

Experiential Learning in a Transdisciplinary Setting – Learning from Experiences in Rural Development studies

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Abstract: Local actors in rural development often claim that they are being objects of research and approached as sources of “data”, thereby helping students and researchers in advancing their careers, but get little knowledge in return and cannot see the benefit of the research to their own lives. On the other hand people in rural areas are targeted in a variety of governmental and non-governmental programmes, on the design of which they often have little direct influence. Universities have a dual role here: They produce information that is used to develop and justify interventions in rural systems, and they educate future decision-makers and programme managers. There has been an ongoing discourse in the academic world on the relevance of different types of knowledge, as well as on the competences which future professionals in these fields need to acquire during their studies so as to fulfil their job tasks in a responsible and capable manner.

The Latin-American – European project SERIDAR aims at increasing relevance of university research and education through transdisciplinary networks for rural development in selected Latin American regions. A joint Competence Centre is being created as an international network of universities and other research institutions, grounded in local stakeholder networks where a variety of non-academic and academic actors collaborate and jointly develop research agendas. This paper focusses on the methodology of inter- and transdisciplinary student team research which are being implemented as pilot projects by participating universities. We describe the approach followed in these running pilot projects, its theoretical foundations as well as the criteria and methodology we intend to use for analysing and learning from the experiences made. First observations and lessons learnt are discussed.

Keywords: Competence-based curriculum development, Problem-Based Learning, active learning, stakeholder participation, university – practitioner networks

Introduction

Local actors in rural development often claim that they are being objects of research and approached as sources of “data”, thereby helping students and researchers in advancing their careers, but get little knowledge in return and cannot see the benefit of the research to their own lives. On the other hand people in rural areas are targeted in a variety of governmental and non-

governmental programmes, on the design of which they often have little direct influence. The idea that development can be planned based on research evidence depicts local actors as passive receptors of development, but researchers and interveners as “experts” that bring change. Universities have a dual role here: They produce information that is used to develop and justify interventions in rural systems, and they educate future decision-makers and programme managers. There has been an ongoing discourse in the academic world on the relevance of different types of knowledge, as well as on the competences which future professionals in these fields need to acquire during their studies so as to fulfil their job tasks in a responsible and capable manner.

The development of participatory research methods and experiential learning approaches has received important impulses from Latin-American scholars and practitioners. One of the driving forces had been to highlight experiential know-how of practitioners and thus to bridge the gap between academic and non-academic knowledge and skills. Participatory approaches for development, and later during the decade of the 1980ies also for research, brought to light a lively debate on local actors’ rights but, more significantly, on their agency to decide their own future even under huge institutional and economic constraints. In this way planned development as emanating from dominant centres of knowledge and power was contested (Long, 2007), and different ways of research and intervention were proposed and developed that centred on local actors’ capacities, knowledge and lived experiences rather than on “expert” knowledge and technology. However the urge to integrate rural communities in global markets in the 1990s relegated participatory approaches, and most universities shifted their focus to other priorities than to understanding, supporting or at least respecting local processes. In this paper we summarise the efforts made by different universities in Latin America in order to revive local participation in their research and development agendas as applied in problem-based student team research projects. In a further step we analyse our experiences using a methodology of systematisation. The latter is defined as: *“the participatory and thoughtful process of reflecting about different aspects of a specific project or intervention: its actors, actors’ interaction, outcomes, results, impact, problems, and process* (Tapella and Rodríguez-Bilella, 2014:3). Nevertheless, this concept is re-worked: On the one hand a joint development and learning process across teams and projects of six universities needs to be considered, on the other hand the pilot projects were heterogeneous because the processes of their development were embedded in local conditions, and leave us with important insights for engaging in projects that belong to the communities rather more than to the researchers alone. This implies faculty working changes within the university system, students and future professionals acquiring specific knowledge, skills and attitudes, and new power balances on university-community alliances. Although with clear intentions since the beginning, the pathways to link research and development to local demands in each case have not been linear but full of loops that left us with many questions, lessons and dilemmas in the process.

