chosen question, teaching taking place in a rural area far away from the school, with several meetings with local stakeholders to work on their project of local development.

The complex question we want to work on with the students is about the relation between agriculture and public through its impact on a rural area. The choice of the rural area is of great concern for the success of our pedagogic project. This area must provide an agriculture:

- Producing amenities (positive externalities) like landscape, jobs, tourist economy, quality products...)
- and
- Under strong natural constraints whose survival is not sure in the context of the Common Agricultural Politics (CAP).

This model of agriculture seems economically threatened but corresponds to the public's expectations and the question is : how this agriculture is able to link these expectations and the CAP? The answer to this question cannot be only an accumulation of technical solutions, but must be built with a multidisciplinary approach (agronomy, economy, geography, sociology). Before the beginning of the exercise, the local stakeholders are contacted to test their potential implication in the formation of the students and we propose them to formulate a common question to the students. So, the students have to build an answer to this question involving this area.

## **How to manage liberty and constraints in this learning process?**

### **... In the teaching process**

In this case-study, the chosen pedagogic tools are used to make the students autonomous. We don't afford them to be passive but we stimulate them by these forms of teaching to react and tell something on the points they are working on. So, the freedom degree is high on the "how to do?" and the constraint level is high on "this is the question to answer ". The interest of this classical teaching is that the whole group has the same layer of knowledge. We use then collaborative learning groups to make them actors of the project and to collect data. This tool will help them to formalize with their own words what they need to answer to the common question and why do they need it.

By this form of pedagogic tools, they learn how to work together and how to listen to each other and define common objectives. In our exercise, the collaborative learning groups are the best tools to make the students acquired knowledge on productions and agricultural organizations of the chosen studied area, and the best way to implicate them in the process of the building of method to answer local's expectations

To complete the work in collaborative groups they have to prepare oral presentations. The students regularly practice oral presentations but in this case it can be described as a dynamic one: other groups are asked to react and complete the results (i.e.: food productions in the region confronting to farms types). It is the beginning of their work and not only an exercise to perform in front of teachers: they see rapidly the interest of the oral presentations by an increasing of their collective knowledge and building of new questions.

The lectures, the work in collaborative learning groups and the oral presentations are built to make the students formalize themselves the complex question. Their perception of the strength and weakness of each kind of organization of agricultural productions have to lead them to ask a question about the link between the rural local development and the agriculture. In our case study the students' conclusion on their first bibliographic diagnostic was that the area was characterized by several agricultural products more or less valorised by signs of quality. Their question, guided by the teachers, was based on the real economical link between the inhabitants 'expectations about development and the richness provided by the agricultural activity: are the agricultural productions the motor of the local development?

The appropriation of the subject was easier because they were no more passive but in the process to build their study in Drôme for whom they feel they were responsible. The teachers are present but only

to guide and give direction. This less directive way of teaching made the students actors of their project.

During this first phase, the stakeholders are not directly concerned by the learning process. We only describe to them the content of this phase.

The answers to the defined question will be the aims of the case study carried out in Drôme during one week (table 1). Our pedagogic objective at that particular time is to teach them the use of the scientific procedure to answer to locals' expectations. To find scientific and realistic answers the teachers emphasize the importance of the bibliographic synthesis and the hypothesis they have been able to build. This proves to them that the time used for this part of the work is very useful before to collect data and to be impregnated of the scope of the local agriculture. This is the first step of the scientific procedure. The second step is then formalized explaining them the importance of the chosen question: this will be their guide for the study. The hypothesis they described on agricultural productions are characterized as a third step before going on to collect data and before leaving the school for the chosen area.

The fourth step is then rapidly initiated by the students because they feel the lack of information and they directly ask the teachers for other methods of collecting data to confront their hypothesis with local public's expectations. Before the teachers give them advices and other methods they are asked to define what sort of data do they want and why do they need them when confronted with the question. When their thoughts are clear, they are able to understand the fourth step: to collect data from local stakeholders to complete their own perception. The chosen method is a guided interview which is the best way to compare different points of view on the same subject. So, we maintain a same question worked with diverse points of view. The students need to understand that, when confronted with different people, they will need to direct the conversation and discuss with them the same topics to be able to synthesize the perceptions. Our objective is that they acquire the fact that it is not useful to meet people without having prepared the interview (isn't it trivial?). That will lead to impossible comparison of points of view. The whole group builds a common interview guide and the teachers validate it when all the students agree with it. It is also the students who choose the different stakeholders they want to meet but for each person they must argue to convince the whole group that is a "information key- stakeholder" according to the question. After this step, the contact with the stakeholders takes place.

### ...In the framework of teaching planning

In terms of methods our aims are they understand that, before trying to answer to locals' expectations, several types of work are necessary.

For this case-study we use firstly lectures to teach students the six different methods they will need to work on the chosen site.

