TRANSDISCIPLINARY RESEARCH AND EXPERIENCE BASED LEARNING: THE CASE OF CONSULTANDES

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ABSTRACT

The purpose of this study is to understand why an academic program built on transdisciplinary research and experience-based learning is a powerful tool to position a school of management, its students and create significant value in society. It also examines how to implement such a program. The paper builds on the case study of Consultandes, an academic platform create in 2006 in the School of Management of University of Los Andes (Colombia). The implementations of main principles of transdisciplinary research combined to an experience-based learning process are the main components of the model. The institutional willingness to assign resources, a strong academic leadership, a highly compromised team and positioned brand are other key factors of success.

INTRODUCTION

Managers have faced a greater range of challenges than ever before due to the increasingly global, interactive and fast-changing business world and society (Szarucki 2013). However, business schools have received intense criticism for their alleged inefficacy in developing adequate managerial skills for graduates to compete in the marketplace (Bennis & O'Toole, 2005; Datar, Garvin & Cullen, 2010). It is argued that the disproportionate attention undergraduate and graduate teaching places on rigorous scientific knowledge (over conventional work practices), have created educational programs detached from reality and unsuitable for skill development (Bennis & O'Toole, 2005; Varela et al., 2013). In consequence, the universities are unable to keep pace with ever changing industry requirements, and in the end, the graduates that get (if they can) good corporate jobs will be the first to be blamed for failure or poor workplace performance in their companies. (Eckhaus, Klein & Kantor, 2017). Brightman (2004) adds that there has always been talk of a disconnection between what universities teach and what companies demand. The institutions continue to have that more supplyist emphasis, simply to educate people regardless of what the market requires and there is always a lag.

Economic pressures on business schools have forced to shift paradigms in the teaching and learning models required to prepare business school graduates for successful careers and meaningful social and personal lives. Traditional teaching methods, such as lectures or cases discussions, fail to provide an adequate education that develop management skills applicable to the real world and in line with labor market needs. In the literature, authors such as Balsiger (2015), Kolb and Kolb (2008) or Lang et al. (2012), argue that transdisciplinarity research and experience based learning methods appear as effective methods to develop management skills to reduce this gap between theory and practice. We define transdisciplinary research as a reflexive, integrative, scientific method-driven aiming at the solution of societal problems and of concurrently related scientific problems by differentiating and integrating knowledge from various scientific and societal bodies of knowledge (Lang et al., 2012; Pohl & Hadorn, 2008). This implies that transdisciplinary research needs to comply with (a) tackling real life problems, (b) addressing the complexity of these problems by involving a variety of actors from science and practice and accounting for the diversity of their perspectives, (3) creating knowledge that is solution-oriented, socially robust, and transferable to both scientific and societal practice.

In other hand, experiential learning is an interdisciplinary approach based on management, education and psychology, and involves a holistic process of action / reflection based on experience / abstraction (Kolb and Kolb, 2008). One premise of experiential learning is that experiences framed by reflection lead to learning (Kolb & Kolb, 2005). Going beyond mere personal development, literature suggests that, in a high-changing day-to-day business environment, the activity and practice of learning is the key for adaptation and successful change at organizational level as well as at individual level. Then, experiential learning is particularly powerful for management education, as it is effective in training and education in fields as diverse as talent management, leadership performance, competence development, change management, community involvement, volunteering, cross-cultural training and entrepreneurship. Experiential learning approaches, when used in today's management education, generate value for companies, universities, employees and students alike.

Despite their qualities, these methods appear difficult to implement in the academic field due to the demand of resources required, in particular, in terms of time availability of faculty involvement. Transferring diverse theoretical, methodological, and

practical skills may require several teaching staff; developing meaningful stakeholder interaction is time-intensive; and managing the research process demands significant efforts in logistics and coordination. Moreover, they imply the commitment of many resources, which universities cannot or do not want to provide. There are structural impediments to transdisciplinary such as university structures, publication requirements and funding preferences that perpetuate disciplinary and researchers differences often due to lack of transdisciplinary experience and expertise. Furthermore, experiential learning teaching methods place equal emphasis on content and process involved in the acquisition of knowledge and skills. Therefore, in comparison to a more traditional course format, experiential learning methods require a considerable amount of time and commitment in preparation of courses. They may also require smaller class sizes in order to accommodate various experiential activities.