It has long been apparent that university graduates need more competencies in their future professional and societal engagements than presently available knowledge that faculty can teach. Competence-based curriculum development is an approach to developing curricula based on desired competencies to be developed in students through the curriculum (Biggs and Tang, 2007). A useful definition of the term ‘competencies’ in this context is given by Kupper and van Wulfften (2001, emphases ours): *“We see competencies as the capability of people to perform in a function or a profession according to the qualifications they have. These qualifications should be expressed in terms of **knowledge, skills and attitude**. Additionally, because the environment in which our graduates work is constantly changing, our graduates should be able to adjust to new circumstances.”*

As a consequence, new learning objectives that match these desired competencies are required, and the lecturers’ task is to organise educational experiences that enable students to achieve these learning outcomes. In this paper we describe the methodology tested in SERIDAR’s partner uni-

versities for student team investigation based on complex real-world problems. The learning objectives and activities aim at developing also methodological and social competencies, in addition to the knowledge being constructed jointly. In the systematisation methodology subsequently described here we therefore consider that the projects do not only focus local development in the communities concerned but also an innovation within the curricula for students, implying conceptual and procedural changes within the universities.

Transdisciplinary networks within the SERIDAR project

Seven universities in Mexico, Nicaragua, Costa Rica, Colombia, Ecuador, Spain and Germany have partnered in the EuropeAid-funded project “Rural Society, Economy and Natural Resources – Integrating Competences in Rural Development” (SERIDAR). It aims at increasing local relevance of university research and education through transdisciplinary networks in selected Latin American regions.

In the project a joint research, education and training platform for rural development and related fields is established - a Competence Centre which is integrated internationally (EU-LA), regionally (Andean region and Mesoamerica) and locally (in the partner countries). In order to bridge the gap between the academic and non-academic knowledge systems, university staff have integrated themselves in local stakeholder networks involving various types of actors like farmers’ groups, youth, peasant women, NGOs, GOs, academics: Round-table meetings and other joint events are organised to elaborate and prioritise locally relevant knowledge needs and possible topics for research and capacity-building activities. Research topics are then taken up in thesis work of students, in the joint doctoral programme and – in the future – also in larger international research projects. Participatory development of such research programmes is crucial for the thematic and methodological orientation of the Competence Centre. At each university a liaison (*persona de enlace*) was responsible for facilitating this process. The development and experiences with these transdisciplinary networks are discussed in Hofmann-Souki et al. (2014). Various research and education activities follow a transdisciplinary approach, for example the problem-based student team research projects as a practice-oriented learning activity.

Inter- and Transdisciplinary Student Team Research within the SERIDAR network – the methodology

For most of the universities in the SERIDAR network, problem-based student team research (PBSTR) constitutes a new element in their study programmes, and therefore are planned and implemented as pilot projects. PBSTR projects follow two purposes: a) students’ development of professional and personal competencies in methodological, analytical, social dimensions, and b) to contribute with useful knowledge to and support joint learning in local stakeholders’ development efforts.

In order for the universities to allow their faculty to make experiences with the PBSTR methodology meant that this learning activity needs to fit into existing curricula, e.g. in the form of an elective course. It was not intended to change the curricula as such, as has been done elsewhere with Problem-Based Learning (PBL) methodologies in processes of competency-based curriculum development (e.g. Riseman et al., 2005). Instead, the focus is for the students to apply theoretical knowledge acquired in other courses, and to work with non-academic partners on issues identified in the local stakeholder networks (see chapter 2). This transdisciplinary approach differentiates the chosen methodology from conventional PBL, and it has important implications in all phases of the course.

This dual purpose of PBSTR implicates formulating objectives for the pilot projects on two levels: learning objectives for participating students, and research objectives for the investigation to be done. In due course the learning activities offered need to ensure that students are able to reach these objectives, and assessment tasks needs to relate to these same objectives, as stipulated by constructive alignment (Biggs and Tang, 2007).

