Designing more responsible behaviours through Design Education: Reflections on a Brazilian pilot experience in Social Innovation for Sustainability

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Abstract: From the Design viewpoint, sustainable strategies must be integrated into a wide collaborative system that contemplates the environmental, socio-cultural, economic and technological dimensions as a whole. This paper presents a pilot experience in Design Education that discusses social innovation for sustainability in the city of Uberlandia/MG/Brazil. By involving a group of undergraduate design students of the Federal University and Second Hand Furniture Stores, the objectives of the trial were: (1) to find alternative solutions to social and environmental problems; (2) to connect theory and practice by generating a “home interiors prototype”; (3) to stimulate collaboration among the University, young designers and society and (4) to foster a virtuous cycle of actions. Despite the many positive aspects achieved, a continuous collective effort is crucial in order to include new partners, such as support institutions and local government as well as to gradually engage companies in trying new paths towards a more responsible behaviour.

Keywords: Design Education, Design practice, Design for sustainability, Creativity by Design, Design Pilot Projects

1. Introduction

The 1970’s brought a concern that the major environmental problems were associated to resource scarcity (Meadows, Meadows, Randers, & Behrens III, 1972). However, in the 21st century, people have been confronted with another challenge. The means used to overcome resource scarcity, including the substitution of some natural resources and ‘cleaner’ environmental products and services, may have affected the next generation of environmental problems (Redclift, 2006).

In 1987, the Brundtland Commission defined sustainable development as the “[...] development that meets the needs of the present without compromising the ability of future generations to meet their
own needs”. Conversely, according to Redclift (2006), this definition has a misleading approach that obscures several complexities and contradictions. The author points out two aspects: first, as needs themselves change, it is unlikely that future generations will have the same needs of nowadays; second, needs are different in each culture, so the sustainable development may be defined differently in terms of each and every culture and, more specifically, in contextualized scenarios (Redclift, 2006; Manzini, 2008). If on the one hand this might be a controversial interpretation, on the other it reinforces the important perspective of local and contextualized solutions for sustainability problems.

In the 1990’s, the sustainability movements were characterized by a small number of researchers and activists who assumed a whole-system approach to the challenge of developing human systems and technologies that offer high quality and environmentally healthy ways of life for humankind (Gilman, 1990). Nowadays, this whole-system school of thought also includes the awareness of the importance of interconnections, relationships, results and response circles (Gilman, 1990; Manzini, 2006).

The learning and innovation perspective is closely associated to both the whole-system perspective and to a change towards sustainability. Therefore, this transition is considered a social learning process because it relies on progressive efforts to achieve significant change. In order to succeed, sustainability requires a radical reduction in the consumption of environmental resources, i.e. a systemic discontinuity, to create novel systems of production and consumption, and a highly context-related social-technical system. Moreover, the assumption of a new paradigm requires education on better living through the improvement of physical and social life contexts, thus adopting new behaviours that consume much fewer natural resources (Manzini & Vezzoli, 2002; Manzini, 2006; Morelli, 2007).

Specifically from the perspective of designers, design for sustainability is a strategic approach that aims at generating and developing sustainable solutions in order to achieve three fundamental levels: economic growth, environment stewardship and social progress (Elkington, 1994; Manzini, 2006; Morelli 2007). Therefore, it is central to magnify the sense of participation, increasing visibility for the adoption of new and alternative design solutions, and enabling assistance. It also includes leadership and partnership with potential stakeholders such as, for example, business organizations, academic, research and support institutions, and society towards change (Gilman, 1990; Hall, 1995; Morelli, 2007; Van Zyl, 2008).

Even though traditional industry has been moving towards more aggressive forms of globalization, the operational strategies are being forced to become increasingly more attentive to local contexts. For companies, competitive advantages entail the creation of innovations, which now focus on the local level and on individuals (Morelli, 2007). For Thackara (2008), local context and the local production of solutions are the key for sustainability because they provide authenticity and more adapted and efficient results to a given region. Therefore, in contextualized scenarios, the new design agenda asks for a precise usage of competencies in order to reveal innovative and successful social solutions and to put them into practice. Thus, designers need to create conditions that stimulate the ability of individuals to compose the systems, experimenting original ways of being and of acting in collaborative paths (Manzini, 2007; Morelli 2007; Castro & Carraro, 2008; Brown, 2008).
2. Transition towards sustainable directions

Among the many existing possibilities, the decrease of environmental impacts demands a design approach that can embrace a concept development and a pilot as a trial (Castro & Carraro, 2008). In addition, sustainable strategies must include collaboration and the exchange of knowledge as well as the adoption of more efficient processes through design. For many authors (Schneider & Ingram 1990; Hall 1995; Swan, Newell, Scarbrough, & Hislop 1999; Tsai 2001) these strategies must be integrated into a wide collaborative system that contemplates every dimension of the process, i.e. the environmental, socio-cultural, economic and technological dimensions. Such a system, in turn, will allow individuals and organizations to exchange knowledge and to experience new behaviours towards more sustainable paths.