The purpose of this article is to answer the following question: How to implement successfully these methods in education in management, and maximize the value for society and the development of management skills of students. How to scale education for managerial skills applicable to the real world and generate societal impact? In what follows, we argue that transdisciplinary research throughout the method of experience-based learning provides business and management educators with a tool that can help them solve a fundamental challenge that business education has faced throughout its history: how to mix rigor with practical relevance. The case of Consultandes, an academic program created in 2006 at the University of Los Andes (Colombia), is useful to understand how transdisciplinary research principals and experienced based learning methods were applied in a consultancy class.

The paper contributes to reflection in management education about how to develop and scale experience-based learning in the classroom. The following sections build on transdisciplinary research and experience-based learning approaches to break over the main components of the academic model of Consultandes.

LITERATURE REVIEW

The literature review aims at building a conceptual framework that integrates transdisciplinary research and experience-based learning.

Transdisciplinary research

Balsiger (2015) shows that transdisciplinarity can be applied in classroom and is an example of collaborative thinking between students. Transdisciplinary research is a scientific method whose main purpose is to provide solutions to real-life problems through the interaction of different actors either from the academy or managerial world (Lang et al., 2012; Pohl & Hadorn, 2008). It combines three basic elements that are fundamental for it to function: (1) attacks real problems, (2) the consolidation of team of collaborators from different disciplines, and (3) from the interactions between the collaborating team, the construction of the solution of the problems for society.

According to Lang et al. (2012), an ideal-typical transdisciplinary research process integrates tree main phases: (a) problem framing and collaborative research team building, (b) co-creation of solution and (c) implementation and re-integration of created knowledge (see figure 1). In phase a), real-world problem is translated into a boundary object (see, e.g., Clark et al. 2011) that is both researchable and allows for the re-integration of the insights into societal implementation as well as the scientific body of knowledge. This phase also implies the building a collaborative research team and the creations of a joint understanding and definition of the societal problem to be addressed. The team collaboratively defines the research object, research objectives as well as specific research questions and success criteria. Then, the team designs a methodological framework for collaborative knowledge production and integration. Phase b) embraces the development of the research project through the interaction of a knowledge community. For each step of the research process, the contribution of each actor involved in the knowledge community for the purpose of the research project is defined and supported by specific means (Krütli et al., 2010a,b). Thereby, it is necessary to involve stakeholders in different levels of the research process (Wiek 2007; Stauffacher et al. 2008). For instance, practitioners and researchers will play different roles and bring diverse perspectives to the project. Moreover, the team should apply and adjust integrative research methods and transdisciplinary settings for knowledge generation and integration. Finally, phase c) closes the loop of the process of using, applying, and implementing the research results. This phase include a knowledge management process, with the (re-)integration of the results in two ways. On the one hand, into the societal practice (e.g., implementation of the evidence-based strategies and action programs generated during the research) and; on the other hand, into the scientific practice (e.g., comparison, generalization, and incorporation of results into the scientific body of literature) (Pohl and Hadorn 2007). This phase should generate targeted "products" for both parties y include an evaluation of both societal and scientific impact (Walter et al., 2007).

FIGURE 1
## PROCESS FOR TRANSDISCIPLINARY RESEARCH

Source: The authors

Experience-based learning

Experience-based learning is about how to generate deep learning in students through an experience. It induces a fundamental change in the student's thinking and behavior (Kosnik, Tingle, & Blanton, 2013). It involves apprentices with the phenomenon being studied (for instance an organizational challenge) rather than merely thinking about the problem or only considering the possibility of doing something with it (Keeton & Tate, 1978). A key element of experience-based learning is that learners analyse their experience by reflecting, evaluating and reconstructing that experience (sometimes individually, sometimes collectively, sometimes both) in order to draw meaning from it in the light of prior experience. This review of their experience may lead to further action (Andresen, Boud & Cohen, 2000).

