

Educate to Innovate: Constrain and Opportunity

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ABSTRACT

Applied design processes for social innovation and sustainability, permanent face restrictions that threaten the effectiveness of the results. Thus education to think as a designer in a position to tackle adversity and uncertainty requires transformations and methodological challenges and innovation as an opportunity for achieving goals. This paper covers some of the testimonies, experiences and meaningful conclusions of last year students of Design at the University of the Andes in Bogota facing the constraints and opportunities generated in the implementation of projects for sustainability and social innovation developed for vulnerable families and extreme poverty communities in Colombia.

This is done with the support of the National Agency team for Overcoming Extreme Poverty (ANSPE) through its Social Innovation Centre (CIS), state agencies responsible for the creation and implementation of strategies for overcoming poverty, main target of the National Development Plan Colombia 's current government for 2020.

Keywords: Design education, social innovation, designing learning processes

1. Social Innovation, Education and Design

"Promoting innovation -based sectors including social perspective in which highlights the contribution that may have some innovations to the solution of specific problems for different individuals, families and communities ", is one of the topics included in the National Plan 2010- 2014 Development *Prosperity for All* from the current government in Colombia.

Innovation for competitive development in the regions in transition such as Latin America, takes a role of great importance to the social processes, sustainable development and good governance, acting as an instrument of state alliance with public and private institutions to accomplish important objectives, including peace.

In this specific context, is where education and training for the Design in Colombia differs recently with its creative and methodological input among other disciplines. Thus, thinking as a designer using and transforming tools provided by discipline are a challenge for the Design, is a condition that makes it as a mediator of management, strategy and innovation through the various interactions between

University, Business and State and institutional spheres, fulfilling a role as a facilitator of social achievements of great impact in the future for diverse communities in the country, contributing among other things, to the process of reducing poverty rates as the ultimate goal of the State, subject of this paper.

In this direction, social innovation within the Colombian national policy framework involving Colombian government institutions (ANSPE, CIS, COLCIENCIAS, DNP) is expanding its framework, where design schools in the country are actively working together on the issue (RAD,2013).

2. Poverty and Opportunity for Innovation

By understanding extreme poverty as the most severe state of poverty (DNP,2013), with people living on less than \$ 1.25 a day (World Bank, 2013) and cannot satisfy several of the basic needs like food, water, shelter, sanitation, and health care, the Agency National Overcoming Extreme Poverty (ANSPE) in Colombia identified 1,500 families in this condition for which it intends with its intervention programs until 2020 and through the "Red Unidos" (government program for prosperity) to leave this condition. Methodology defined in nine dimensions of work and intervention for overcoming achievements, which are: identification, income and employment, education and training, health, nutrition, housing, family dynamics, banking and savings and access to justice.

One of these pilot and cooperation agreement for two years currently accomplished between ANSPE and Social Innovation Centre (CIS) with last year students of the Design Program at the University of the Andes (Zapata, 2013), recognizing the importance of academy as a key player in the generation of knowledge and sustainability initiatives and social innovation and development agent, focused on solving needs of those living in poverty (Agreement Uniandes -ANSPE, 2012)

Facing the research topic of this paper **Educate to innovate: Constrain and Opportunity**, students from six selected cases developed from the two previous years responded to the issue with their reflections on the process developed and which will be mentioned later.

	Project	Dimension	Achievements	Students
1	Emptying Light	Habitat	33. The house has lighting, natural ventilation and privacy	Julián Franky Eduardo Gómez Catalina Castellanos
2	Parenting Guidelines	Familiar Dynamic	37. The family with children under 6 years knows and applies child rearing.	Andrés Felipe Perea Andrés Felipe Zapata Laura Flórez
3	Racers	Incomes and Labor work	6. All persons of working-age home, reach a level of capabilities for easy linking to a gainful occupation or improving the conditions of the activity that is already developing.	Juan Carlos Cubillos Parra José Alejandro González Zamora Sara Patricia Núñez López Mateo Paris Benavidez
4	Feel the Library	Habitat	25. The family has transformed the rubbish	Alex Mahecha Ana Becerra Fátima Martínez
5	Breathe	Habitat	33. The house has lighting, natural ventilation and privacy.	Diana Catalina Cano Nicolás Lukauskis Carvajal Ricardo Antonio Rambal
6	Barter Bank	Banking and Savings	40. The family saves through the financial system or non-formal mechanisms.	Ana María Murgueitio Diana Carolina Rivera Pedro Tobar Caldas

Tabla 1. Students selected project cases

In the same way, from the professional practice, and to contrast the concepts at issue of constrain and opportunity, some of the conclusions were taken from the reports of the seminar-workshop about social innovation, barriers and facilitators, held in June this year, from the learning and experiences of Colombian and Latin American cases in social innovation and its participants.

