EDUCATION IN COOPERATIVE CELLS AS SOCIAL INNOVATION: A CASE STUDY IN THE BRAZILIAN SEMIARID

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ABSTRACT

Social innovation's fundamental objective is to promote life quality. Any new initiative, whether it be a program, a project, an enterprise or a technology with this purpose might be considered a social innovation. From this concept, it is perceived as social innovation the efforts of the *Programa de Educação em Células Cooperativas* (PRECE), an initiative originated in Pentecoste, a municipality in the state of Ceará, located in the Brazilian semiarid region. This program has benefitted hundreds of youngsters, enabling their access to knowledge and further approval in university entrance exams. The educational method of collaboration in cells made possible broadening the horizons of many youngsters coming from rural communities in Ceará, even when lessons were ministered under a tree in the middle of a farm. The objective of this study is to identify the dimensions of social innovation, according to Tardif and Harrisson (2005), existing in the PRECE's proposal. It is aimed to evidence how the initiative is composed, bringing to light the essential elements that make it social innovative. A case study of PRECE was carried out through qualitative research. Data were collected via semistructured interviews with members of the direction and coordination of the Program, and analysed using the software NVivo 10. For reference base, the content analysis technique was used in accordance with Bardin (1977). The results highlighted how the dimensions of social innovation are composed within PRECE. This research contributes by foregrounding a social initiative that has been capable of changing individual realities in the Brazilian semiarid and showing how such initiative is constituted in the social innovative perspective.

Keywords: Social innovation; dimension; semiarid; education; collaboration.

1. INTRODUCTION

Social innovations emerge as a way to improve life quality of people who need means to change their realities. In the definition provided by Neumeier (2012), social innovations might be understood as transformations in attitudes, behaviours or perceptions of a group who gather in a network of interests aligned with the group's experiences and these changes lead to new and improved alternatives of collaboration.

Bacon et al. (2008) highlight three critical factors to explain the dynamics of social innovation. First, the willingness to change, coming from the awareness about a threat, flaw or from the feeling of a new opportunity. Second, the presence of internal capacities to promote such change, which include leadership and a culture related to it. Third, the access to external resources to help transformation to occur; these resources comprise people, money, skills and networks as well as the positive feedback from the benefitted audience.

In this regard, the *Programa de Educação em Células Cooperativas* (PRECE – Program of Education in Cooperative Cells in Portuguese) was created to contribute with the education of young people from rural areas, enabling them to become students in the Federal University of Ceará (hereby also called by its Portuguese acronym UFC).

Using a cooperative learning methodology, PRECE became an innovative movement that has improved the life quality of hundreds of youngsters. The program was started in 1994 in a manioc mil in the rural community of Cipó, located in Pentecoste, a municipality in the state of Ceará. Over the years, the Program breached the borders of the community and, currently, its methodology is incorporated as a UFC extension project.

Considering the impact PRECE has in the semiarid municipalities it operates in the semiarid region of Ceará, places that also lack initiatives to foment local development, the Program is defined in this article as a social innovation.

The objective of this study is to identify the dimensions of social innovation in the PRECE's proposal, according to Tardif and Harrisson (2005). It is aimed to evidence how the initiative is composed and, in this sense, to bring to light the essential elements that make it social innovative.

A qualitative methodology was employed to operationalize this research. The content analysis technique was used with the software NVivo 10. Through this tool, eight semistructured interviews were analysed, which had been carried out in Fortaleza and Pentecoste, with the individuals in charge for operationalizing PRECE's activities.

The findings foregrounded that the social innovation dimensions from the analytical table from Tardif and Harrison (2005) were identified in the PRECE, confirming it as a social innovation to the context studied.

This article is divided in five sections, starting with this introduction, which brings a general overview of this study and the objective pursued. The following section comprises the theoretical backgrounds, putting forward social innovation in a general perspective; afterwards, the concept and the dimensions of social innovation are introduced. The third section conveys the methodology and the case analysed. The fourth segment presents the findings and the analysis of such results. Finally, the last section closes with the final remarks.

2. THEORETICAL BACKGROUNDS

This section aims to present some conceptualizations about social innovation. For such, it outlines, at first, some discussions about social innovation and, later, highlights the dimensions of social innovation adopted as references for the analysis proposed in this research.

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2.1 Social Innovation

To understand the concept of social innovation, it is necessary to evidence some general definitions for the term "innovation" itself. Schumpeter (1985), for instance, considers innovation a dynamic element in the economy, which grants the entrepreneur the fundamental role of economic development promoter.

Currently, organizations have been experiencing what is called a "Schumpeterian rebirth", according to which innovation is the crucial source of effective competition, economic development and social transformation. Thus, it emphasizes that modern economies are built with ideas as well as capital and labour, being the globalization process itself, a product of innovation. Furthermore, economies are becoming interdependent, whereas cultures have become permeable, transparent and strong by intensifying the exchanges of goods, services, ideas, values, experts, problems and solutions (Torun, 2007).

Erber (2004) affirms that economists from all schools share the consensus in which technological innovation is one of the main engines for development. Nevertheless, Fagerberg, Srholec and Verspagen (2009) acknowledge and understand that the technological and innovative influence over economic development has been a controversial issue.

Eber (2004) also foregrounds the Brazilian economy as one of the biggest in the world, even though the country has been struggling with social and economic problems affecting its growth and development, leading to the need for recognizing technical innovation as a priority in the country's strategy for development.

To do so, in Brazil, the Law of Innovation 10,973 from the December 2nd 2004 (BRASIL, 2004), regards innovation as the introduction of a novelty or an improvement in the social and productive environments, resulting in new products, processes and services.

For Tigre (2006), innovation takes place by the practice of inventing, linked to the creation of a process, technique or new product. According to Tidd, Bessant and Pavitt (2008) dealing with innovation is compulsorily related to discussing changes. These authors assert such changes can happen in four categories, conveyed as the 4Ps of innovation, namely: product innovation – changes in products and services; process innovation – transformations in the way products and services are created and distributed; position innovation – modifications in the context wherein products and services are introduced; paradigm innovation – changes in mental models guiding organizational activities.