According to Kolb and Kolb (2009), this theory defends that students become aware of their transformation and learning through an iterative process of (a) planning an active experimentation, (b) having the concrete experience, (c) reflecting on the experience and (d) concluding from the experiment (see figure 2). The educator designs the opening of the learning process by planning an active experimentation. Then, the concrete experience of the learner is the basis for observation and reflection. By reflecting on his experience, the learner makes sense on what happened and connects with the consequences of his actions. During, the next stage of abstract conceptualization, based on the reflection on experience, the learner captures new information. This stage of "thinking" serves to organize knowledge, allowing students to perceive the context and identify patterns and norms. Through this process, they classify or generalize their experience and build ideas and theories that enable them to take action and transfer their knowledge from one context to another. A new experience needs to be acted upon by analyzing and assessing its meaning and by relating it to past experiences and previously acquired knowledge (Armstrong & Mahmud, 2008). Experience has a "transformational" impact on the learner to the extent that it becomes integrated into the student's "system" of previously acquired constructs and subsequently functions as the lens through which the student observes, interprets, evaluates, and approaches new experiences (Kosnik et al., 2013). The challenge of experiential learning is to develop all the capabilities previously described in both individuals and teams (Li, Greenberg & Nicholls, 2007).

FIGURE 2
PROCESS FOR EXPERIENCE BASED LEARNING
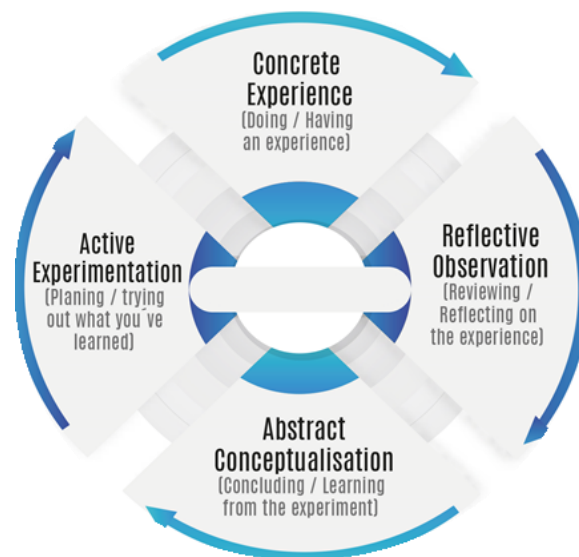

Source: Kolb and Kolb (2005)

In education in administration, the experience-based learning approach is considered as ideal for strengthening skills such as problem solving, decision-making and teamwork, as well as creativity and leadership (Bevan & Kipka, 2012; Kolb and Kolb, 2009). Problem solving and decision-making are central to managers' responsibilities. Placing students in a problem-centered environment may help them bridge the gap between theory and practice (Sherwood, 2004) and create the knowledge they new to act in different contexts. The challenge of experiential learning is to develop all the capabilities previously described in both individuals and teams level (Li, Greenberg & Nicholls, 2007). Literature on team learning insist on the pivotal role of reflective conversation within the team (Kayes & Kolb, 2005). To learn from their experience, teams must create a conversational space where members can reflect on and talk about their experience together. Team development as successive stages in the sophistication of a team's ability to learn. A team develops from a group of individuals into an effective learning system. It appears that, while initially group members were oriented to individual roles focused on satisfying their personal needs; they later came to share responsibility for team leadership by organizing themselves into team roles (Kayes & Kolb, 2005).