Didactical concept

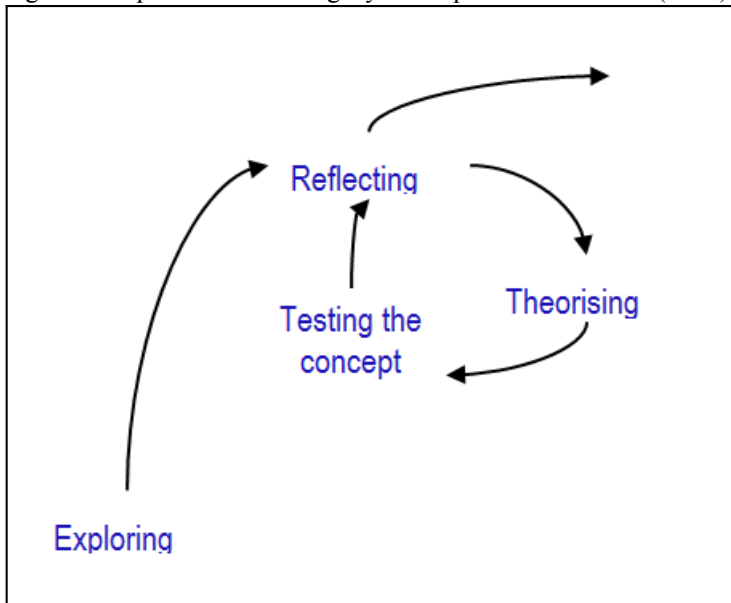
Considering the vast range of competencies that graduates need in the future, the learning objectives formulated for the PBSTR projects address three dimensions:

1. Knowledge on topics, i.e. factual knowledge the students should learn. The added advantage here is that students are able and have to put this knowledge into the context of a real-world problem.
2. Methodological skills, in particular analytical and research skills from information-seeking to structuring the research process to performing empirical research
3. Social skills like communication, teamwork techniques, self-management and user orientation.

Methodological foundations of our didactical concept lie in experiential learning (e.g. the Coverdale Training), Problem-Based Learning (e.g. Barrett, 2005) , and Action and Decision Oriented Investigations – a concept developed and used by the Centre of Rural Development (SLE) at Humboldt-Universität zu Berlin, Germany (see Fiege, 2012).

Referring to Dewey and Kurt Lewin, David Kolb (1984) has developed an experiential learning cycle. The Learning Cycle is anchored in a thorough understanding of learning theory. Its roots go back to the developmental learning theories of Jean Piaget in the 1960/70ies. Experiences constitute a set of empirical findings which are at the bases of reflection and learning conclusions, which in turn constitute bases for new action. The experiential learning cycle allows participants to reflect how learning occurs: They learn how to learn. This is the basis for life-long learning ability.

Figure 1: Experiential Learning Cycle adapted from D. Kolb (1984).



Problem-Based Learning (PBL) constitutes a type of experiential learning. The supervisor here does not have the role of an instructor, but rather a facilitator of learning. For our purposes PBL is a learner-centred instruction method, built around a complex problem or question, which stimulates students to “learn how to learn” and engage in research. Learners collaborate in groups to

structure the problem, seek understanding through cooperation and solutions to real-world problems.

In contrast to common PBL practice whereby cases (problems) are prepared by faculty alone (e.g. Barrett, 2005), the questions and problems developed within our PBSTR methodology are preferably derived from a knowledge need of practitioners and should, as a consequence, result in a concrete output for specific users who have commissioned the study. This follows the concept of Action and Decision Oriented Investigation as described in Fiege (2012): In the conceptualisation of each project three questions need to be answered in subsequent phases, before starting the empirical research:

1. Why has the study been commissioned (what is the knowledge gap)?
2. For whom and with what purpose (who will use the outputs and how)?
3. How may the outputs be achieved?

Projects include between 4 and 13 students, often from different study programmes, and are supervised usually by two lecturers. The student groups plan and implement the project, which implies to clarify the purpose and intended outputs as well as the users of the outputs, elaborate the theoretical and analytical framework, plan and implement the methodology for obtaining the results and analyse the latter, as well as present them in a way useful and applicable for the users and as required for university assessment. During their work the group needs to plan and act collectively and individually, communicate within an interdisciplinary and transdisciplinary context and reflect on the result elaboration and group process that evolves.

Lecturers become observers and facilitators of students' learning and have an important role especially in reflection and conceptualisation phases. The supervisors' task is to ensure focus and scientific quality of the work, appropriate communication with the stakeholders involved, spaces for reflection and feedback, and examination of those results which are included in the assessment tasks. Furthermore, some specific input is given in the form of methodological trainings on participatory research methodologies or teamwork techniques.