Mulgan, Tucker and Sanders (2007) criticize the complex conceptualizations given to innovation; these authors, however, define innovation as linked with new functional ideas. This definition differs "innovation" from "improvement", where the latter implies an incremental change, and they distinguish "creativity" from "invention", considered vital elements for innovation, although missing the hard work and diffusion that actually make ideas promising.

The European Commission (1995) recognized that innovation cannot be seen only as an economic mechanism or technical process. Innovation is also a social phenomenon through which individuals and societies express creativity, necessities and aspirations.

According to Hillier, Moulaert and Nussbaumer (2004), an innovation policy implies in the capacity of regenerating several forms of capital (social, environmental and institutional) to promote development, relying on new governance relationships based not only on one kind of agent, but also in the cooperation among different sort agents.

One of the basic concepts of innovation lies in its width. The Oslo Manual (OCDE, 1997) outlines, addressing to the degree of novelty, innovation as Minimum, Intermediate or Maximum. The first is linked to what is understood as new to the "company", the second highlights what is a novelty in a region or country and the third considers what is new to the world.

Pol and Ville highlight that the concept of social innovation has been used in juxtaposed ways in different disciplines. In these discussions, it can be granted as the engine for institutional change, as an alternative with social purposes, as an innovation oriented to the common good and as addressing to needs not yet fulfilled by the market.

Lundstrom and Zhou (2011) identify some differences between business and social innovation. According to the these authors, the former aims at capitalizing knowledge to reach commercial interests, whereas the latter has the commitment with social progress by solving problems where economic resources are scarce. Concerning actors and investors, it is stressed that business innovations are typically invested by companies, despite these organizations may also work with social issues. Furthermore, the government, non-governmental organizations, foundations and individuals can perform social innovations.

Regarding the criteria for success, the performance of business innovations is measured through the participation in the market and by profit rates, whereas in social innovation is assessed by the intensity of social improvements and progress. In addition, the authors stress critical resources, which in business innovations are the financial used as support. In social innovations, on the other hand, a mix of different resources are sought, such as political acknowledgement and financial support, volunteer work and philanthropical commitment. Finally, considering organizational matters, Lundstrom and Zhou (2011) emphasize the different standards growth social organizations have, and, although these organizations do not grow as fast as private ones, they tend to be more resistant.

Valverde and Castor (2007) stress the idea of social innovation as underpinned on a broader view of development, wherein policies and undertakings tending to provide or accelerate development should not pursue only economic goals. Development should also be oriented by non-economic goals (in the strict meaning of the term), that is, by the search for justice, equity, solidarity, inclusion of marginalized groups, expression of individualities, minimization of environmental impacts or by preserving the sociocultural tissue.

Heiskala and Hämäläinen (2007) convey that social innovations are often created as a response to rapid technical-economic changes, which create new social problems not possible to be corrected by prior political mechanisms. This demand tend to be motivated by the search for equity.

Pol and Ville (2009) state the absence of consensus regarding the relevance or specific meaning the term "social innovation" holds in the fields of social and human sciences, although the term has become diffused among social scientists. On the one hand, these authors affirm some experts consider the expression "social innovation" an inaccurate "fashionable word". On the other hand, other scholars understand the concept has meaningful value to identify a critical kind of innovation. Howaldt and Schwarz (2010) emphasize that, in as much as bring forward the new paradigm of innovation promoted by chronological changes, transformations concerning the object of innovation have also taken place. This view opposes to the classical technical paradigm from the industrial society, which was immersed in the idea of development.

Franz, Hochgerner and Howald (2012) reinforce that social innovation has been ignored as an independent phenomenon, being disregarded as one to be target of social and economic scrutiny. The concept of social innovation seldom appears as a clearly outlined specific term. These authors evidence social innovation as being normally used as a descriptive metaphor in the context of social and technological changes.

According to Cajaiba-Santana (2013), social innovations emerge through changes in attitudes, behaviours or perceptions, elements leading to new social practices. This author stresses that these changes do not only occur in the way social agents act or interact with one another, but also through transformations in social life, enabled by the context where these actions happen by the creation of new institutions or social systems. Therefore, what is

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underlying in social innovation is not the problem to be solved, but the social transformations solving the problem brings. To the *Center de Recherche sur les Innovations Sociales* (CRISES, 2012), social innovation is understood as a process started by social actors to respond to certain aspirations. These goals might be addressing to a need, supplying a solution or being benefitted by an opportunity to change social relationships; transforming a scenario or proposing new cultural guidance for improving life quality or conditions in a community.

Neumeier (2012) emphasizes the importance development programs and other incentives have as catalysers of regional social innovations, taking into account the context of rural development in his analysis. Furthermore, this author conveys the need to approach these initiatives with more depth, paying appropriate attention to the shape these programs are assembled, thus, allowing the creation of sustainable social innovations.

In the study performed by Butkevičiene (2009), relying on data from interviews with social innovation and rural development experts; it was possible to identify several trends for social innovations. Such trends outline that social innovations could serve as tools for the restructuration process in rural areas, namely: new services in rural settlements (tourism is shown as an example); new educational courses for rural populations; ecological agriculture; formation of action groups; social innovations through electronic means.

2.1.1 Dimensions of Social Innovation

Social innovation might comprise dimensions, factors or classifications. Such composition is presented in this section based on the comprehension different authors have on the topic.

To André and Abreu (2006), five factors encompass the dimensions of social innovations: the nature (what is social innovation?), the stimuli (why are social innovations produced?), the resources and dynamics (How are social innovations produced?), the agents (Who produces social innovation?) and the innovative or creative means (Where are social innovations produced?).

Neumeier (2012) identifies stages social innovations might undergo:
- Problematization, which emerges from an initial impulse (whether it is an idea or a problem identified) for change to happen;
- A manifested interest, through the contact with actors who wish to promote and be part of the transformation;
- Delimitation and coordination, relating to the establishment and negotiation between those who will act for the behaviour to be adopted and the further paths to be followed. The author emphasizes that the network composed by these actors is flexible to constant changes and new adjustments.