The transition towards sustainability is discussed in the Transition Management literature (Rotmans, Kemp, & Van Asselt, 2001; Loorbach, 2007). This theory considers the practice of learning about desirable transition pathways as an important instrument (Van den Bosch & Rotmans, 2008) to influence changes favouring sustainable directions. In this field, transition experiments are a key concept to characterize small-scale trials that can be used as mechanisms to evolve towards a more sustainable society (Loorbach, 2007; Van den Bosch & Rotmans, 2008).

In tune with and broadening the notion of Pilot Projects (Vreugdenhil & Ker Rault, 2010), these trials are driven by a wide-range of societal needs (that go beyond technological innovation) and cover a great variety of innovations, including institutional, legal or socio-cultural changes. Different instruments are used in activities that occur at the strategic, tactical and operational levels.

- At the operational level, actions include the activation of actors, a set-up and a pilot implementation, with the goal of turning visions into concrete actions.
- At the tactical level, activities include the creation of paths as a basis for cooperation. The goals are oriented to the development of partnerships in order to address the desirable change, therefore involving a large number of actors and widening the support.
- At the strategic level, experiments focus on building a common understanding of the problem, a shared sense of responsibility and direction (Snapp & Heong, 2003; Loorbach, 2007; Van den Bosch & Rotmans, 2008).

3. The Brazilian Scenario: contextualizing the problem

The scenario of this educational pilot experience is the city of Uberlândia, Minas Gerais State, South-eastern Brazil, with an estimated population of around 670.000 inhabitants (IBGE, 2016). According to the Local Social Housing Planning, 40% of this population receives up to 3 minimum wages per month and 10%, from 3 to 5 minimum wages per month [i.e., R$724,00 that corresponded to about US$340,00 (Dec.2014)]

In 2009, there was a deficit of houses (social housing) of about 50.000 units for the strata of population that earns between zero and 6 minimum wages (PMU, 2009).

3.1 The alternative design system proposed

The actors that integrate the experience (Figure 1) that constitutes the subject of this work are:

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1 In 2016, despite the minimum wage is higher than in 2014 - R$880,00, it corresponds to US$265,00, due to the government instability in Brazil that impacts in all aspects of the country: political economy, social policies, R&D investments, and others.
• The design students from the Federal University who are enrolled in a course named *Atelier de Estudos Socio-Culturais*, in English, Socio-Cultural Studies Apprenticeship, that lasts a semester (from August 2014 to February/2015);
• The sector formed by Second Hand Furniture Sector – a very dynamic market that has more than 100 stores in the city of Uberlândia.

The sector encompasses a great diversity of products, such as residential and office furniture, appliances, adornments, carpets, domestic utensils among other options, many of them in very good repair. Regarding the consumers, there is a great, diversified public which buys second hand products which include, in general: a) lower income customers; b) students from other cities that come to Uberlândia to go to University; and c) creative people that seek opportunities for buying good quality objects in good state to customize them in an artistic way.

### 3.2 The pilot experience of design education

According to Manzini (2008) the achievement of a systemic discontinuity that intends to foster sustainable living, demands steps such as: a) to change the perspective, i.e., the interest in ‘objects’ for the interest in results; b) to plan alternative solutions; c) to evaluate and compare the alternatives; and d) to develop more adapted solutions. Moreover, before the initiation of a design process, some principles related to sustainability must be considered, as follows:

- **To make a plan bearing in mind the main objectives of a design project**: considering that some proposals are not ethically acceptable, it is essential to evaluate all the implications of that project;
- **To promote variety**: considering the diversity that is part of sustainable contexts, it is crucial to stimulate local-based solutions. Examples: artisanal products, energy systems based on different sources, different means of transportation, among others;
- **To use existing solutions/products**: considering the need of minimizing consumption, it is important to improve the existing goods or services. Examples: to fix the infrastructures, buildings and out-of-use products, intensifying the use of products/services, updating knowledge and organizations.

Based on all these previous considerations and in order to try a new way of facing current social and environmental problems in the city of Uberlandia, this educational pilot experience was proposed.
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The trial engaged undergraduates of the Design course from the Federal University of Uberlândia (UFU/MG), with the following specific objectives:

- To underline to design students the importance of creating alternative solutions to social and environmental issues in local scenarios, especially in developing countries, such as Brazil;
- To apply the theory in a real context by generating a “home interior prototype” based on the studied concepts;
- To discuss issues related to social learning on sustainability;
- To stimulate collaboration among the University, young designers and society and
- To foster a virtuous cycle of actions.