Connecting transdisciplinary research with experience-based learning

In what follows, we argue that transdisciplinary research complements and frames the learning-by-doing experience in the context of a service-learning by doing classroom (Robinson, Lloyd Sherwood, & DePaolo, 2010). Both approaches, transdisciplinary

research experience-based learning, involve a learning process with concrete stages, an immersion in real situations, teamwork and problem solving. They complement each other in the fact that the learning process in the context of a transdisciplinary project begins with the building of a collaborative research team and the framing of the problem involved in the real situation in which learners are immersed. The second stage of the learning-by-doing process involves the concrete experience. In this stage, the transdisciplinary research approach contemplates a co-creation of the solution in interaction with the community of knowledge with which the learners are involved. Then, the third stage, of reflective conversation, implies team conversation and new knowledge creation, for the learning community: on the on hand, for the students who learn from their experience and develop their managerial capabilities; on the other hand, for the manager that begins to implement the recommendations in its organization. In the following stage, all the members of the learning community learn from the experiment, by managing the new knowledge create (for instance, measuring the impacts, editing testimonies, etc.). This new knowledge feeds the learning process of students that enter the classroom during the next academic period. The learning process within the central cycle can also occur several times during the transdisciplinary process. Through this process, students strengthen their managerial abilities (see figure 3).

FIGURE 3
INTEGRATING TRANSDISCIPLINARY RESEARCH PROCESS
TO EXPERIENCE BASED LEARNING PROCESS
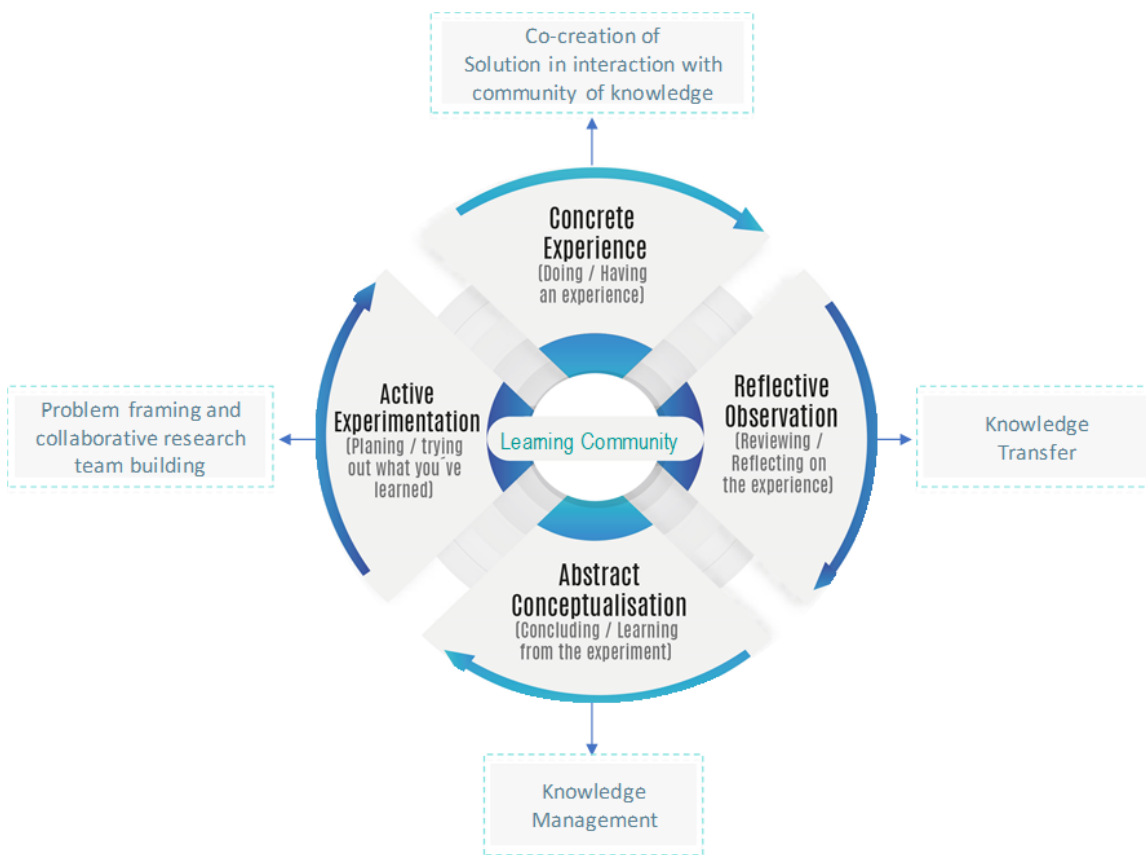
Source: The authors