CRISES' members are in the center of a joint effort with civil society and contribute actively to knowledge transference activities, for such, many studies have been performed in partnership with other actors. In addition, the scholars connected to the Center belong to several fields like anthropology, geography, history, mathematics, philosophy, industrial relations, management sciences, economy, political science, sociology and social work. Because of the assertive role CRISES has in the social innovation field, the dimensions proposed in Tardif and Harrison's research (2005) were chosen to operationalize the identification carried out in this article.

Starting with the analysis of 49 scientific papers published by the Center, Tardif and Harrison (2005) verified how the integration between researchers from the Center was settled and to what extent these members knew other productions from CRISES and referred to them. The document resulting from the mapping process, besides multiple identifications, introduced the table called "CRISES' Conceptual Encyclopaedia of Social Innovation". This table outlines five dimensions for social innovation: Transformation, Innovative Character,

Innovation, Actors and Process. In this regard, Maurer (2011) as well as Souza and Silva-Filho (2014) used the term "dimensions" to operationalize elements from the table in distinct case studies.

Figure 1 displays the "CRISES' Conceptual Encyclopaedia of Social Innovation", elaborated based on the study by Tardif and Harrison (2005). The Encyclopaedia presents five dimensions of social innovation.

Figure 1 – CRISES' conceptual encyclopaedia (dimensions of social innovation)

Dimension Transformation	Dimension Innovative Character	Dimension Innovation	Dimension Actors	Dimension Process
Micro-context • Crisis • Rupture • Discontinuity • Structural modifications **Economic** • Emergence • Adaptation • Labour relations/ relations of production and consumption **Social** • Re-composition • Reconstuction • Exclusion/ Marginalization • Practice • Change • Social Relations	**Model** • Work • Development • Governance • Quebec **Economy** • Knowing/ Knowledge • Mixed • Social **Social Action** • Trials • Experiments • Policies • Programs • Institutional arrangements • Social regulations	**Scale** • Local **Types** • Technical • Socio-technical • Social • Organizational • Institutional **Purpose** • Common good • General interest • Collective interest • Cooperation	**Social** • Movements • Cooperative/ Communities • Civil Society • Unions **Organizations** • Companies • Social economy organizations • Collective organizations • Recipients **Institutions** • State • Identity • Values and norms **Intermediaries** • Committees • Social networks/ of alliance/ of innovation	**Mode de coordenation** • Assessment • Participation • Mobilization • Learning **Means** • Partnerships • Integration • Negotiation • *Empowerment* • Difusion **Restrictions** • Complexity • Uncertainty • Resistance • Tension • Commitment • Institutional inflexibility

Source: Adapted from Tardif and Harrison (2005) and Maurer (2011)

The first element, *Transformations*, connects with the context wherein the social innovation is comprised. This dimension emphasizes macro and micro issues casting influence over the initiative. Crises, ruptures, discontinuities and structural modifications compose the subtopics within this contextual item.

Social innovations rising in the identified context might be influenced by social and economic matters, which may require adjustments or new responses. Such transformations promote initiatives leading to the search for innovative strategies. Transformations regarding

concerns about polarization, exclusion and social marginalization will demand answers that may improve the well-being of people affected by such challenges.

Concerning the economic component of these transformations, the definitions comprised promote adaption. New labour, productive and consumeristic relationships may emerge from such interplays. Regarding the social component of Transformations, the subtopics introduce the effects influence the social sphere. This composition considers possible contextual conflicts acting simultaneously and possibly affecting the social innovation in question.

Concerning the *Innovative Character* dimension, Tardif and Harrison (2005) affirm that innovations are responses to crises and are characterized as novelties in their contexts. These new initiatives represent attempts and experiences in the implementation process. When succeeded, they might be institutionalized and transformed into new labour, development, governance and solidarity economy models.

After the contextual identification, social actions to the social innovation are defined considering the possible ways for labour, development, governance or Quebéc (solidarity economy) and the kind of economy that is being targeted. Three types of economy are considered in this sense. First, the knowledge model, encompassing the concept of Knowledge Economy coined by Peter Drucker, based on applying knowledge in economic development (Guile, 2008). The second type is mixed, contemplating general and collective interests and it may settle partnerships with the government. The third, social, has the goal is to solve social problems.

Analysing the *Innovation Dimension*, Tardif and Harrison (2005) divided different experiments of social innovation in five kinds: technical (technological), socio-technical, social, organizational and institutional. These authors affirmed that social innovations are local processes started by different actors aiming to transform their interactions. On the one hand, these actors change their interplay with the organizational and institutional environment. On the other hand, such actors have the objective to neutralize the effects of crises in as much as they try to conciliate different levels of individual and collective interests. These social innovations take place locally and can be guided towards the common good, general or collective interests.

The *Actors Dimension* emphasizes the collective learning emerging from innovation due to the number of people interested and involved. It is hoped that cooperation amid all actors occur aiming to ensure "good governance" practices. In this dimension, actors such as cooperatives, associations, trade unions and community movements are included. Moreover, organizational actors like companies, social economy and collective organizations are included as well as their beneficiaries. Institutional actors such as the State, identities, values and norms also belong to this group like committees and networks of social alliance to promote innovation also fall into this dimension. Partnership and cooperation are key elements here.

The last element, *Process*, deals with the dynamics, complexities and uncertainties in relationships between actors. Institutional rigidities constraining the innovative process are also added to this dimension.

Furthermore, the forms of coordination, means (interpreted as relationships established between different parts), and constraints to implementing social innovations, which may influence or reduce the innovative potential of a project are verified in this last dimension. According to Tardif and Harrison (2005), innovation brings to light the importance of collaboration and participation of different stakeholders. Hence, the final goal in an innovative project is the involvement of all participants and their cooperation throughout the process.

The dimensions composing the table introduced in this section map the path taken by social innovations beginning at the contexts where they are present. These dimensions also overlap relationships, presenting challenges to the implementation and permanence of social innovations.

