

Transforming higher education: How universities can engage with stakeholders

Maria Wurzinger^a, Gustavo Gutierrez^b, Carlos Gomez^b, Hernán Cucho^c, Liliana Picardi^d, Graciela Nievas^e, Juan Pablo Gutierrez^f, Frederic Lhoste^g

^aBOKU-University of Natural Resources and Life Sciences, Vienna, Austria; maria.wurzinger@boku.ac.at

^bUniversidad Nacional Agraria La Molina, Lima, Peru; gustavogr@lamolina.edu.pe and cagomez@lamolina.edu.pe

^cUniversidad Nacional de San Antonio Abad del Cusco, Cusco, Peru; hernancucho@yahoo.com

^dUniversidad Nacional Rosario, Rosario, Argentina; lpicardi@unr.edu.ar

^eUniversidad Nacional de Comahue, Neuquen, Argentina; niquinte@gmail.com

^fUniversidad Complutense de Madrid, Madrid, Spain; gutgar@vet.ucm.es

^gMontpellier SupAgro, Montpellier, France; frederic.lhoste@supagro.inra.fr

Abstract: *In Argentina and Peru, the livestock sector plays an important role for the national economies by providing job opportunities in rural areas and contributing to the GDP. A growing population, urbanization and income increase are fuelling an increase in demand for products of animal origin. Both countries prioritize the social, economic and environmental development of rural areas, in which the livestock sector plays a central part. The livestock sector is facing challenges such as low productivity levels, resource scarcity and climate change. A complex holistic approach is required encompassing environmentally friendly livestock production options that integrate appropriate management strategies in due consideration of market opportunities, policies, food safety and animal welfare. The EU-funded project “EDULIVE-Transforming higher education to strengthen links between universities and the livestock sector in Argentina and Peru” addresses the integration of universities within society at large based on the knowledge triangle concept which stresses that higher education, research, technology and businesses need to be interlinked for optimal use and flow of knowledge and skills within a sector. By strengthening these linkages EDULIVE fosters transformational development of the sector, facilitates networking opportunities and accommodates the non-linear nature of innovation and knowledge creation. Universities broaden their education and research scope and offer improved curricula, which better reflect needs and demands of the livestock sector. Improving the quality of higher education curricula by involving sector stakeholders ensures true relevance of higher education for graduates in the field of animal sciences. Therefore, graduates are better equipped with skills to address the challenges of a rapidly changing sector.*

Keywords: *universities, animal sciences, cooperation mechanism, transformation*

Introduction

In Argentina and Peru, the livestock sector plays an important role as it contributes to the national GDP (gross domestic product) and offers job opportunities not only on farms, but also along the value chains. An increased demand for products of animal origin raises questions how production can be intensified in a sustainable way.

Currently, societies are confronted with multiple trends that exert pressure on socio-ecological systems such as population dynamics and urbanization (UN 2011; Długosz 2011), globalization (Guillén 2001), climate change and natural resource depletion or degradation (IPCC 2017; Prior et al. 2012). These changes make the need for livestock professionals, able to respond to changing needs and demands of the sector stakeholders, apparent. The necessary transformation to a sustainable society will require guidance by responsible actors who have a deep and contextualized understanding of current trends and challenges in

socio-ecological systems (Webster 2007). We understand socio-ecological systems as having social, economic and ecological dimensions that characterize a multi-level complex adaptive system (Smit and Smithers 1994; Tiftonell 2014). Complementing their knowledge, future decision makers in such systems will need particular capabilities and skills to facilitate societal innovation (WBGU 2012; Brown, Bransford, and Cocking 2000). A key skill, according to Fortuin and Bush (2010), will be the ability to cross boundaries between disciplinary knowledge, cultures and theory and practice. Indeed, the discussion on how we can facilitate sustainability learning in higher education has gained momentum in the past several years (Tàbara and Pahl-Wostl 2007; Shephard 2008; UNESCO 2005; Wright and Horst 2013). As universities educate future decision makers, they have a key responsibility for the transformation towards sustainable socio-ecological systems (Shephard 2008; Gadotti 2008; Ciurana and Filho 2006; Moore 2005; Stephens et al. 2008; Mochizuki and Fadeeva 2010). In turn, we can argue with Gadotti (2008) that education today is part of the causes of unsustainable lifestyles. Krizek et al. (2012) and Beringer (2007) underline that the institution university with all its components, including curricula, has to undergo a sustainability transition.