By combining the transdisciplinary research with the experience-based learning approaches, a virtuous spiral of value creation in society is generated through the training and preparation of students in developing their management skills. They strengthen their ability to identify and seek solutions to real problems in society. Subsequently, through work in a collaborative environment with their peers, the teacher and the organizations, the students strengthen their ability to work as a team. Finally, when designing strategies focused on solving the problems posed by the organizations and their respective implementation plan, the students develop managerial communication skills, focus on the creation of value and leadership among others.

METHOD AND CONTEXTUALISATION OF THE CASE STUDY

In order to answer our research question and understand how to implement successfully transdisciplinary research and experience-based learning in a management education, we chose the single case study approach. According to Stake (1995), the selected case of Consultandes is instrumental in the fact that we want to learn from the 12 years' experience of the program.

Consultandes is an academic platform that provides management-consulting services in the context of a course. Designed on the highest professional standards of management consulting industry, Consultandes accompanies and advises its clients in processes of change and development of opportunities to improve their performance in a significant way, in an environment where

professionals of excellence prosper. As an outcome of the project, the participating company or institution receives a formal presentation of the solution provided to the need expressed and an executive report of the results obtained. The results of the project are the property of the company, and if required, the consultants can sign a commitment of confidentiality.

In the course, called "Management Consulting", teams of consultants (groups of four students) look forward to solve a real need of a company or institution assigned, under the supervision of a professor. The projects, executed in a period of 4 months (February to May or August - November), are a learning space for students to integrate the knowledge acquired during their education in administration and to secure the main professional competences they need for their future professional exercise. Therefore, the course considers the following specific questions: (1) how to orient actions from the professional ethics of a management consultant? In other words, how to generate added value given the limitations of resources (time, budget, man-hours)? How to achieve a positive impact on an organization? (2) How to conceptualization and analyze complex problems in order to make them manageable? That is, how to identify real needs of organizations? How to delimit the scope of a project in administration that contributes to satisfy this need? Moreover, how to build solutions and make decisions to solve those problems? Finally, (3) How to work in effective teams? In addition, (4) How to communicate ideas effectively?

Since its beginnings in 2006, Consultandes has attended 711 clients (76% SMEs, 24% Big firms; and, 87% for profit, 9% NGOs, 3% governmental organizations, 1% hybrids) from different sectors of the Colombian economy. It realized 825 projects (an average 30 of per semester) in marketing (41%), strategy (25%), finance (11%), management (10%), and operations and logistics (8%), among others. Some examples of projects developed by Consultandes are: marketing plans, pre-feasibility studies of projects, planning of new business strategies, viability of new business units, analysis and structuring of cost systems, operational planning, implementation plans for new technologies or quality systems, among others. Consultandes has counted on the participation of about 3000 students from the Undergraduate and MBAs programs of the school of management.

To explain how Consultandes works and understand why it is successful, we tracked all the mechanisms, processes, good practices, meetings memories, testimonies, indices, tools available from the program. We gathered all the archival documents, multiplied focus groups, interviews, and workshops with its academic directors (table of data sources available on demand). We exploited the conceptual framework that we integrated in section 2 (figure 3) as a tool to articulate the ideas and concepts in the finding section.