3. METHODOLOGY

As Konstantatos, Siatitsa and Vaiou (2013) indicate, socially innovative initiatives are developed in reaction to increasing inequalities as well as to processes of social exclusion, mobilizing different resources. In this regard, understanding such phenomena requires specific methodologies to approach and learn along with the actors, objectives and practices comprised. The methodologies used in this research are part of the broad field of qualitative research, which has been acquiring greater acceptance in different sciences since the 1970s. Furthermore, the aforementioned authors affirm that qualitative techniques are methodologically focused on the subject/ object and their dynamic relation with the social context. Hence, this section presents the paths followed for developing the research and the treatment used for the data collected.

The current qualitative research, regarding its nature, is classified as exploratory and descriptive. The former is carried out to answer a research question with few previous related studies from which information might be collected; this type of research focuses on acquiring familiarity with the area, to investigate it later with more rigor. Among the typical techniques used to do so are the case studies. Whereas the latter, the descriptive research, is interpreted as the one seeking to outline the behaviour of phenomena as well as to identify characteristics of a determined problem (Collis and Hussey, 2005).

Considering these points, the case study of the *Programa de Educação em Células Cooperativas* (PRECE) was adopted as investigation strategy to define it as a social innovation, relying on the dimensions of analysis presented in Tardif and Harrison's (2005) table. According to Yin (2010), the case study is the most suitable strategy when analysing contemporary phenomena, included in a specific real life context.

The data were collected through semistructured interviews with eight individuals who are closely linked to PRECE's trajectory and the talks took place in Fortaleza as well as in Pentecoste. These people are *Vilamar Ponciano (Director of the Popular Cooperative School of Pentecoste); Magela Braga (Vice-Director of the Popular Cooperative School of Pentecoste); Aurenir Luz (PRECE's Coordinator of Public Relations); Ana Maria Andrade (PRECE's co-founder and articulator); Tony Ramos (Educator and articulator); Elton Lopes (Director of a school in Pentecoste that operates under PRECE's tenets); Manoel Andrade Neto (PRECE's founder); Ravena Lopes (Coordinator of Cooperative Learning).* With the exception of Manoel Andrade Neto, all other interviewees participating in this research were former PRECE students, also known in the region where the Program takes place as "precistas".

These interviews lasted from 20 minutes to one hour and, following the objectives aimed here, brought forward how PRECE can be regarded as a social innovation. Yin (2010) also states that interviews are essential sources of information when performing a case study.

The information provided was analysed with the NVivo 10 software for qualitative analysis. As a result, this tool made possible to create "nodes" corresponding to each dimension. Using the content analysis, information comprised in the transcribed interviews were distributed in each dimension (node). According to Bardin (2006), the content analysis technique is composed of a set of methodological instruments that are applied to diversified discourses. The gathering of such techniques absorbs the investigator who seeks hidden elements, latent aspects - what is not apparent - the potential novelties, in other words, the "unsaid" retained in a message.

Mozzato and Grzybovski (2011) highlight the adequate use of softwares as one of the good practices for validating research results. These authors foreground, among other softwares for analysis, NVivo and affirm it is an instrument that is being used increasingly in the Management field. Therefore, it can be taken into account as a valid instrument for analysing qualitative data; it makes analysis easier and qualifies the analytical process.

After concluding the distribution process, a new content analysis was done within each node to make emerge relevant information about each dimension, feature that permitted to analyse PRECE understanding the different elements using the dimensions of social innovation, based on the reference table.

3.1 Programa de Educação em Células Cooperativas (PRECE)

The information in this section was collected from PRECE's (http://www.prece.ufc.br/) and PACCE's (http://pacceufc.blogspot.com.br/) websites, respectively, these data are available for the public at the World Wide Web.

In 1994, the *Programa de Educação em Células Cooperativas* (PRECE – Educational Program in Cooperative Cells in Portuguese) was founded by a group of seven youngsters in a rural district called Cipó. This location is part of Pentecoste, a municipality in Ceará, situated in the Brazilian northeast. The group was encouraged by Manoel Andrade, who were in Cipó and has been a professor at the Federal University of Ceará, to study together. Their focus, at first, was to obtain a high school diploma and, later, as the project developed, to take the entrance exams needed to become students at the UFC. In this regard, the option for this federal university occurred given it provided to students from distant cities housing, food and other facilities, which other local universities did not.

Over time, the program increased its prestige with the surrounding communities, as it achieved results such as having one of its first students and founders approved in the first place for Pedagogy at the UFC. In the early 2000s, as a result, more students walked, drove or cycled from near communities to take part in the program. In as much as the program began scaling up, problems appeared and PRECE started to employ new strategies to keep delivering outcomes.

To solve spatial problems, Manoel Andrade suggested the students to form study groups in their own communities, spreading the methodology and the idea, which helped the movement to grow even further. Students, who began gathering in places such as community associations, started the *Escolas Populares Cooperativas* (EPCs - Popular Cooperative Schools in Portuguese). Similarly to PRECE's founders, this new group of students aimed at going to UFC to get a college degree.

Students themselves organize and run these popular schools in articulation with other EPCs nearby. Such collaboration allows them to exchange human resources like teachers when necessary. Furthermore, the fact that students approved return every weekend to their communities to aid their peers is a key enabler for the success of these EPCs. This comeback works not only a way of making peers help one another, but also as a tool to motivate youngsters to study harder and achieve similar results.

PRECE as a whole operates by using a kind of group study called "cells". These cells are formed by a group of five to seven students who get together to learn more about one subject; the cell member with more background on the issue facilitates the learning. These roles, however, are not static. Although a student holding more knowledge on one topic becomes a facilitator for the rest, such feature does not impede other members to collaborate if they wish or if the group needs their assistance. During the weekends, UFC students who might be former PRECE's members or not, assist these groups as well.

The operationalization of these cells is simple. The need for financial resources is low and most funding comes from projects PRECE approves with funding supporting agencies

and foundations. Three of these helping organizations are the Mary Harriet Spears, the Brazil Foundation and the Konrad Adenauer Foundation, which by gathering donations from people in other countries finance the initiatives PRECE undertakes.