According to the concept of the knowledge triangle, “the contribution of higher education to jobs and growth, and its international attractiveness, can be enhanced through close, effective links between education, research, and innovation (...)” (EU, 2017). Applying this to the livestock sector, it seems vital to strengthen the cooperation between universities for animal science and the relevant livestock sector stakeholders, promoting the offer of demand-driven higher education and with it the ability to react to current needs and expectations of the sector.

This is the starting point of the project “EDULIVE – Transforming higher education to strengthen links between universities and the livestock sector” – an EU project within the Erasmus+ programme, from 2015-2018. Focused on pilot cases – 4 universities in Peru and Argentina together with diverse stakeholder organizations working in the field of alpaca fibre, dairy and sheep wool and meat, ranging from farmers’ associations, NGOs, private businesses to national research organizations – it serves as a hub and platform for the development of cooperation mechanisms. This exchange has a potentially high impact on the relevance of Animal Science curricula, research activities and the economy.

Aim of this paper is to demonstrate how a project can stimulate interactions between universities and important stakeholders, but also highlight possible limitations of such an intervention.

The authors of this paper are the project coordinators of all participating universities and are engaged in the implementation of all project activities.

Material and Methods

The EDULIVE-project started in October 2015 and lasts until October 2018. In this paper project activities from the project beginning until March 2018 are presented.

Project partners

There are 18 institutions from five countries participating in the project, including universities, research institutions and other actors (NGOs, farmers’ organizations, private companies) in the agricultural sector.

Table 1 lists all project partners according to their home country and type of organization.

Table 1. Project partners of the EDULIVE consortium

Type of organisation	Europe	Argentina	Peru
Universities	BOKU-University of Natural Resources and Life Sciences, Vienna, Austria	UNR-Universidad Nacional de Rosario	UNALM-Universidad Nacional Agraria La Molina, Lima
	UCM-Universidad Complutense de Madrid, Spain	UNCo-Universidad Nacional del Comahue, Neuquén	UNSAAC-Universidad Nacional de San Antonio Abad del Cusco
	SupAgro, Montpellier, France		
Research organisations		INTA-Instituto Nacional de Tecnología Agropecuaria	INIA-Instituto Nacional de Innovación Agraria
Farmers' organisations		AACM-Asociación Argentina Criadores de Merino	AGISF-Asociación de Ganaderos de la Irrigación San Felipe
		FECORSUR-Federación de Cooperativas de la Región Sur	
		SRB-Sociedad Rural Bariloche	
NGO			DESCO-Centro de Estudios y Promoción del Desarrollo
Private companies		Fuhrmann S.A.	Inca Tops S.A. Michell & Cia S.A. Gloria S.A.

All *universities* in the consortium are public ones and receive financial support from the national governments. The Argentinian universities were selected as they jointly offer a Master program on “Small ruminants in dry areas”, but are separated by about 1200 km. In Peru, UNALM is based in the capital city versus UNSAAC represents a university more in the periphery – leading to also different settings and challenges. All universities offer a bachelor program in animal science. UNALM also offers a Master program in animal science.

In both Latin American countries, the *national research organizations* (INTA-Argentina, INIA-Peru) were invited to participate as their mission is to provide technical solutions for the farming sector, but are also in the same time possible future employers of university graduates. They are potential research partners for the universities, but also for the other stakeholders.

Stakeholders of three distinct value chains in the livestock sector were selected based on their importance and potential to represent the different needs, challenges and constraints in the respective value chains. In 2016 the alpaca industry of Peru contributed with an export volume of about 51 million US \$ to the national economy (MINAGRI, 2017). Another important criterion was that these value chains include a diverse group of actors, starting with resource-poor smallholder farmers leading to high-value products, which in many cases are sold not only on the national market, but are also traded globally.

In Peru, for the alpaca value chain no farmers' organization which could be eligible according to the criteria of the EU call could be identified. Therefore, the NGO DESCO was selected as it has long-lasting cooperation with many smallholder farmers and can act as a representative for this group.