RESULTS

The results are divided in five sections. The first four sections break down the different mechanisms designed to implement the transdisciplinary research approach in the context of a course. The fifth section identifies the continuous mechanisms that support the learning-by-doing process embedded in it.

Phase 1 - Team-buiding and problem setting

Consultandes builds its teamwork in three steps. First, it defines the pedagogical team; then, it selects its clients and respective projects; finally, the consultants' teams integrate and conceptualize the problem.

FIGURE 4
ORGANIZATIONAL STRUCTURE
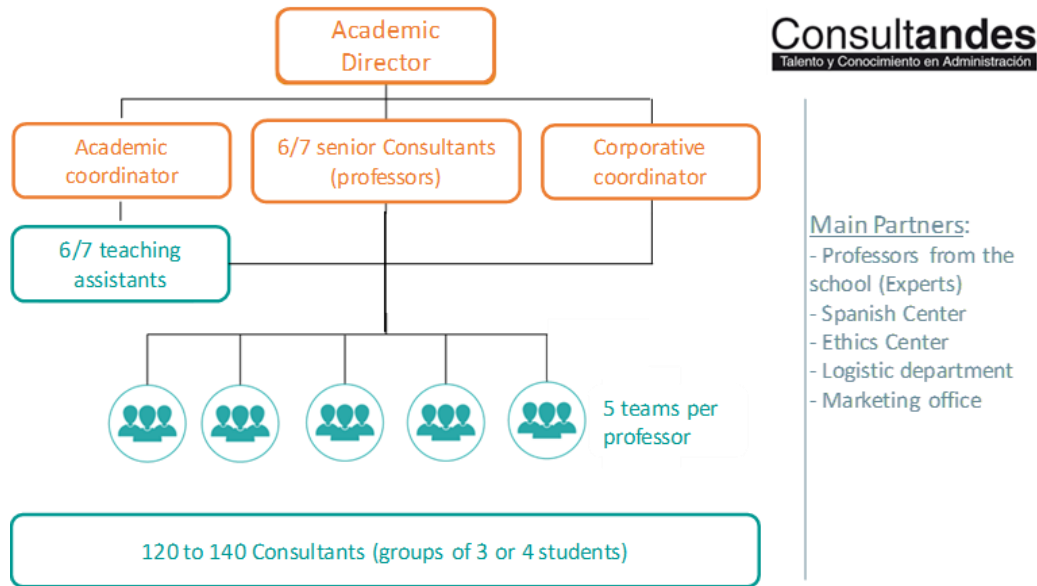
Consultandes' *pedagogical team* integrates an academic director, 2 coordinators, 6 or 7 professors (one for every 20 students), and 6 or 7 teaching assistants (see figure 4). Every semester, 90% of this staff changes. As part of its culture, Consultandes, rotates its professors within a pool of about 40 people. This pool is increasing every year because each team of

professors is composed of at least two professors that are following up from the past semester, two professors that are coming back from a rest and one new professor. The teaching assistants are students from previous semester and also rotate every academic period. This allows to rethink the program permanently, to involve new perspectives and to avoid to be pulled down by inertia. It also implies an exercise of integration at the beginning of each semester, led by the academic director, to plan and revise the challenges for the team and to reaffirm the team culture and compromises.

As part of its fundamental principles, and in line with the community of knowledge of transdisciplinary research principle, Consultandes work WITH its *clients* not FOR the clients. Therefore, clients' involvement in the program is requisite. To do so, Consultandes organizes three workshops with clients before assigning the projects to the students. The first workshops insists on the value exchanges between Consultandes and its clients. The costs associated to clients' participation in the program is time to work with students and assess their process. The second workshop focuses on defining the problem to work on within each project. In this workshop, one or two professors interview the responsible from the organization and assesses its potential involvement. The third workshop aims at training the clients to act as "good" clients in order to maximize the potential of success of each project. The clients are expected to maintain permanent communication with the program coordinators, as well as with the consultant team and to facilitate access to the necessary information, in a timely manner, within the development of the project. They also have to assign an interlocutor, with decision-making capacity, to guide the group of students within the organization. He must have availability of at least two hours a week during the execution of the project. He also has to attend three meetings, in the facilities of the university, to follow up the project (steering committees), which last approximately one hour each. He also has to participate in the critical and constructive feedback of the consulting process and should always keep in mind the professionalism that a consulting project requires. Finally, the client must assume any special logistics costs required for the development of the project such as transportation, materials, among others. This taking into account that the project does not involve the payment of fees.