Protagonism is essential to the Program's processes, given that a high level of individual accountability is necessary for the program to work; a relevant feature once students are in charge of these cells in the EPCs. In spite of its challenges, PRECE has been capable of attaining results such as placing more than 600 students in different universities. Moreover, these youngsters have been moving on to become masters and PhDs. To date, the program has been operating through 15 EPCs in four different municipalities in the Ceará semiarid: Apuiarés, Paramoti, Pentecoste and Umirim.

Manoel Andrade, along with the Federal University of Ceará, helped PRECE to become an extension program of the institution in 1998. Such status, at that time, provided transportation for students who were approved and needed to return to their communities. Later, this partnership evolved and gave birth to a bigger UFC extension project operating under theoretical cooperative tenets. The objective, in this case, was to prevent students from dropping out, especially in courses that require deeper mathematical background. In this regard, evasion is a problem because dropouts both lose the chance to get a college degree and make university lose resources coming from the government due to a smaller number of enrolled students.

Because of these efforts, the *Programa de Aprendizagem Cooperativa em Células Estudantis* (PACCE – Cooperative Learning Program in Student Cells in Portuguese) began in 2009 with the purpose of motivating students to form study groups to help each other, inspired in PRECE's "cells" model. The outcome desired was to reduce evasion indices as well as increase conclusion rates. *The Coordenadoria de Formação e Aprendizagem Cooperativa* (COFAC – Coordination of Formation and Cooperative Learning in Portuguese) operationalizes the program that is supervised by the Office of Undergraduate Studies at the UFC. Presently, the program has about 250 scholarship students from different campi, and besides receiving training about the methodology, these students are also responsible for organizing cells that have to develop learning projects on a topic of free choice. They are required to perform 12 weekly hours of activities, and in exchange receive R$ 400 (US$ 133.33) during ten months.

4. RESULTS AND DISCUSSION

The data collected made possible to identify the presence of the five dimensions comprised in the Tardif and Harrison's (2005) table. This section introduces the discussion about the data gathered, sustained on interviewees' lines, which illustrate these dimensions and permit a better comprehension about the case's singularities.

The lines highlighted in this section were sheltered in the corresponding "nodes" created in NVivo 10. Later, the content analysis technique made possible to identify the information about each one of the five nodes, thus, the extracts' interpretation was directed to such purpose.

A second content analysis allowed reading the extracts, which were also divided and inserted in the nodes. In this sense, the most significant lines for each social innovation dimension can be seen at the next subsections.

4.1 Transformation Dimension

As foregrounded in the PRECE's description, interviewees highlighted the importance of the context wherein the Program was initiated. The limitation young people had, regarding their access to superior education, was a central factor for Professor Manoel Andrade, the

founder, to seek a way to contribute not only in Cipó, but also in the surrounding communities.

Figure 2: Transformation Dimension in PRECE – Interviewees' lines

Tranformation Dimension
In 1994, we had a context in the municipality (Pentecoste) in which we didn't have any secondary high schools in the region and many youngsters left to Fortaleza, to São Paulo, a lot of people abandoned school while still were in the primary high school. Then, in this period, I invited a group of students to get together in an old manic mill to study (in Cipó – district of Pentecoste). Those students were out of the correct school age and out of school itself. So, I stimulated the group to study, I set a goal, which was to go to university, but before that, they needed their high school certificate first. And it started like that, studying in an old manic mill and sharing what they knew. One by one, they concluded their high school studies, took the entrance exam, went into university and, I think the biggest secret is also their return. They started to come back at every weekend to help others. Then, we started to aggregate more people, at first, people who wanted to finish secondary and primary high school (Manoel Andrade Neto - PRECE's founder).   He (Manoel Andrade) woke up at night once and got himself thinking on what he could make for that community (Cipó) in the middle of nowhere, with houses distant from one another, with many students needing to finish their primary and secondary high school. Schools, especially the secondary high school ones, were 17km away from Cipó, so some youngsters due to the distance and all the adversities present in the countryside like catching a transportation to get to the place, gave up, and preferred to be small farmers like their parents (Ana Maria Andrade - PRECE's co-founder and articulator).   There was no electricity at the time, so they studied under trees, around the old mill (Tony Ramos - Educator and articulator).   The first group was composed by young adults, and there was only one teenager. Norberto, my cousin, in 1994 was 20 years-old and had only finished the fourth grade, which he had taken twice, that happened because in Canafistula, our community, we had schools that went on only until the fourth grade at that time (Elton Lopes – Former PRECE member and director of a school in Pentecoste that operates under PRECE's tenets).

Source: Elaborated by the authors

Considering the economic aspect, the accounts systematically evidenced the lack of financial resources the inhabitants of Cipó had at the time PRECE was conceived. In this poor community, formed by farmers, the few schools available offered until the fourth grade of primary high school. Commuting was an obstacle; problem that made students quit and look for jobs in agriculture as well as in livestock farming like their parents, even though these occupations granted smaller chances for financial autonomy.

Regarding the social issue, young people from the region remained excluded because of their limited schooling; the precarious teaching they could access constrained their capabilities to search for better jobs and income opportunities.

4.2 Innovative Character Dimension

PRECE's teaching model, in which students are responsible for sharing knowledge based on the topic they are more proficient, was outlined as an essential innovative character to the Program's proposal and success.