In Argentina, there are three distinct farmers' organizations as they represent large, middle and small size farms – each one with different profiles and therefore challenges.

The private companies were selected based on their market importance, but also their willingness to participate in a project for capacity development in higher education.

Project activities

Figure 1 gives an overview of the main project activities.

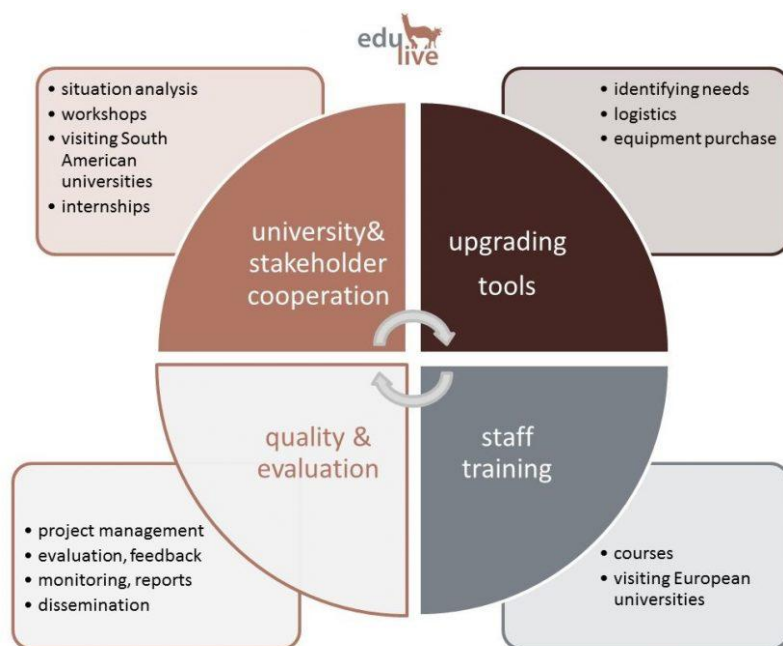


Figure 1. Core project elements of EDULIVE-project

Initially, an on-line *survey* was carried out by all four universities in Argentina and Peru to assess the level of satisfaction of students with their current study programme (Masters level in Argentina, bachelor level in Peru) and to get feedback from graduates on market entry and skills they found lacking in their current jobs. An additional on-line survey was done to get also feedback from the stakeholders employing graduates to get also their experiences. For both surveys the LimeSurvey tool was used. In both countries the response rate was low. In Peru, a total of 82 students, 39 graduates and 42 stakeholders answered the questionnaire. In Argentina a total of 27 students, 15 graduates and 14 stakeholders filled the on-line survey. In parallel to the on-line survey, the syllabus of the curricula and contents of courses were screened and evaluated.

A series of *workshops* with universities and all stakeholders were carried out to get a better understanding of the different needs, but also to identify mechanisms and possible areas of interest for future cooperation. The Peruvian partners decided to have separate workshops for the different value chains. Over a period of 11 months a total of 6 workshops (3 for dairy sector, 3 for alpaca fibre) were held in Peru and 3 workshops in Argentina.

Internships for students for a period between 2 weeks and 3 months (depending on the requisites of the universities) were implemented. The aim of these internships was to offer students the opportunity to test their knowledge in a real world setting, but also to provide the stakeholders with insights of the capacities of possible future employees and give universities an immediate feedback loop on their curriculum. So far, 30 internships were performed in Peru and 10 internships in Argentina.

In order to strengthen the universities, they purchased their equipment, from basics like laptops and projectors to cameras, camcorders and interactive whiteboards.

Staff training was identified as a key element to start envisaged changes in the current education systems. Different staff trainings for academic staff on topics like didactics, e-learning and quality management in higher education. In each country 2 courses on didactics, 2 on e-learning and 1 course on quality management were carried out. Course duration was usually between 4-5 days. Courses were held for participants of both universities in the same country to provide an additional platform for exchange of knowledge and experiences. In each course 20 staff members (10 from each university) participated.