Then, at the *students'* level, the first module of the course is dedicated to team building and problem framing. During the first week, the pedagogical team builds about 30 interdisciplinary and multicultural teams of four students, depending on the number of students and according to the answers that they supplied to a profile survey. Then, during the first class, they participate to an integration activity with their professor. To prevent students from falling into the five main dysfunctions of a team (Lencioni, 2012), -that is absence of trust, fear of conflict, lack of commitment, avoidance of accountability and inattention to results-, students first tasks are to organize a fun activity of at least 2 hours, to reflect on their complementing profiles and to write down a team contract. The second and third weeks of the class are dedicate to problems framing, through workshops based on case studies, according to the guidelines for best practices of Consultandes and their own assigned case. Through this module students are trained to prepare a proposal and to sell it to its client under the supervision of the professor.

In order to maximize the learning process of the students during this phase, Consultandes frames the preparation of the proposals within a competition. This implies that, at the beginning of the course, only half of the projects are assigned and clients choose between two assigned groups, the team that more convinced them. Once the client approves the proposal, the projects is kicked of during the first steering committee in which participate all the actors involved in the project (the client, the team of 4 students, the professor, the teaching assistant and 4 students from other groups).

Phase 2 – Co-creation of solutions in interaction with community of knowledge

The process of co-creation of the solutions in interaction with the community of knowledge is a cyclic and cumulative learning process, according to the learning-by-doing process. Every errors and conflicts are learning moments. During this process, the participation of each member of the learning community is fundamental for the success of the project and for the learning of the students. This second phase is guided by the third steps of the guidelines for good practices of Consultandes.

Interactions and relationships with *clients* are a mechanism and source of learning for the students. They are a source of feedback and reflection for the students. The program fosters the permanent communication and team building between the client and the students, to co-create a solution Taylor made for the client.

Professors also called consultor seniors are part of the team. They are passionate about working with Consultandes and accompany the growth of students. Through their personalized support to each team, they coordinate their learning process, but do not lead it. They are facilitators, guides, councelors, they give feedback, they provide information, if necessary.

All the full and part time professors from the school of management (and sometimes the university) are part of the value network of Consultandes. Students consult them as experts for their specific knowledge or experience. As experts, they also participate to the orientation of the project.

Finally, other stakeholders participate to the project solution and the learning process of the students. For instance, stakeholders from the organization are involved in the research project whenever it requires it. Students learn from their interaction with them, their perspectives, etc. The Spanish center is another example of important partner of Consultandes that is supporting the effective communication skill development through specific drills. Classmates are important mechanism and source of learning for students, a source of feedback and reflection.

All this co-creation of the solution, in interaction with each other, has to be framed within the own responsibility of each student to lead the project process and their learning process simultaneously. The construct their knowledge based on their personal experience and their interaction with other. They integrate their knowledge and skills during the iterative process of doing and reflecting on the experiment during this phase.

Phase 3 – Knowledge transfer

The third phase of Consultandes is steered by the fourth step of the guidelines for good practices of Consultandes: the sale of results. During the third committee, the consultant team transfers to the client all the tools, knowledge and arguments they developed during the project. In that moment, the knowledge impacts both the client's organization (with the implementation of the

solution) and Consultandes.

The final reports aim at convincing clients to adhere to the proposed solution and to implement it. Simultaneously, all the material product of the project goes to the memory of Consultandes in the depository of projects that students from future academic periods will check.