![Figure 2: Group of students – discussion after theoretical studies on design for social innovation](image1.png)

As for the method, the course included many activities that should support the final development of an ‘interior design prototype’. Such a prototype was planned as the exhibition of a compact house, furnished mainly with second-hand furniture and appliances, in order to demonstrate the feasibility of having a home of fair quality and price.

The other activities developed during the course were related to:

- Theoretical design studies for social innovation and sustainability (Figure 2);
- Discussions and reflections among groups of students about design strategies for sustainability, related to the second hand furniture sector and low-income families (Figures 3-5);
- On-site visits to second-hand furniture stores;
- Studies of interior design projects for social housing.

![Figures 3-5: Groups of students – discussion about design strategies and value chain for sustainability](image2.png)
It is relevant to mention that the field research carried out by students revealed a shocking image of the sector due to some aspects, such as:

- Most of the visited stores seemed more like warehouses than furniture shops geared toward end consumers, with very messy, cluttered rooms, and overall visually polluted (Figures 6-8). For the students, these conditions represent a barrier to the business value since they cannot display the goods in an attractive way;

- The students noticed a large amount of still useful products in the stores, which were seemingly forgotten, taking away the value of these objects. According to them, the majority of the products were a very good resource for interior design projects and solutions, not only for low-income customers but also for the higher strata of the population (Figures 9-11).

On the whole, the main objective of this pilot experience was to propose an alternative design system that could involve three main actors – University, Stores and Society. An exhibition - a Home Interiors Prototype - was planned as for the conclusion of the apprenticeship. Its aim was to communicate with society and other partners this initiative of the Design School and the importance of providing alternative solutions to social innovations. Moreover, the experience as a whole was
intended to foster the continuity of actions in the coming semesters, in order to give autonomy to this alternative design cycle. In order to amplify the positive impacts, such an experience must consider the support of other collaborators, such as business support institutions, the local government and the civil society. The benefits this first alternative design system was expected to be achieved are:

- For the academy: this education pilot work is a strategy to discuss the importance of being both an ethical and responsible designer with students. The proposal intended to give them the opportunity to putting in practice alternative solutions that fulfilled social needs in a way that was both creative and cheaper (Figure 12-15). This was made possible by designing spaces with second-hand furniture and appliances instead of using new goods. Furthermore, it intended to provide the design students with a chance of being ‘in contact with real life’, by establishing connections with owners/entrepreneurs, users and other actors involved in the work;

- For the stores: to increase their business value by improving the quality of service that was already being offered. This first contact represented an opportunity to call the entrepreneurs’ attention, to organize the stores’ rooms in order to make them more attractive to consumers and to valorise their goods. From this, a collaborative process among design students and/or young designers and second-hand furniture stores was also planned. The collaboration was to generate creative solutions for consumers, thus providing projects for interior spaces, with a fairly value;

- For the society: in this work, benefits were mainly related to social (1), economic (2) and environmental (3) aspects, such as: 1) the access to feasible good quality housing, especially for the low income population (since the project can be developed and offered by interior designers free of charge, in partnership with stores); 2) the creation of job opportunities in the case of young designers and/or makers or people who work with furniture restoration; and 3) encouragement of the fixing or restoration of used furniture, which represents a very significant initiative to extend the life cycle of products.

In the same lines of the former aspect, Sweden has recently announced tax breaks on repairs to clothes, bicycles, fridges and washing machines. On bikes and clothes, for example, VAT has been reduced from 25% to 12% and on white goods consumers can claim back income tax due on the person doing the work (Starritt, 2016).
In order to stimulate social innovation and local development, it is important to point out that collaborative works depend on aspects such as the group that incorporates them, detailed instruments of coordination and on the creation and re-creation of a circle of knowledge in order to share a common understanding (Swan, et al., 1999; Lopes & Baldi, 2009) or a common language (Carlile, 2002). All these aspects combined, contribute to support the whole-system working in a virtuous and continuous cycle. However, to increase the sustainability effectiveness as a competitive strategy and an intrinsic characteristic of any participant, it is necessary to improve the ability of each partner, each stakeholder, be it an individual or an organization which is involved in the process.