In addition, visits at European universities for intercultural dialogue and sharing of experience, ideas and the working in different circumstances were carried out. Academic staff members from the Latin American universities visited in the first year for 1 week the UCM-Universidad Complutense de Madrid and for 1 week Montpellier SupAgro. In the second year participants were hosted by UCM-Universidad Complutense de Madrid and BOKU-University in Vienna. In each visit 8 professors (2 per university) travelled to Europe. Again, the visits were organized to allow dialogue between European and Latin American partners, but also between Latin American partners.

Quality control and evaluation is another critical factor in the project. All steps of the project are carefully documented by all project members and monitored on a regular basis to provide transparency. Project activities receive feedback and evaluation, and results, technical and financial data is collected in reports to implement possible improvements already during the course of the project. A mid-term and final evaluation, done by an external consultant, were in-built mechanisms to ensure that the project activities are carried out as planned. The mid-term evaluation was done by one consultant for both countries to ensure comparability of results. The evaluator was provided with all project documents. In each country personal interviews with individual persons and a workshop with all actors were carried out. Based on this information a report with recommendations was prepared.

Results and discussion

Satisfaction with study programs

Results from the survey showed above all that more practical expertise, as well as communication and management skills could improve the cooperation between graduates employed by stakeholders – abilities found to be currently lacking by both employees and employers. This confirmed the project idea to be of great potential benefit. In both countries some graduates were complaining that they had to search for a longer time before getting a good job offer. Reasons mentioned were that companies preferred people with a longer working experience or missing practical experience gained while studying.

One explanation for the underdeveloped soft skills is that in all four universities the study programs are heavily focused on acquiring technical knowledge in the different aspects of animal production (feeding, breeding, animal health and herd management). Training of soft skills like team work, communication and management does not get a lot of attention. Related learning outcomes to these skills are lacking at program, but also at lecture level. This became also obvious in a training course for teachers where they expressed their concern that it is very difficult to evaluate students if they have acquired this type of skills. In training courses different methods how lectures could be adapted (e.g. converted class room, problem-based learning, etc) were presented and discussed.

Cooperation mechanisms

Over a time span of about 11 months in both countries a series of workshops was carried out between universities, research organizations and all other stakeholders. At the beginning of the discussion actors' expectations from the universities were elaborated. As expected the range of expectations was quite large, ranging from a very applied knowledge (e.g. how to milk cows) to more analytical skills were asked by different actors. It was an important discussion point to clarify which focus universities set for their study programs, but it also clearly highlighted a common problem of universities. Balancing between more applied education or preparing students for their future by focusing more on theories, models and concepts and strengthening more the research skills. All four universities have as priority a more applied study program in mind as this also seemed more needed in the labor market.

There were also discussions how stronger and more strategic alliances could be established between different organizations. Some had already experience in working together (e.g. joint supervision of bachelor or master thesis by research organizations and universities).

One possible intervention was to invite representatives from the partner organizations to the universities to give lectures for students and staff members. Especially in Argentina this was quite a novelty to open the university to external speakers. The feedback from students was very positive to meet people from the “real world” and learn what are current trends and developments. The feedback from the external speakers was mixed. Some enjoyed the interaction with young people, others were disappointed about little interest and/or little knowledge about their work.

Another result of these workshops was the development of joint development or/and research projects with different partners. One representative of the Peruvian universities stated “it is really exciting to see that an NGO and industry partners sit together in one room and discuss cooperation”. This shows that these interactions not only led to a closer collaboration between universities and the other stakeholders, but also amongst stakeholders. Providing a space where people can express freely their opinions facilitated the formation of new alliances. In Peru there is also currently more funding from the national government provided for public-private partnerships. Therefore, this project was launched in the right time as the enabling environment was also there. Funding opportunities are important to translate joint ideas on development and research into tangible results like joint projects.

The space of interaction between the different groups was quite different between Argentina and Peru. In Argentina all stakeholders commented on the long distances options between locations as one major limiting factor. Face-to-face meetings for further discussions are not easily to organize, farmers’ representatives are sometimes out of reach due to poor coverage of mobile phone network and/or internet. As there had been little interaction before the project start, it also took longer to get to know each other and develop a shared vision of interaction. The workshops were perceived useful by all partners as it opened new perspectives and understanding of the current situation of each one. There are less funding opportunities for universities to establish links with their potential partners in the future. This also was raised as a concern.