Moreover, students are asked to write a final essay that make them reflect on their learning and to produce a legacy (an infography) for the next generations.

Phase 4 – Knowledge management

Consultandes gives a special attention to its knowledge management. It has built a database "Projectpedia" with a search motor for all the 865 projects realized since 2006. This database is useful for the developing of the next projects but it is also a source for research useful for scholars from the university. Moreover, every academic period, Consultandes improves its Guidelines for Good practices, according to the experience accumulated.

Consultandes also assesses its impact through surveys and focus groups. The value creation for all the stakeholders (students, client-organizations and the management school) is not easy to measure but it is evidence by the positioning of the program within the market and the differentiation factor of the profile of the students from the school within the labor market. For the students, it is possible to measure performance of the program by learning objective (orientation to value creation, ability to solve problems, effective communication and effective teamwork).

Some tertimonies from clients illustrate the impact of Consultandes within organizations:

"I was very impressed by the quality of the work given by the groups. I found that students are supported by a very strict methodology, by teachers who motivate them to comply "(Patricia Gomez de León, Asociación Alianza Educativa)

"The country needs programs like Consultandes, so that companies like ours can benefit from highly professional student consultancies" (Jaime Lopez, Cintas y Etiquetas Ltda)

Those four phase last one semester more or less. During this period, an iterative process of experience-based learning feeds the development of the projects.

An iterative process of experience-based learning

Every week, during the semester a learning by doing process occurs within the learning community here grasped. The learning process of the students starts with the design and planning, by the academic director, in co-creation with the pedagogical team, of the active experimentation in which they will get involved. In other words, the pedagogical material of Consultandes includes numerous instructions and announcements, connected to the course program and the guidelines for good practices of Consultandes that are aimed to facilitate the learning process of the students and their concrete experience, during the week, in interaction with the project's stakeholders.

The reflective observation occurs weekly at two levels within Consultandes. The first level is within the pedagogical team and the second level is between each professors and its teams. Each week, the academic directors of Consultandes leads a pedagogical meeting in which participate all the pedagogical team. During those meeting, problems are shared; best practices and new solutions are co-created. Systematically, the team documents in acts all the problems identified and suggested solutions to explore. But, and perhaps the most important key success factor, despite the excellence practice, the team is all the time purpose oriented and amused. The second level of reflection occurs during the advice sessions between the teacher and the students' team. They are articulated around the four learning objectives: how to keep focused on value creation, how to make good decisions, how to solve team problems, how to articulate better the ideas.

Finally, the circle of learning-by-doing process follows with the abstract conceptualization. The practice of permanent reflective observation of what works and what has to be improved leads to permanent innovation ideas. These ideas are further included within the guideline for best practices or within manual of processes. It might also lead to the design of new learning experiences, learning tools or learning environments.

DISCUSSION AND CONCLUSION

Consultandes is a successful example of how to implement within a management school a program that integrates both, transdisciplinary research and experience-based learning. The results highlight the good practices of the program, first in terms of the process behind this transdisciplinarity approach, second in terms of the management of the learning-by-doing process of its students.

This program is worth replicating because of its high potential impact: for positioning the school and its students and for the value it generates in society by solving real problems. The research aims at understanding why it works so well and how. The answer is in its ability to integrate transdisciplinary research and learning-by-doing and to understand that all the actors that are involved in the program each semester are part of a learning community. The focus on learning-by-doing approach leads to a culture of learning and growth (individually and for the organizations).

The operation of the program require the involvement of a lot of human resources and a very highly personally motivated pedagogical team whose efforts flow during the process. The leader (the academic director) plays a central role within the effective

work of the team. The brand positioning of the program within the market helps to find clients that trust in the process and that accept to contribute to the program with the level of involvement required.

Future research could focus on how to move from a learning community to a community of knowledge; how to transfer the knowledge and replicate the model at national and regional Latin American level; how to be a good leader for this program.

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