	Lectures	Collaborative learning groups	Oral presentations	Interviews with local stakeholders	animation	Deliverable
Preparation months	✓	✓	✓			Question
Intensive week		✓	✓	✓	✓	Diagnostic and debate

Table 1. Panning of the use of the teaching tools according to the evolution of the exercise

In their future job they will have to work in groups on long-term projects. The method we propose provides them a scientific procedure, an experience and some realistic ideas on the complex link between agriculture, rural area and society. The questions on this topic require several meetings with local stakeholders. To be effective it is necessary to define the way the data will be used and why it is collected. We want that the students remember the requirement of a preliminary work, particularly in the case of the relation between agriculture and society, to formulate a well-defined question. This formulation will help them to control their interview of the local stakeholders to collect their perceptions and to facilitate the data analyses. The analyses are completed with the bibliographic preliminary work. The last step of the work is done during the presentation and the debate between the stakeholders and the students. This presentation is a confrontation of the students' synthesis and

diagnostic and the diversity of the stakeholders' perceptions. This final result of the case study is completely animated by the students who have prepared the oral presentation but also the debate (they have formulated the points they would like to discuss with the stakeholders) (table 1).

We use the case study to link the students with local stakeholders whose expectations are necessary to implicate the learning process in a rural local development procedure. The work of the students is not only to learn methods but to be able to answer to a defined question on which local stakeholders are waiting for answers. The teachers become a tool explainer managed by the students (a very interesting change in our classical position!) to elaborate their own way of solving the question.

This particular form of teaching leads to different advantages: the relationships between the teachers and the students are changed because they rapidly feel that our methods are useful for their work, they are faced to the complexity of rural development and public 's expectations but they still are only students from the ENSAIA and not alone to sustain all the complexity and they have the opportunity to assess their ability of using their different knowledge acquired in the previous years at the school to answer the question. This way of teaching allowed us to set up an evaluation of the students based on their motivation measured by their aptitude to work in group, to communicate with the other students and the stakeholders, to synthesize the perceptions they collected and to debate.

## What about the students point of view?

To assess our case study in terms of pedagogic interest and knowledge acquired by the students, we interviewed them on these aspects of the project, three months later. We have several aims which can be confronted with student's perceptions of the case study. To obtain their point of view we interviewed them (15 students) using the controlled interview methods on the following points:

1. The methods to answer to complex question on local expectations, the global and multidisciplinary approach: half of the students (7 on 15) have completely acquired the scientific steps for the global approach we work with them. They understood it is a quite pertinent way of working to collect objective data and to be able to control the results they present. Nevertheless, 6 students are not able to talk about the multidisciplinary approach.
2. The six different tools (Benoît *et al.*, 2006) they are able to use again: all the students (14 ) tell us they are now able to use themselves one of these tools . They think it was very useful and very interesting to test them in front of local stakeholders.
3. The different confrontation with the local stakeholders: 4 students tell us that it was a good experience to meet local actors and to confront different points of view. 4 students think it was reassuring to have to answer to local expectation in the context of an exercise directed by the teachers. It makes them realize what are their strength and weakness before they have to present in their future job. For 3 students it was their first experience to be confronted to local stakeholders, and they learn that this situation needs method to be efficient.
4. The knowledge they have acquired about the link between agriculture, production and public and the local expectations: 6 students think they have acquired knowledge on the particular link between agriculture and tourism and especially that it was something complex involving the public, the productions and the economic results. 6 students are now aware about the evolution of agriculture that must respond to the public 's expectation to survive in areas like Drôme. 6 students think that this case study was a good exercise to be able to identify the different actors involve in rural development. 5 students have understood that local projects are completely dependant of the local people and their will to create new activities. 7 students have not a clear vision of what knowledge this case study could have brought to them for their future job.

## Some conclusions ...for further discussions

We reach our pedagogic aims homogenously for all the students in terms of acquiring new tools but more heterogeneously for the acquiring of the building of a method to answer to a complex question. The ability of the students to acquire this multidisciplinary method is function of the professional objectives of each student.

The required conditions for the success of the exercise are:

- a project taking place away from the school (in this case, 500 km; but each year is a new deal !) which leads to a rich and intense group life and to an enhanced motivation due to the novelty of the context
- a short time (one week)) for the final work which must end by a debate on a fixed day
- a preliminary pedagogic work (three months) in collaborative working group which prepares the students to their appropriation of the question
- a face to face with the local stakeholders (Uriarte *et al.*, 2007) and their implication until the final restitution which concretely ends the project.

This pedagogic project involved in landscape agronomy tries to help students to a collaborative approach. To sustain this collaborative approach we use to bias: (i) teachers are used as “resources” managed by students, (ii) a multidisciplinary work applied on a same region. And finally, we focus this exercise on a single question built by local stakeholders, which are the “final evaluators” of the process during an exciting final night discussion.

The major problems are the choice of the site (motivated local stakeholders, link between agriculture and public's expectation), the financial cost (journey, food, lodging: 200 €/student) and a large availability of the teacher team.

The last restitution evening ...and often night is a very important event for students ...and stakeholders. Even the discussions are rough we obtain as teachers a very good feed back from the stakeholders.

The perspective is to follow this experience, and to build a more structured final report by the students. In some years, we propose to come back to the regions studied before to evaluate dynamics.

After a run during 3 years with only a school specialization (“Agricultures et milieu Rural”) , we enlarged the student group concerned by this module to 2 specializations ( “Agricultures et milieu Rural and Productions Agricoles” ) in 2005 and 2006, and since last year to a new one ( “DEFI”). So, the institution (the Ecole Nationale Supérieure d'Agronomie et des Industries Alimentaires of Nancy (France) is more and more engaged in such a teaching method.

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