As a follow-up to general workshops bi-lateral meetings were organized between different project partners to follow up on mutual interests. At the moment cooperation is project-based, but this can be seen in some cases as a first step to a more formal and long-term cooperation. In Peru, the private companies have started a negotiation process with one university to sign a framework contract.

Internships

In Peru, both universities have as a requisite for the bachelor program the completion of at least three months of internships, but there is no systematic support provided by the institutions for the students to find an internship place. This was one critique mentioned by some students during the survey.

Within the framework internships were organized to not only help students to get internship places, but also to use them also as a learning opportunity for the universities. Existing regulations, feedback and evaluation sheets for students, host institutions and sending universities were up-dated, cross-checked and further developed during a “quality management” training course for university staff. By having a closer follow-up of students’ internships, universities get an immediate feedback on their teaching portfolio and knowledge of their students.

In Peru, it happened that students from both universities were doing their internships with the partners from the alpaca industry at the same time. This was an additional interesting point as students could directly compare their knowledge, but also the companies could see that study programs differ in their orientation. UNSAAC in Cusco has a focus on animal health, whereas UNALM has only basic courses on animal health. This was noted by the receiving institutions and made them aware that they have to check these details during a recruitment process.

Argentinian partners took a different approach for their internships and organized them more as study tours. This gave students the opportunity to visit different partner organizations and get to know different production conditions within a short time.

A general problem encountered in both countries is that students prefer to do their internships during the summer holidays in order not to miss lectures. This time does not always fit best for the companies. In general, the feedback from students was positive. In Peru, students were given specific tasks to work on. For example one student had to analyze milk quality delivered to the dairy company and provide feedback to farmers and give recommendations how milk quality could be improved. Students liked to be exposed to real world problems and to apply their knowledge acquired at university. They also reflected that the application of theoretical knowledge in the field is not always easy and requires experience. It was also seen positive that they had one main contact person at the company, who guided students. Supervisory visits on site by professors were carried out to oversee the activities done by students. This was noted as positive, but also as a time consuming and costly effort and seems to be unrealistic as a routine practice in the long run. One option would be not to visit each and every student, but select each year different companies which are visited.

Mid-term evaluation

All training components were seen positive; especially the courses on e-learning raised a lot of interest in all universities. In Argentina, universities see on-line courses as a possible option to enlarge the current offer of courses. In Peru, the discussion was to open on-line courses for the other university in cases where a specific expertise is missing. One concern raised was that universities have no mechanisms to disseminate new information and ideas gained during the trainings to the teaching staff in general.

In the mid-term evaluation the internships were also evaluated positively and seen as a very good opportunity to strengthen links between universities and the livestock sector. It was mentioned that lessons learned from this pilot internships have to be used and also applied to other sectors of the livestock production. The project supported universities to reflect on their current scheme for internships and develop possible strategies to improve them.

The evaluator insisted that institutionalization of different initiatives and the implementation of certain topics remains a challenge that has to be taken up by the higher management of the universities.

Challenges

Particular challenges were found in changes at the level of legislation concerning university structures and activities, e.g. stricter requirements for student internships such as a minimum salary/remuneration, aimed at protecting the students from excessive work without payment, but also making it impossible for some smaller companies to accept interns in the first place.

In general, the communication flow between such a large team of coordinators and even more partner organizations turned out to be really challenging. With many partners in remote areas, different summer and public holidays, all activities have to be scheduled extra carefully and ahead of time. Intercultural differences in communication between project partners from different countries were also noted.

Conclusions

The project's main approach to strengthening cooperation between the livestock sector and university programmes on animal science has been proven relevant in the initial survey and during continuous feedback of project activities. Cooperation mechanisms, which had mostly been based on personal contacts with few formal and organized structures, turn out to be

very important and of mutual benefit. Internships are received with great motivation from all sides – students, professors and industry/farmers. To ensure the success of the internships for all parties involved, they have to be well planned and organized.

The taken approach to work on specific value chains was good as it allowed in-depth discussions and offered space for learning. Lessons learned from this interaction can be transferred to other livestock value chains.

Institutionalization of interactions between universities and stakeholders was recognized as important, but at the same time also as a challenge.

Financial support by the EU was vital to initiate processes, upgrade equipment and run pilot internships. EDULIVE also provides transcultural exchange at regional and international level.

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