Transdisciplinary approach and its implications

As mentioned before topics of the pilot projects have arisen from a process of negotiation with local actors in the networks the universities participate in. In order to build trust, a (sometimes formal) agreement is made by the supervisors with a specific actor or group of actors, in which objectives and expected deliveries, distribution of responsibilities and other important issues are laid down. These often need to be refined by the students in a later phase. Involvement of practitioners in the other research phases varies, depending on the topic, analytical framework and methodology, and also on distance, available time and financial resources. In some projects the practitioners even participate in the training modules on participatory research methods.

Results are discussed with the local stakeholders, and students need to consider the feedback received in their final output. In most cases the practitioners are also involved in evaluation of the pilot project, both regarding results and process of the collaboration.

First experiences in preparation and implementation of the pilot projects

The overall concept and methodology of the PBSTR projects are nearly the same for the teams in each participating university. However, there are some differences especially in the formulation and relative importance of the learning objectives, the concrete training modules offered, the composition of teams as well as scope and duration of the projects. Needless to say, these param-

eters vary also according to the topic of investigation and conditions within the study programmes and universities. First experiences from several countries are described here.

Experiences in Ecuador

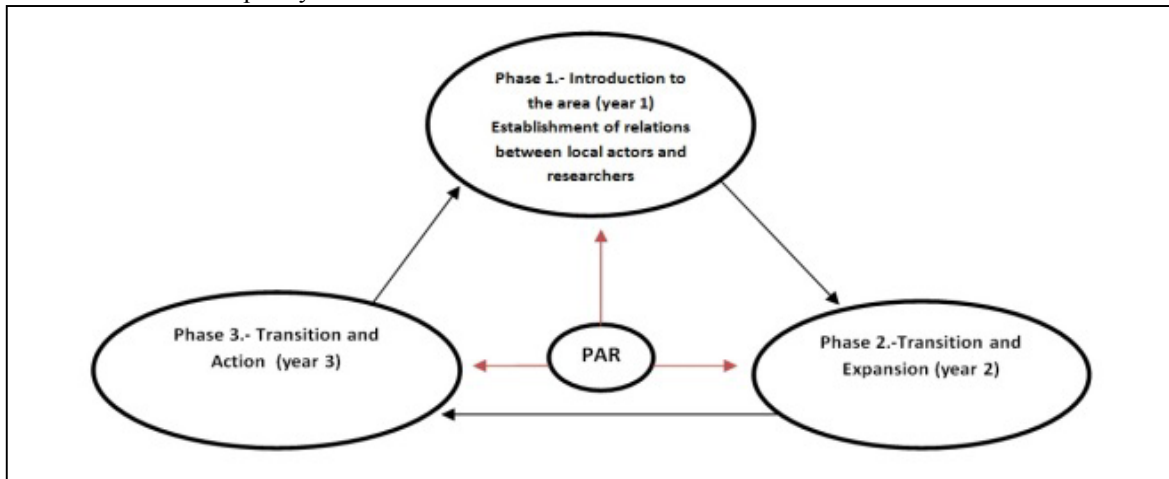
The implementation of the pilot project in Ecuador has been a process of joint learning between the supervisors, teachers, students, and local actors in the province of Guayas. Once a local network interested in participating in research under the SERIDAR project had been located, a Participative Action Research (PAR) workshop was held. Participants in this workshop were professors, master's students in Rural Territorial Development (RTD), and members and former members of the Association of Agricultural Cooperatives of the Coast (AACC). The challenges to implementing this methodology were: a) the fact that the research topic should originate from the needs of the local actors and not from academia, while the university demands that students present a research proposal prior to the development of the thesis, and b) implementation of the PAR methodology is a process that takes several years and the time students have to complete their theses is only six months. For these reasons it was decided to propose an alternative plan of sustainability of research in the area. According to the plan, each year one or more master's students carry out their research alongside the local actors of Guayas using the tools of participative research. At the same time, it is proposed that local actors seek persons from their own region interested in pursuing a master's degree in RTD. These students from Guayas will then continue and expand research in the area, thereby guaranteeing the sustainability of the project.