Figure 3: Innovative Character Dimension in PRECE – Interviewees' lines

Innovative Character Dimension
PRECE appeared in 1994 in the rural context where seven students out of the right school age were stimulated by Manoel Andrade, a federal university professor, and decided to get together to study in an old mill in the rural community of Cipó, Pentecoste. And this fact was the milestone of a story of great student protagonism in the region. In 1996, it happened another milestone as the first of them, Francisco Antonio Rodrigues (Toinho), was approved. So, this approbation drew the attention from the rest and besides being reason for celebration for the ones who were in the group, made those people to wake and observe what took place the mill, that was something still very internal and primitive. So, young people from different ages and communities got together to this group from Cipó and PRECE kept growing (Aurenir Luz - PRECE's Coordinator of Public Relations).
So, after a while, the people from the city (Pentecoste) started going there, too. Many people came from rural communities, but it was after the people from Pentecoste started going to Cipó the movement got stronger because people from the city has 'another level'. They didn't have as much guts as people from the rural area, but they had a higher level of formal education because came from better schools and most of them had already finished high school or was on the last year. So, they went to Cipó with the idea of being approved, and it was from then that PRECE began expanding (Manoel Andrade Neto - PRECE's founder).
Another differential was the students' return to their communities. We had a story there, people would only return to Pentecoste 'to eat some fish by the dam'. So, it was a very strong innovation, the person thought: 'I'm going to university, but I have a commitment to come back to stimulate others'. This was the hallmark in PRECE's history; it was an important strategy (Manoel Andrade Neto - PRECE's founder).
So, Manoel Andrade, when thought about a social project for students, he considered a space, then he noticed that old mil as a stage for students to study in groups. […] When we started in 1994, it was something completely empirical, it was idea genuinely conceived between a teacher and a group of students. […] This project greater goal, when Manoel Andrade though about it, was to provide those low-income students coming from rural areas, the possibility to go to university. This is the innovative aspect to that place. In Cipó, the only the wealthy, children of politicians were able to have superior education (Ana Maria Andrade - PRECE's co-founder and articulator).
I think PRECE is a novelty because it is not only a prep course to university. The great novelty is that these young people who left the woods went back to their communities and kept the project alive, continuing to give hope on the access to superior education to other young people. So, the youngster returning to his or her community is what I believe to be PRECE's greatest innovation (Aurenir Luz - PRECE's Coordinator of Public Relations).
To me, PRECE's innovative character lies in bringing students from popular origins to university, giving them what nobody believed was going to work: studying under a tree, not having a teacher, student learning with student, giving autonomy to these people. That is the

innovative character to me. It is something I consider fantastic and is PRECE's differential: the student is hold accountable (Vilamar Ponciano - Director of the Popular Cooperative School of Pentecoste).

There are two very strong kinds of relations in the PRECE: cooperation (among members) and solidarity (from the ones who return to contribute). The university ceded them a bus to contribute with the PRECE at weekends and, on Mondays, the bus went back to take them to Fortaleza (Tony Ramos - Educator and articulator).

Source: Elaborated by the authors

Currently, PRECE operates in many communities and its model was adopted as an extension at the Federal University of Ceará and in professional schools of the State Government. To date, the Program has undergone different adjustments and faced many challenges as a new proposal in the region.

It is important to bring forward that experimentation was important to conceive the novel ways to tackle the challenges identified. In addition, it was because of such experiments, as the ones performed in the old manioc mill, that PRECE emerged and went on changing its region.

4.3 Innovation Dimension

PRECE began in Cipó, a district in the municipality of Pentecoste in the semiarid region of Ceará. This community struggled with problems much similar to others in that region. Although it was started in a simple community in the poor countryside, the initiative was able to go beyond its borders. In this regard, PRECE was also acknowledged as an innovative effort in the USA through Professor Manoel Andrade, while he was there studying for his post-doctorate degree and had contact with the Cooperative Learning theory, which was later incorporated to the Program.

Figure 4: Innovation Dimension in PRECE – Interviewees' lines

Innovation Dimension
The first cell had seven students who lived there (in the old manioc mill in Cipó) and we were the people supporting them. We lived in Fortaleza, but at all weekends, we drove 'til there on Friday nights. We spent Saturdays and Sundays with them, learning with them (Ana Maria Andrade - PRECE's co-founder and articulator). We didn't have much space in our homes, so we studied under the trees. It was a structure like that, there was the moment when they studied, and there was the moment for presentations and debates. We were always betting on a lot of student protagonism, so we never concentrated much on the teacher figure. In that context, people didn't believe that students could get together and overcome learning difficulties. Everybody believed that you needed to have a good school and a good teacher for something to happen. So, the students, without any school or teacher, got organized and overcame their difficulties. And that to me was the great innovation in the PRECE (Manoel Andrade Neto - PRECE's founder). Another innovation was to see the children of small Family farmers and fishermen going to university, to the UFC, most especially. Having the right to university residences as well as eating in the university restaurant and being able to go back to their communities at the weekends. Something nobody had never seen in that region. (Manoel Andrade Neto - PRECE's founder).

In 2000, almost 100 students moved from the municipality center to Cipó to study in the PRECE and try to go to university (Ana Maria Andrade - PRECE's co-founder and articulator).

In the 2000s, the EPCs came up, these are the popular cooperative schools also managed by students. They appeared because of the rise on students' demands. These students went to Cipó, learned the methodology and took it back to their communities; we gave them full support so they could start this nice thing in their communities as well. We, the leaders, we needed to go to the places and implement these schools (Ana Maria Andrade - PRECE's co-founder and articulator).

The Program inside the UFC was created aiming at decreasing evasion and integrate courses, so people could get to know each other and interact. The courses weren't supposed to be isolated, but practice empathy and solidarity (Ravena Lopes - Coordinator of Cooperative Learning Program).

If it wasn't for PRECE I wouldn't be able to manage any of this. They brought me to Fortaleza, gave me the means to stay here, they took me have to take the test [2009] and picked me up after that. It is like a parent taking his son by the hand, showing the path and taking him further. PRECE's main innovation is the one related to solidarity and social responsibility (Magela Braga - Vice-Director of the Popular Cooperative School of Pentecoste)

Nowadays, if you look for where PRECE is, it is not possible to track anymore. We hear people saying: 'I formed a group inspired by PRECE, there is no way to calculate easily how many groups there are. We heard there is one in Mato Grosso [a state 3,000 km far from Ceará], for instance (Vilamar Ponciano - Director of the Popular Cooperative School of Pentecoste).

In 2003, a school was rented, and then, instead of studying at weekends, people could study everyday. In 2004, we had 20 students approved at the UFC. Nowadays, we can't count all the people anymore, but at least 600 have got into university so far (Elton Lopes - Director of a school in Pentecoste that operates under PRECE's tenets).