Thus, understanding social innovation defined by the National Node of Social Innovation as:

(...) "A process through which we create value for society through practices, management models, innovative products or services that meet a need, take advantage of an opportunity and solve a social problem in a more efficient and effective than existing solutions, producing

a favorable and sustainable change in the system in which it operates. Social Innovation potential is characterized by scalability, replicability, be sustainable and integrate and the active participation of the community creating partnerships between different actors of society ". DNP, ANSPE and Colciencias (2013).

3. Research, Innovation and Constrain

For education in Design and their many interactions, facing constrains and difficulties that brings the extreme poverty in communities is a constructive opportunity, reflective and even accidental to review the methods and work tools.

According Gurrutxaga, innovation requires appropriate contexts and where cultivated land, which germinate activities in which is possible to create, apply and share knowledge, at the same time they offer us the opportunity to address issues collectively. The "interactive learning spaces " are the epitome of innovative environments, and its main features are: freedom of thought and action, experimental attitudes toward reality, openness regarding beliefs, stimulating interdisciplinary and multiple experiences, access to knowledge and available data, scattered resources, and management failures tolerant (Retegi, X & LM Ullibbarri 2009).

Understanding the "social" as the space generated by and for the coexistence of people and groups, is fundamentally about relationship problems and opportunities: economic, social, political, etc. When relationships do not work properly it won't be any space to think of new ideas, basically involving four key stakeholders: the community, the state, the private sector, the non-state sector non profit (COLCIENCIAS ANSPE and DNP, 2012).

The above condition identified in the document Base of Social Innovation Policy of state agencies working in this field in Colombia, summarizes the design framework for actions and the challenges facing the academy is training bases of their students in practice field with these communities of extreme poverty. Carrying this process to reality has led to working methods and unexpected nonlinear as a result of each particular situation due to different human conditions of the selected families, contrary to traditional forms and systematic incremental management more focused on the economic and management (Martinez, 2011).

4. Education: Methods and Tools

The course program at the University of the Andes, is organized for groups of 3 students who select, according with their interest, one of the dimensions ANSPE defined by assigning them to two families in extreme poverty for their visit and intervention during the academic semester (4 months).

The methodology is divided into four phases of work based on innovation as a learning process (Beckman and Barry, 2007) raised from design thinking and as a hybridizing process for the course and involves multiple tools from other authors (Murra, Caulier-Grice and Mulgan, 2012) for each of work phases: **Phase 1: OBSERVATION**, (Research and register), **Phase 2: ANALYSIS** (Framework of opportunity or needs), **Phase 3: CONCEPTION** (social model and its value proposition) and **Phase 4 SOLUTION**: (sustainable Final model).

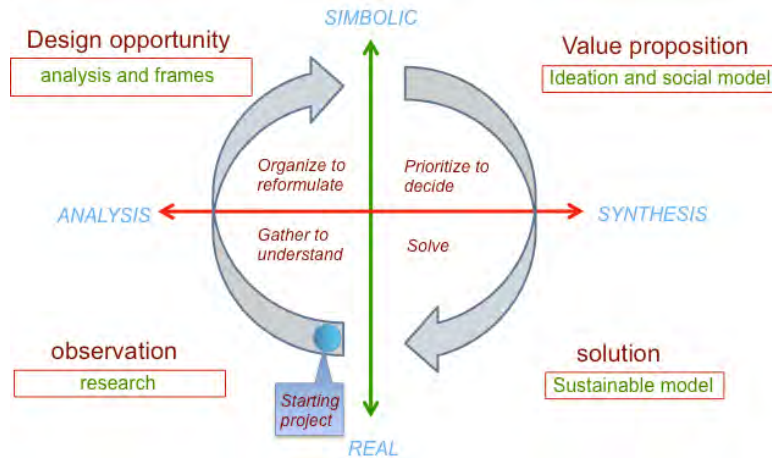


Figure 1. Adapted of Beckman, Barry (2007) Innovation as learning process. Embedding Design Thinking. California Management Review

The design thinking encouraged building incentives for social innovation, integrating the human values, desires and emotions, as something culturally acceptable; the value of sustainability from economic and feasible, and the value of the feasible from technical or technologically feasible.



Figure 2. Concepts that structure Social Innovation from Innovation and Design Thinking

5. Constrains to the Social Innovation process

This is the group of constrains they face during the experiences of innovation, which hinder their development and the achievement of its objectives, and even, in some cases, may mean extinction. These barriers can be in different phases of social innovation and influence families and relapse in situations such as unemployment, displacement, violence, barriers to access to health care, lack of attention and care of children, neglect to elderly, among others and affecting the development of projects (DNP, Colciencias, ANSPE, 2013).