The first phase of research, which we call *introduction to the area*, consisted of four stages: First a discussion was held between researchers and local actors in Guayas during which the topic, objectives and methodology of the pilot project were discussed. This assisted the investigator and the local actors to coordinate commitments and support for the research. It was agreed to investigate the conditions that led to the disintegration of rice cooperatives in the Guayas river basin, canton of Daule, and their relationship to the transformation of the agrarian structure and agricultural production of the area. In the second stage, the investigator and two members of the former cooperative prepared the research tools (surveys and interviews) to be used by students, local actors and their children, and the liaison. In the third stage, three focus groups were created whose participants included four master's students, 36 local actors interested in the topic, and the liaison. This activity enabled the involvement of more students in the pilot project, the discussion of the conditions of the local actors, and the contextualization of the area. Finally, once the information was processed, a workshop was held to discuss the results with 45 local actors interested in the topic.

The implementation of the pilot project required constant coordination between the supervisor of the project, the students, and the liaison. The most surprising finding was the strong involvement of the local actors, for whom recalling and valuing the peasant struggle of the 60s and 70s was motivation for continuing research in their area, which presently faces structural problems in the rural sector, such as access to water.

The second phase of the research in the pilot project, called *transition and expansion*, was carried out by means of a new PAR workshop. In this workshop, a new topic of research was discussed with local actors in order to discover how they organize with respect to water resources and what the problems they identify with regards to this resource. New agreements for collaboration were established between the student and the local actors. The third phase of the research, *transition and action*, was also carried out (figure 2).

Figure 2: Phases of Participatory Action Research in Ecuador.



Experiences in Mexico

The Autonomous University Chapingo (UACH) through Chiapas Headquarters of the Master of Science in Regional Development (MCDRR), collaborates with the Network for the Development and Conservation of the Sierra de Chiapas Villaflores (REDESIVI). Actors in 12 local farming communities involved, as well as academics, NGOs and government institutions in the environmental sector. The region has been immersed in the Biosphere Reserve La Sepultura since 1995. The mountainous territory is characterised by diversified agriculture (corn, beans, palm, coffee and cattle), as well as numerous rivers and streams that form the Cuenca Alta del Río Plank converge.

Livestock is one of the important activities in 12 communities for its economic value, but grazing puts a heavy strain on the fragile environment especially in periods of draught. For this reason members of REDESIVI decided to collaborate in a transdisciplinary manner to investigate the water management practices of local actors related to livestock in the Sierra de Villaflores. The group was composed of six graduates (of Social Anthropology, Sociology, Animal Science Veterinary Medicine, Alternative Tourism, and Administrative Computing) and two Master of Science in Regional Rural Development. The group was trained in Problem Based Learning methodology and then designed fieldwork using this methodology as well as Participatory Action Research. The group held meetings with local community stakeholders, conducted interviews, surveys, tours accompanied by local actors to rivers and streams as well as other places where cattle graze.

The PBL methodology allowed each member of the group to experience the real situation, and to analyse it from the perspective of their discipline, while exchanging experiences and knowledge with participants from other disciplines. " I had never worked in an interdisciplinary group, but it is the best experience I could have, because I learned from them all", said Bolom U., a member of the group, at the evaluation meeting. Further analysis of activities and solution strategies that local actors put in place to solve problems helped the group to understand the dimension of water management for mountain livestock.

A first assessment was carried out within the transdisciplinary group based on criteria described by Montoya (2010): thematic knowledge (understanding of the issues), cooperation (collaboration in the field and in the office), tolerance (attitude of integration, harmony and respect in the team), leadership (convincing, innovating, and managing without generating conflicts), applied learning (practical use of the learned topics), communication skills with local actors, skills to apply methodological tools, skills to synthesise information and accompanying tutorial (methodology, guidance, encouragement, and advice). The results show that all participants understood the

thematic field, although not all could handle it properly. Half of the group tended to strong cooperation while the other half does so to a lesser extent, and only as long as they are told to cooperate. Tolerance is a value in which all members of the group believe but only two members of the group achieved high values for it. The leadership skills were generally rated as medium. Group members felt that they tend to apply their knowledge. It was assessed that group members generally developed skills to communicate with local stakeholders; however the use of methods to synthesise the group are judged as lower medium. The accompanying tutorial is rated at higher medium. We conclude that transdisciplinary work should generate more skills in each of the members, and we should work more on values such as tolerance.