In PRECE was developed an innovative social technology. The return from university students to their home communities. The feeling of belonging to a group, this feeling of social responsibility to be contributing with the development of the community itself and with a self-managed program (Elton Lopes - Director of a school in Pentecoste that operates under PRECE's tenets).

PRECE is not an experience that emerged from theory to practice, but it came from a need and then later aligned with theory, but it's different from a school that would simply use Cooperative Learning in a close model; PRECE is free. Students' motivations are different and they divide their time according to what they're willing to study in the day (Tony Ramos - Educator and articulator).

Fonte: Elaborated by the authors

PRECE's fundamental role, at its inception, was to provide poor youngsters the possibility to finish their basic studies and get into public universities. The common good, cooperation and solidarity have been the Program's trademarks, characteristics systematically

evidenced in the interviews. The program alumni, known as "precistas", communicated a feeling of belonging and accountability with the initiative, once they have been motivated to build new possibilities together as well as to help others who were in the same conditions and shared equal needs.

4.4 Actors Dimension

During its creation, different social actors were essential for the Program to endure. Encouraged by Manoel Andrade, students realized they could build a movement that would transform their lives and bring new perspectives for their future. Inhabitants from Cipó as well as Manoel Andrade's relatives got involved in the cause, as they perceived its potential.

Figure 5: Actors Dimension in PRECE – Interviewees' lines

Actors Dimension
He [Manoel Andrade] thought about something about Education. Then, he remembered of some young people and invited the first, Francisco Antônio Alves Rodrigues, who was finishing primary high school, he was a young person well developed in his speaking and taught at a small rural school in a community called Serrota. He thought of young Francisco Antônio as the initial leader and to invite other youngsters to start a project that later would be named PRECE. Hence, the first study cell was born, where the student was the protagonist (Ana Maria Andrade - PRECE's co-founder and articulator). The Independent Presbyterian Church in the Cipó contributed with food for those young people through its tithes and offers as well as paying for the transportation for these young people so they could make the tests related to finishing their education (Ana Maria Andrade - PRECE's co-founder and articulator). All Andrade family supported the project and his father even donated a piece of land, where the old manioc mill was (Ana Maria Andrade - PRECE's co-founder and articulator). After 1994, the project kept growing steadily, Andrade himself invited some teacher from the university to teach there at the weekends (Ana Maria Andrade - PRECE's co-founder and articulator). When this group of students start to show this kind of solidarity, this capacity of sharing what they knew with one another, and of being solidary, to return to help someone else even when he didn't need anymore that was a differential. It was the great strength for PRECE to work (Manoel Andrade Neto - PRECE's founder). Participating in the PACCE was very important, it gave us potential, and we took many people to work. There was the people from PRECE and PACCE, competent people like students who could write good ideas and we formed a very strong group with both PRECE and PACCE (Manoel Andrade Neto - PRECE's founder). The Secretary of Education called us so we could make some joint work with public schools. And I, with the help of students, and I have always worked with the help of students, we created many things for the state of Ceará. We requested a school, to have an experience with a school, and Secretary gave us a school in Pentecoste supported by the UFC. The university entered as a co-manager so it could have a different model (Manoel Andrade Neto - PRECE's founder).

In 2009, when Professor Andrade started to study about cooperative learning and discover that the PRECE's practices were very similar to the elements of cooperative learning. It was also the moment in which the university formalized a partnership with the Program to think about a way to teach and learn cooperatively could be implemented at the UFC (Aurenir Luz - PRECE's Coordinator of Public Relations).

When UFC students get into PACCE they undergo many training courses, but the 'example pedagogy' is also very Strong. They get to know PRECE's history, which is a very good stimulus, once they see those seven rednecks from Cipó that got into university by helping each other. It is by practicing that they acquire the understanding about 'you need me and I need you' (Ravena Lopes - Cooperative Learning Coordinator).

When the first student was approved, Andrade signed in PRECE as a UFC extension project and requested the transportation to bring Francisco Antônio every weekend to do the work they had started. The dean said it wasn't worth to spend that money with a car to take just one person, it was economically unviable. So, Andrade, who is visionary, told the dean that one person would make a lot of difference and in very little time the van wouldn't be enough to transport the amount of people who would be getting into university. At that time, the proposal was ludicrous, but now we have two official buses from the state secretary of education bringing students to their communities every weekend (Elton Lopes - Director of a school in Pentecoste that operates under PRECE's tenets).

The partnership between the Program and the state government aimed to get us transportation, because people were leaving their homes to study and were willing to return and contribute with the municipal development. Then, there was this big movement, a big pressure, and an amendment to the state budget was created to cost these expenses. After the mayor was re-elected, just after a while, he cut off this transportation. So, it was then that an opportunity to present PRECE to the state government and to the secretary of education came up; they liked us and started to provide transport every weekend. What's more, a coordination inside the government was created to multiply PRECE's work. Besides the new cells being born, the efforts started to be carried out in regular classrooms (Elton Lopes - Director of a school in Pentecoste that operates under PRECE's tenets).

Source: Elaborated by the authors

The program also had other essential supporters for its structuration and growth. The church in which Andrade congregated made available part of the resources. Moreover, the assistance provided by the UFC to PRECE's former members was fundamental to enable these students to live in the capital, go back to their communities every weekend to help others.

International supporting organizations such as the Konrad Adenauer and the Brazil Foundations aided the Program. In addition, the Ceará State Government, which has incorporated PRECE's methodology in a prototype school in Pentecoste and granted a space so the Program could operate in Fortaleza, has also provided such assistance.

Finally, several volunteers and formal collaborators believed in the idea's potential and made possible to bring about the project, changing the lives of hundreds and helping so the Program could become a reference in education and cooperative learning in the state of Ceará.

4.5 Process Dimension

The processes established to run PRECE have been systematically assessed by different participants, starting by the students, who evaluate the performance of their cells at the end of each day. They consider how learning took place, the roles engaged by each member as well as the wrongs and rights the group performed.