Figure 3. Phases of Social Innovation (ANSPE)

The following issues correspond to the classification of the most meaningful and care constrains facing the process found methodological innovation in the student work with the communities of extreme poverty that mark the development of their projects:

5.1 Difficulty in creating empathy and communication

Corresponds to building confidence in both adults and children for fluency development of the projects. Specific and difficult conditions of unemployment, violence and displacement, domestic violence in these communities makes it difficult to create bonds of trust and access to information.

Students identify households very closed in relation to the same neighborhood, their relationships are not the best, then why they react different with strangers who come to their house unexpectedly?. In this way the achieve to apply or adapt the tools to enter and find information empathy becomes complex.

This is one of the main constraints and methodological work challenges identified by students from their lived experience working with these families and communities and in some cases affect the proper development of the research.

" The trust was initially difficult aspect with families, because knowing their background stories and know what their problem was a complex task. We use observation tools that we reference in the course, but we had to modify some and find the way to access this information from them, generate empathy with the people of the communities was difficult at first (...) "

" Traditional tools we use, such as IDEO cards, rather than transform them we had to adapt them and often rely on other friendly tools with the help of psychologists or go to school in the area, as the issues of violence or aggression that accompany these families are complex to manage, at the end we had to adapt them depending on the situation itself (...) "

" For us it was difficult at first because we decided not to use any tool, but create a spontaneous dialogue with no predisposition to any specific tool. Besides, the place was dangerous, we could not take pictures or anything, and so we had to improvise with graphics or pictures to search the place. At first the main target was to gain the confidence of the people and create empathy; after a couple of visits we could use the cameras because we had gained confidence with families (...) "

"At first thanks to local guide (called social co-manager, ANSPE), we could enter to their homes with some trust and knowledge of the families; people didn't know exactly what we were doing, we were strangers and the co-manager gave us the confidence and security in the relationship with the families for information. Some times when the co-manager didn't work, use other sources of information such as the school, the surrounding community, including (...) "

" The co-managers create an emotional bond in some cases, especially in neighborhoods with higher levels of resource problem. Empathy facilitates the way you work. Over time, the information you give us is different from the family which gives us the co-manager, co-manager they fear that the acknowledgment of some situations not suitable for them and often say what is politically correct, while if they tell us real truths of your situation when you've gained confidence now (...)"

5.2 Difficulty of adaptability to changing situations.

Is the ability to respond immediately to unexpected situations that can change conditions of work planned in research, data analysis and testing prototypes.

Students had to resort recursively to various strategies to overcome restrictions and barriers to information and procedures with the community of study.

" (...) If, adaptation and recursion is key to the field visits, remember that they should include a tool in the analysis phase and ideation, was a two 2X2 matrix, we expected that the lady easily applied to a particular situation, but she was not, then proceeded immediately to take the matrix and simplify, we use colors, fruits and vegetables, so she 's sorting out according to their tones, understood the concept of selection and characterization, fruit could locate either side and provided all the exercise with the family "

" (...) We seek outside help because children are reluctant to speak of punishment, then I started to draw situations of how they would punish their parents, as difficult to ask parents of these violent attitudes. There are some tools that I try to apply as is, but do not work, to have the trained eye is a condition of the designer to transform any tool and interpret the situations that arise, there used stamps, little hands that had about rewards or punishments, (...) it was ideal to reach the issue through the children and also look for other people to give us information such as the school psychologist."

5.3 Gaps in basic knowledge of other sciences

To better understand human behaviors from their own nature and context it is important to have a framework approach and broader knowledge of science in Economics, Anthropology, Sociology, Psychology and Management among others.

Faced with the greatest difficulty and / or success of thinking as a designer in adversity and uncertainty of working with and for families in extreme poverty, the students noticed:

"Generally the economic and social context that has the designer makes you think too much about what they have studied, we must be very careful, because context questions the designer and the community do not share the same conditions, and has the same range of motivations, Maslow says. "

(...) Have to be very selective in the information they receive from families, many of whom do not know what they want and not always what you say is true, you have to believe them, make spaces to represent the true emotions and aspirations they have (...), while it is important to create the tools that will allow them to express themselves and communicate their true feelings, what is more knowledge responsible that they can interpreted. "

" It was also difficult to teach people that the design gives them a benefit over time (...). These families are people who do not think long term; they must solve their everyday problems (...). They do not understand very well what is their problem, and how we can help beyond money or food. Understand and assimilate the design as something luxurious, material things and under this condition the exercise becomes more difficult "

5.4 Lack of systemic understanding of the situation

It's important to identify the interactions between the different actors of the situation.