The transdisciplinary approach meant that activities were adjusted according to local circumstances and realities and provided professional and personal growth of each member; soon came into play prior knowledge and skills to interact within the group and with local stakeholders and to learn more about the problem at hand. The transdisciplinary research on rural development lead to greater interaction between researchers and local stakeholders and therefore to an integration of different angles and of practitioners' perspectives to the research. Additionally, transdisciplinary work brought to the surface human values such as respect, tolerance and cooperation, while allowing a thorough analysis of the symbolic aspects that local actors relate with water management.

Experiences in Nicaragua

At the Universidad Nacional Autónoma de Nicaragua – Managua the pilot project has been done on undergraduate level. In order to identify the topic the needs most felt by the local actors were identified, and then a prioritisation according to perceived urgency has been done by the local actors, in this case concerning access to water resources in Pochocuape. On this basis the research objectives and expected results have been agreed. From the beginning the interaction has been through participatory methods - group meetings, round-tables, interviews as well as various exercises. This has contributed to enriching the knowledge of all – the supervisors, students and local actors. As regards the students, specific learning objectives had been formulated for them on the levels of knowledge, methodologies and abilities. For each category certain learning activities and learning situations have been implemented, including a course on research methodologies, and the students then had to choose, design and verify the methods for their field work. Later on the students evaluated that understanding was less difficult than applying the new methodologies. Among the most important learning experiences they mentioned were: teamwork and new forms to investigate, to listen and to communicate. Difficulties mentioned were: Coordination, time, teamwork, communication and access to information, among others. They evaluated that the experience that had the most impact on them was being able to interact with the local actors and see their problem situation in the field.

For the supervisors the difficulties were similar: To coordinate the time of students with their other studies, and that not all of them assumed their assigned role. Also to deal with the new methodology lead to learning. Success has been seen in the enthusiasm to participate in the project, to gain new knowledge, to be able to relate directly to the local actors and understand their problem situation. They were surprised about the level of interaction between academia and local stakeholders, generating synergies and learning to understand and respect others in their identity. In the future such projects could be integrated as an extra course, or like a specialisation programme in the Msc programmes of the university.

Experiences in Germany

At Humboldt-Universität zu Berlin study projects already are an integral part of the mainly international Msc programmes at the Faculty of Agriculture and Horticulture. In most cases a topic in a developing country is chosen. This time the study project has been planned as a part of a transdisciplinary multi-stakeholder project on sustainable rubber cultivation in southern China

(SURUMER). This meant that the “clients” of the research, those who expected to use the outputs, were researchers themselves and also supervisors of the students. Hence it was easier for the students to periodically reassure with them that they were working in the right direction, because these negotiations happened within the academic circle and language. The other user of the results, the nature reserve administration in the research region in China, was more difficult to involve, because of political considerations in China and also due to the distance for most of the time.

The task was to prepare and perform a stakeholder analysis of rubber cultivation in the research area Xishuangbanna as a baseline study for further research activities within the larger SURUMER project. At the beginning a three-day intensive training on teamwork techniques has been implemented – an activity which not only makes the further collaboration in the project more effective, but which also serves to prevent conflicts. Students learn to reflect on their own collaborative process and improve based on experiences made. In the ensuing four months the objectives, hypotheses, theoretical framework and methodology of the research were developed. The empirical research involved two weeks in which the students immersed themselves in village life in China with observations, mapping and interviews. Results were briefly analysed on the spot and presented to the local partners. Strong interest at the natural reserve administration led to a lively discussion at that event. The final results were presented three months later after in-depth analysis. A revised version of the report will soon be published in English and translated into Chinese, too. In addition, the transcripts of all interviews with a variety of stakeholders could later on be used by other researchers in the project, in particular as a preparation for own interviews on more specific topics. Whereas the students felt quite confused at times with the uncertainty involved in such a real-life project, they very much valued the interaction with stakeholders and the associated change of perspectives.