4. Reflections on the Design Education pilot experience

Some authors state that the insertion of design strategies within companies is subordinated to the development of a broader strategic thinking within the organizations (Mozota, 2003; Best, 2006; Castro & Carrao, 2008). For Castro and Carrao (2008), the decrease of environmental impacts requires a Design approach that embraces concept development and a pilot as a trial. Furthermore, sustainable strategies must include collaboration and the exchange of knowledge, as well as the adoption of more efficient processes through design. As mentioned before, these strategies need to be part of a collaborative system (Schneider & Ingram, 1990; Hall, 1995; Swan, et al., 1999; Tsai, 2001) that takes all the dimensions of a process into consideration. This comprehensive view will enable the exchange of knowledge among individuals and organizations and favour more sustainable behaviours as well.

On the other hand, Lopes and Baldi (2009) argue that collaborative works are not a synonym of innovation and local development per se, but rather depend on the involved group, the contexts and the mechanisms of coordination. Furthermore, they must include space for discussing differences and for changing behaviours in order to balance interests, thus creating a collective identity (Hardy, Lawrence, & Grant, 2005).

Throughout this design education pilot experience it was possible to identify some aspects related to the engagement of the individuals involved, be they students or entrepreneurs, as follows:

Regarding the engagement of the design students, it is possible to analyse their participation from two perspectives:

- Theory: Although the majority of students demonstrate an interest in the purpose of the course - the role of Design in Social Innovations for Sustainability - they show a low level of maturity regarding social and environmental problems that is needed for considering all connections and relationships and required to support a deeper discussion. Because of this, the need for reading, studying, and collectively discussing the proposed themes was a very relevant opportunity to put students in touch with the argument and, at least, to start considering it;
- Practice: On the other hand, despite the obstacles of the research field, and to assemble the exhibition, the practice was a very successful time in that it provided the students with the opportunity of materializing some principles discussed in theoretical lessons. Despite facing the resistance of the entrepreneurs, the economic limitation and other troubles during the entire course, most students were deeply involved in the preparation of the prototype.
As a pioneer experience, it demonstrates feasible conditions for continuity, therefore involving other groups of design students in subsequent semesters, but including some of the first group as tutors as a way to reinforce their knowledge, as well as to stimulate practice.

In relation to the Second-Hand Furniture Stores, it is relevant to highlight that the sector as a whole has no contact with university and research experiences in their daily work. This situation not only creates some barriers in establishing connections between the academy and stores, but also limits the effective results or the implementation of the desired alternative design system, which was mentioned in the beginning of this paper. Despite the apparent interest of a few entrepreneurs in the sector, they were not willing to collaborate or to undertake any different task, such as the transportation of goods, the communication of the experience and the reorganization of layout stores, among others.

Another relevant aspect regards the lack of funding to run the Home Interiors’ Prototype: since the experience was part of a design course, there was no specific funding for the project or the assembly of the exhibition. Even though this represented a chance for increasing the business value of collaborators and other supporters, it was a challenging part of the experience. Since the stores were not available to transport the objects and furniture they lent to build the prototype, students counted on the help of friends and colleagues to make the exhibition happen.

4.1 Final considerations

The experience has become a very significant moment for the insertion of new arguments and reflections into the role of design, social innovations and sustainability within the Design School at UFU. Obviously, as a first experience, there are many barriers to overcome such as a deep engagement of design students from the beginning, a wider support of entrepreneurs and even the university as an academic institution, and other important actors, such as private companies.

It is worth noting that this pilot also stimulated the development of other experimental proposal, engaging students from other classes. The activities carried out during this work served as inspiration to the design of a product-service system that connected the second hand furniture system, the university and the society. The students developed a concept of an app to put in practice all the partnerships that are expected to collaborate with the system. The work was presented in a scientific seminar promoted by the Pontifical University Catholic (PUC) called PUC Jovens Talentos (i.e., Young Talents), in the city of Curitiba/PR/Brazil, on October 2015 (figure 16).
The system proposed included, among other aspects:

- The integration of second-hand furniture store into an online platform that could display the availability of products within the network, thus facilitating sales;
- The recycling of used objects with the supervision of design students, but also promoting work opportunities for low-income people;
- The development of interior design projects for low-income house by design students.

Regarding the ethical and socio-cultural aspects that are intrinsic to the experience, it is fair to emphasize that behavioural changes take much more time and effort to become part of everyday businesses practices. Certainly, much still remains to be done in terms of collaboration processes, social and environmental solutions. Moreover, the design concerns within the Second Hand Furniture Sector and its relation with the School of Design and young designers must be continually stimulated to become a common practice among them.

As a pioneer design education experience in the region involving these typologies of actors, this pilot has been able to trigger the beginning of a behavioural change within the group of collaborators. In any case, it will demand a continuous collective effort to deeply engage students in taking on leadership roles in the projects. It must also include new partners, such as support institutions and local government, as well as to gradually engage companies in trying new paths toward sustainability, thus transforming the system into a real virtuous cycle.
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