Figure 6: Process Dimension in PRECE – Interviewees' lines

Process Dimension
In 1998, it came up the need for the Project to be registered in the University Extension Office so the students who went to the UFC could have transport and other support. Then, Andrade, as a professor, carried the process out (Ana Maria Andrade - PRECE's co-founder and articulator). In that same year [1998], we thought about how to fund-raise abroad and we received the support from the Presbyterian Church and the Mary Spears Foundation. Hence, we needed to have a formal identity and the Instituto Coração de Estudante [Student's Heart Institute in Portuguese] was created in 2000. The Institute works as a 'financial umbrella' because of its legal framework, it's the part where we can raise funds and do the accountability. Formally, it's an NGO (Ana Maria Andrade - PRECE's co-founder and articulator). We receive some funding from the Brazil Foundation, we make projects that last one or two years with this funding and it's over. We also receive support from anonymous donors, who send money directly to the Institute's bank account. This resource is mainly employed in maintaining the building in Fortaleza, which was ceded by the State Government [to be renewed every ten years] and, lately, the finances have been used to keep this building. When there is anything left, we make meetings for students at some EPC or we do things related to PRECE's memorial. It depends a lot on the project, if the project is the memorial, the funding goes one way; if the funding comes from an EPC, it goes in that direction and they do the accountability. There is an assembly and a board of directors to decide it (Ana Maria Andrade - PRECE's co-founder and articulator). We had many partners to establish this movement. In each moment of our history, someone came up. In the beginning, I spent my money, but then friends appeared and there were people who thought the idea was cool and made contributions. The expenses were simple at first, like paying for transportation so people could come and take the test in Fortaleza as well as to pay for food (Manoel Andrade Neto - PRECE's founder). We started with individual donors, small things. The local church contributed with small amounts, people from the community always helped, sometimes giving food to the students. After a while, we reached a foundation, the Mary Spears that have a scholarship to two university students who redirected them to the movement. Other institutions appeared later, the Brazil Foundation when we won a project and they began investing. We had may people in our history that helped us by giving us space, such as professor Edgar Linhares, who was President of the State Council of Education, he opened us a space to present our initiative to the Government. The result was that they ceded us this building in Fortaleza (Manoel Andrade Neto - PRECE's founder). We evaluate the process. How it was, how the person felt during the process, if the person felt nice, valued. If she could live the conflicts in the group and if these conflicts contributed, if it was possible to manage them. The group processing assess not only results, but also the process. This is what differs it from a normal evaluation, we don't assess only results.

Moreover, every scholarship student needs to do weekly reports (Ravena Lopes - Coordinator of Cooperative Learning).

The EPCs as a whole don't have the same projects, but in general, every project has a coordinator and every EPC has a general coordinator or a president. In the PACCE, in the commission or in PRECE itself. In the Institute, we articulate the EPCs by giving them support so they can develop they own social projects (Vilamar Ponciano - Director of the Popular Cooperative School of Pentecoste).

Nowadays, we have like a 'PRECE's core' in each EPC, with a coordination and these people organize meetings in alignment with Fortaleza. They talk, exchange information, plan activities to be done at the EPCs. For many years, the coordination was centralized in Andrade and in the group closer to him, but now the coordination became decentralized because of the program's present size. Each school has its own coordination; they have representatives that get together in a meeting to plan broader actions and support. We have also been aided by the UFC, the state secretary of education and other organizations (Elton Lopes - Director of a school in Pentecoste that operates under PRECE's tenets).

Source: Elaborated by the authors

Besides the processing of information carried out by students themselves, as highlighted in the accounts above, Popular Cooperative Schools hold a coordination supervising these assessments. Conversely, the PACCE has its own means to evaluate what the UFC group is doing and they receive support from a team focused on articulating these evaluations as well as further improvements.

Throughout PRECE's history, there has been much restructuration. Processes needed to be created and adapted so the essence of the Program's proposal could be kept. Therefore, in as much as PRECE grew in visibility and demand, new relationships have been set up and more formalized procedures have become necessary to ensure good results.

5 FINAL REMARKS

Underpinned on the understanding of social innovation as one aiming not at making economic profits, but at improving the well-being of its beneficiaries, this research sought to identify the characteristic multidimensions of a social innovation through the case study method. In this regard, by using table proposed by Tardif and Harrison (2005) as reference it was possible to identify the presence of their five dimensions for social innovations: Transformation, Innovative Character, Innovation, Actors and Process.

The *Programa de Educação em Células Cooperativas* (PRECE) emerged as an alternative to change the reality of poor young people and brought forward the search for improving the well-being of these people through innovative initiatives. The innovation conveyed by interviewees is present, especially, in the approach of studying cooperatively without a teacher in the traditional content-centred perspective. As a result, each student has become a protagonist in his education as well as to his peers. Another innovative element is the fact that these youngsters, as they got into university, have returned to their communities and assisted those who wanted to reach the same goals. Therefore, solidarity was evidenced as a fundamental element in the constitution of this social innovation.

In this sense, the interviews supported the elements comprised in the Tardif and Harrison's (2005) table as such elements were identified in the data. Hence, it is possible to affirm that PRECE is indeed a social innovation.

The case study permitted to explore PRECE's central aspects and describe them through the speech of its founder as well as other members who have followed the project

during its trajectory and still act either as coordinators or in other positions, managing the initiative in the necessary ways.

Furthermore, this research contributes by foregrounding an initiative that was capable of shaping realities in the Brazilian semiarid, evidencing how such undertaking is constituted as a social innovation.

Nevertheless, the number of interviews might be posed as a research limitation, these talks, however, took place based on interviewees' availabilities. Thus, further research can seek other beneficiaries and promote a broader study. Another suggestion for future research lies in trying to qualify PRECE using a different classification for social innovations to check if the Program responds equally to such composition and then compare it to the one performed in this study.

Although acknowledging its limitations, this study has addressed to its purpose as well as it has socialized an important initiative to the Brazilian northeastern region, besides bringing to light the discussion about social innovation and its capabilities to modify realities.

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