Towards a concept for systematising the experiences

On the meta-level of the international working group, the concepts of the pilot projects have been defined and the methodology elaborated in two joint workshops. It had been clear from the beginning that after their implementation, the universities would need to decide whether or not to continue with such a type of learning activities within their curricula, and if so, how to maintain and improve them. Needless to say, creating convincing success stories with the pilot projects would be the best argument which can be presented to the decision-makers in the study programmes. But how would we know if the innovation was successful to make such a decision? What can be learnt from the experience?

In the preparatory workshop the objectives and a list of criteria have been developed for the evaluation of the pilot projects and for the systematisation of our experiences with the process of conceptualising, planning, implementing and evaluating them.

Based on the criteria, a small team of participating lecturers has elaborated various indicators of success, directed at different target groups. A guide has been drafted for the whole process of systematisation. This work has helped to sharpen the synergies of and differences between the evaluation of the pilot projects in each country and the systematisation of the experiences at each university and within the international working group.

Both constitute collective learning processes. Main objective of the evaluation is to understand how the pilot projects have been implemented, how the method has functioned and how participants value the learning and results. Systematisation focuses on the experiences and the process, is not limited to the project logic itself and may include other dimensions. It promotes reflection, reconstruction and critical interpretation of experiences (Jara Holliday, 2012; Berdegué et al.,

2007), and thus helps to achieve broader learning beyond the question of whether or not to continue with this type of learning activity in the academic study programmes. Whereas implementing pilot projects represents a form of introducing a practical experience to be learnt from for the lecturers, systematising the experiences offers a methodology for making the experiential learning explicit and transparent – it trains the capacity for reflection, in our case on the design and implementation of new learning activities with their respective didactical backgrounds.

Despite the conceptual and methodological differences between evaluation (of the projects) and systematisation (of the experiences and processes), it is still recognised that there are no clear borders and various overlaps (Jara Holliday, 2012). In our specific case it is neither possible nor desired to completely separate the two, first and foremost for practical purposes. Specific events are organised with stakeholder groups to discuss the experiences, events which serve as platform for both evaluation and systematisation, and separating the procedures would seem artificial. Also questionnaires would serve both purposes – people may hardly be expected to fill out two separate ones. The combination also responds to the desire of the working group to keep this step as simple and pragmatic as possible.

In our experience, systematisation departs from the recognition that any intervention (including research) enters in a complex of social relations at the local level (Long, 2007) that researchers cannot control. Moreover researchers become embedded in local social relations among which intercultural and power relations are some of the most important to recognise and deal with (Haverkort and Rist, 2004). In this perspective systematisation (in the sense of reflection) is a way to address social differences (knowledge, power, etc) before, during and after the project is being carried out⁵⁴. It makes visible the different knowledge systems that are interacting (often struggling) in the research process. If learning is changing, research - and education through research - should be a process through which change can be enabled, and systematisation can enhance it.

When consulting the theoretical basis for the systematisation of experiences it became apparent that most of the publications on the methodology are geared towards “classical” development projects with communities or citizens (e.g. ActionAid, 2009, Berdegué et al., 2007; Tapella and Rodríguez-Bilella, 2014; UNDP, 2011). Thus we have to develop for ourselves a methodology for systemising experiences in transdisciplinary research and education, with different perspectives involved. Four basic phases are distinguished in the process, with different actors involved in each step:

⁵⁴ The questions that guide systematisation (e.g. those proposed by Tapella and Rodríguez-Bilella:3) during the process should be then in past, present and future tense, as systematisation does not only occurs after the research.

Phases in the systematisation process	Actors involved/targeted	Methods to be used
I. Evaluation of each pilot project	a) local actors who are the users of the pilot project outputs and with whom the initial agreement had been made b) Participating students c) Participating lecturers	Instruments of participatory evaluation, especially focus groups, interviews, anonymous questionnaires with open questions (for students)
II. Systematisation per university	d) Other lecturers who are responsible for the study programmes	Workshop, consultations, review of materials
III. Systematisation on international level (across participating universities)	c) Participating lecturers d) Other lecturers who are responsible for the study programmes e) SERIDAR's project Board (steering committee)	Workshop, Workshop report as input for renewed intra-university discussions
IV. Discussion and publication of results	All of the above, and other universities (for the publication)	Joint publication and presentations

As regards the first two phases, and according to the experiences of the different universities, systematisation can vary from being the main tool of participatory approaches in research as in the Latin American tradition of PAR or, a tool for reflecting ex-post in all or part of the different project stages.