From the work experience and reflection of students with these communities of extreme poverty, the biggest gamble of creativity and innovation in academic training to work in social projects they consider that:

" The ongoing interaction in multidisciplinary groups, which have not only designers, but psychologists, economists, administrators, sociologists allows us to build custom tools with greater ease and depth, having the knowledge and firsthand experience (...)"

" (...) Is a matter of co -creation and knowledge construction. It's good to have other perspectives, having people landing align ideas and knowledge. From design one can suggest many things but in this same situation there are things one does not dominate, the issue is the viability and sustainability".

5.5 Limitations management concepts and strategy

This is fundamental to achieve the necessary resources to enable sustainability and outreach initiatives, in addition to articulate local or regional actions.

Consider that overcoming the constraints taken into development work with the community of study contributes to sustainable social development model to achieve the goal, not a positive factor, and negative for the project, is formative.

"We must continue to build skills from the experience, both the error and the restrictions must teach and learn from them, like mistakes to overcome barriers and build new, what I should learn without pain (...), we will aim to one part of the selected dimension, this is difficult to accomplish all in short term, this is a process of time, is also part of learning "

6. Conclusions: Constrains and opportunities

Once identified barriers of the design process and innovation by design students at the University of the Andes from the different testimonies about developing social innovation projects with people in extreme poverty, is essential for the closure of this paper, display opportunities from education and design methodologies to allow this reflection.

To create greater action value for future, it is useful to see these opportunities in parallel and connected with some of the most significant barriers to social innovation taken from the memories of the seminar workshop held in June 2013 in Bogota about the challenges of the social innovation in Colombia, which was intended to open a space for discussion and reflection about the actors, instruments, actions and mechanisms that facilitate or hinder the process of social innovation.

In this way it is interesting to identify the relationship between specific constrains encountered in the design process with the barriers to social innovation and opportunities to contribute to both generate and education in design methodology.

CONSTRAINTS OF DESIGN PROCESS	EDUCATIONAL OPPORTUNITY	METHODOLOGICAL OPPORTUNITIES	BARRIERS FOR SOCIAL INNOVATION
DIFFICULTY IN CREATING EMPATHY AND COMMUNICATION	Identify profiles, attitudes and sensitivities of students to work on social innovation projects.	Enhance and control the emotions of the students through modeling of expression and communication skills without losing their naturalness and confidence (community participation)	Lack of coordination between state institutions and within their own agencies.
DIFFICULTIES OF ADAPTABILITY TO CHANGE SITUATIONS	Develop academic programs with new methodological tools and processes, from innovation resulting from barriers and restrictions of the different poverty terms.	Involve more strongly the dynamics of roles and challenges in academic practices in controlled environments and make them release their own adaptability skills and decision making (scalability)	No culture that recognizes that social innovation can have a business model that has economic returns to the community.
GAPS IN KNOWLEDGE OF OTHER BASIC SCIENCES	Review, promote methodologies and creating new tools to measure interdisciplinary work to validate the development of social innovation. Knowing the rules and boundaries of the interaction of different disciplines in social innovation projects and poverty.	More academic practices with public or private institutions directly working in areas that can assurance behavior, habits and practices for human quality (nutrition, food, health, violence, parenting, etc.) (Scalable, sustainable)	Lack of methodology to validate the development of innovation. Seems to be no method to innovate.
SYSTEMIC LACK OF UNDERSTANDING OF THE SITUATION	Orient methods and tools to innovate under particular conditions Colombian poverty and the role of its participants. Promote information and knowledge of the social and cultural context of the region as comprehensive, to not prevent families or communities study.	Ability to understand and articulate the different actors from different circles of experience and knowledge and that impact the study area and its development. (Scalability). Having methodological indicators, visibility and impact on long-term community projects "relay" students, according to the time needed for prototyping, validation and implementation.	Immediate results are required of government and private enterprise. Social issues do not provide immediate results but in long term.
LIMITATIONS ON MANAGEMENT CONCEPTS AND STRATEGY	Work in adaptable and flexible educational models that facilitate create, promote and develop social innovation processes. Recognize in the processes performed, that social innovation can have a creative model and sustainable action for the community. Develop from the beginning, models and business plans grounded in the research process to strengthen value propositions from social innovation.	Display and transform the challenges and results as new methodological tools built on the same field of study (replicability, sustainability). Stimulate from the academy and its internal dynamics and methodologies agreements agile created jointly by the actors participating in projects and builds commitment (scalability and sustainability)	Lack of educational models in social innovation that facilitate, create, promote and develop processes. Lack of indicators. There is no way to measure the social impact of these initiatives, then how are validated and the results show? This does not allow visibility and funding support.

Tabla 2. Constrains and Barriers of the design process and innovations Vs Opportunities for education and methodology

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