This means that the kind of systematisation that is possible does not only depend on the decision and experience of university teams but mainly on the level of local organisation and decision-making that can turn interventions into locally resolved processes (Sherwood and Paredes 2012). Acknowledging heterogeneity of situations for the cases presented in this paper, common criteria and indicators have been formulated for evaluation and systematisation. The main criteria are:

- a. Learning by students, faculty and local actors
- b. Usefulness and quality of the various results – for the local actors and for the theoretical and methodological debate in the SERIDAR competence centre
- c. Level of implementation of the transdisciplinary and participatory focus
- d. Roles, level of participation of every type of (university and non-university) actor
 - Achievement of the principles and valuation of the process, commitment for follow-up
 - Level of implementation of the Problem-Based-Learning methodology
- e. Usefulness and satisfaction of the training course (i.e. of the capacity-building modules within the pilot Project on PAR and teamwork techniques)
- f. Achievement and effectiveness of the process (phases, schedule)
- g. Costs and time invested (in relation to the results achieved, the learning progress and in comparison to other formats of teaching and research)

Overall: → Effectiveness of the transdisciplinary PBL methodology in relation to the specified objectives

Moreover, we can generally recognize some steps in the process of systematisation⁵⁵:

- a. Identification of key actors to involve in the different steps (specific persons)
- b. Definition of the point of departure (initial situation and context, delimitation)
- c. Description of the experience (Components, activities/actors, resources, main results, difficulties encountered, unexpected results, opinions on future application and sustainability)
- d. Analysis (based on the criteria and indicators elaborated, summarising positive aspects, difficulties and surprises),
- e. Deriving joint conclusions and recommendations
- f. Publication and discussion with stakeholders

As a final step it will be advisable to reflect on the systematisation procedure - How effective is it to support the learning of all actors involved? Can it be simplified and become more focussed?

First lessons learnt from our experiences

For most of the universities concerned PBSTR constituted an innovation to be tried and evaluated. University staff welcomed the possibility to link their research and education activities. Working on real-world problems was seen as a motivating factor, but the responsibilities and commitment were felt to rest on their shoulders, too. The engagement has created positive expectations at the side of local partners, and it is a constant struggle to serve these expectations, both regarding results and process of collaboration, while having to adhere to university standards and procedures, too. As a result the time and efforts of the supervisors dedicated to the project were relatively high.

The collaboration requires that students find appropriate communication modes with a variety of practitioners, and they need to orient the way results are elaborated towards the intended use and user group. The problems worked on are complex in nature and thus the students need to define scope and depth of the study. Not in all cases such autonomy was given to the students – a topic to be further discussed in the systematisation process. Also the number of students involved varied a lot, and not always it was possible to mix students from different backgrounds as originally intended – sometimes as a symptom of existing gaps between the different study programmes at a university.

Specific challenges of the projects are conflicts of interest, limited resources, as well as the balance between scientific demands and pragmatism (see also Fiege, 2012). The “clients”, in turn, need to understand and tolerate that the projects still constitute an educational activity, which means that students need space for learning and making mistakes, and that there are certain demands from the side of the university as well, especially when assessment tasks are concerned.

First experiences show that an integration of academic and non-academic knowledge is possible with this joint learning activity. Also the experience to design the project as part of a larger research project is positive and may lead to a broader vision of a transdisciplinary continuum in the territory should this be desired. In an external evaluation of the SERIDAR project both students and local actors involved attested high satisfaction with the learning experiences and results of the pilot projects, local actors expressed demand for continuation. The necessary funding is more likely to be found if synergies with other research or education activities are high.

⁵⁵ Based on Chavez-Tafur (2006); Tapella and Rodríguez-Bilella (2014), Berdegué et al. (2007), as well as own elaboration

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