

## **Leveraging a new generation committed with impactful interdisciplinary projects for the Sustainable Development Goals**

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### **Abstract**

Academia is a key actor in a collaborative effort towards the Sustainable Development Goals. Besides the scientific researches that lead to innovation and technology, universities must engage in leveraging the next generation committed with local impact and aware of international agendas. This paper presents the case of Newton University in Brazil that understood a new model of education should arise to attend the challenges our cities, our countries and the world are facing. The University became the first one to commit all Research and Outreach programs and projects to an international agenda, the Sustainable Development Goals, and to a local agenda, the Belo Horizonte City Strategic Plan to 2030. Based on strategic changing methods, the University built a foundation of cocreation to define an institutional vision, changed all the open calls for funding projects to align to the new agendas and incorporated inter and transdisciplinary approach to solve real problems. As a result, high rates of engagement between students and professors, increase number of partnerships with local organizations and almost four times the impact, reaching 430 thousand people in the city, were achieved. The University case can inspire other educational institutions to replicate the model, especially where exist an innovation culture and a social impact drive, no matter the size, resources or budget of the institution.

### **Introduction**

Are we leveraging the next generations capable to adapt and to act in a changing era, committed with the improvement at a local and global level? At the center of this discussion is education, responsible to form the talents that will lead this process. Our educational systems, from primary education to higher education, were created not just to serve the needs of the industrial revolution, but were made at its image in terms of structure and culture (Robinson 2012).

The industrial mindset is linear, repetitive, segmented and predictable (Mattos 2013). Education has built its structure around the same characteristics: the students divided in grades and years, going on one after another; content and courses divided and not connected; the traditional classroom setting in rows and lines; standardized tests and hierarchy of disciplines.

The digital revolution that led to the information era gradually turned obsolete the industrial mindset, bringing a non-linear mindset, multidisciplinary, connected and unpredictable (Mattos 2013). At the same pace, the comfortable scenario of global economy and businesses from 40 years before the turn of the millennium is showing its inefficiency and cannot be sustained. The global manufacturing model of “take-make-dispose” on linear economy is being replaced by an innovating production on circular economy for a green growth (World Economic Forum 2018a). Economic development is going to a more sustainable and competitive model by combining technology, sharing processes and new business models. The speed and scope of all these changes is making today’s challenges more complex and uncertain, requiring cross-sectorial solution-driven collaborations towards a positive social and environmental transformation (World Economic Forum 2018b).

The United Nations Resolution adopted by the General Assembly on 25 September 2015 states:

*“The future of humanity and of our planet lies in our hands. It lies also in the hands of today’s younger generation who will pass the torch to future generations. We have mapped the road to sustainable development; it will be for all of us to ensure that the journey is successful and its gains irreversible.”*

How are we engaging the next generations, forming the workforce to advocacy and assume the protagonism for local and global transformation? Sustainability challenges will not be solved using the same industrial mindset that caused them. So, what changes the traditional education institutions will face to take their role in this? In this paper, we attempt to answer these questions taking on the strategic change a traditional higher education institution in Brazil made to align its educational model to attend local and global needs.

### **Newton University and challenges in education**

Newton is a traditional private higher education institution in Belo Horizonte, Brazil, founded in 1972. It is a multidisciplinary university, with 31 undergraduate courses and 27 post-graduate courses, comprehending 12,000 students. The university is organized in three *campi* in different parts of city: the Business, Law and Media Institute, the Health Science Institute and the Architecture and Engineering Institute (<https://www.newtonpaiva.br/>, July 17, 2018).

Newton University have a traditional open call for research projects self-funded, reaching its twentieth cycle in 2018 and a well-known outreach policy. Despite this effort, the low academic publication and professor and student engagement demonstrated the need to skill up the students to attend the new demands on market professional training. In addition, the institution focus on undergraduate teaching and the inside the classroom

experience sustained the industrial mindset of professional formation, disconnecting Newton from local and global trends and evolution.

This paper shows the gradually institutional transition to an outreach-led teaching university model, reinforcing the outreach definition adopted that became the main characteristic of the University, a hands-on learning connected with a social impact drive.

Newton is rising fast to become a local innovation hub. Belo Horizonte is the capital of Minas Gerais state in Brazil, a state that has its economy based on mining industries, coffee manufacturing and automotive industries. The city has an emerging technology scene, represented by San Pedro Valley, a national award winning startup hub, and 85% of its GDP comes from the service sector. Belo Horizonte metropolitan region composed by 34 municipalities and has a total population of just over 5 million inhabitants (Bastos, Schneiber and Teodosio 2016). The city prominent creative economy is marked by the foundation of the House of the Creative Economy in 2012 (UNESCO 2013) and P7 Criativo in 2017, to become Brazil's largest vertical pole of creative economy (Minas Guide n.d.).

Higher education in Brazil have always been marked by undergraduate level teaching, which is more appreciated by the perception of society in general and of the government. (Balbachevsky 2013) Private institutions are commonly not research-oriented, needing relevant institutional commitment for research and knowledge creation. For these institutions, differential is employability, leading to taylor-made programs to specific demands of the market. Most of the professors working in private institutions have their roles restricted to undergraduate teaching and are inactive in the role of researcher (Balbachevsky and Botelho 2015).

The private institutions committed with knowledge production sustain important connections with the demands coming from companies and society. Strengthening these connections is key for a successful strategy to support the creation for research and innovation inside the private sector (Balbachevsky and Botelho 2015).

## **Method**

The University needed a strategic change of its educational model to better align to the new world challenges. As a requirement, the method should attend the complexity of the University nature: the extent of the 12,000 students attending, the almost 360 professors and 400 staff.

Strategic change methods may be frustrating to manage due to the poor explaining of the relation between organizational culture, strategy and behavior, as reported in the literature. Social, political, cultural and cognitive terms of managerial activities can foster fundamental strategic change. Whilst each individual may have a core belief, a common set of assumptions, a shared mindset, likely exist. This common belief is not aside from the organization, but connects it to the actions and behavior (Johson 1992).

The most influential group in the organization is the one closely associated with the fundamental constructs of the shared belief (Johson 1992). In the University, professors are likely to be the most influential group, once their practices define the institution

perception by the students and by the market, being the most important group to be included in the strategy design. Since the strategic change climate plays an important role of the acceptance of the change, significant triggers and symbols are key to those operating the organization (Johnson 1992).

Based on the literature, the method chosen by the organization is a simple direct framework to consider social and cultural processes, a three level approach in Strategy, Culture and Action.

The method was executed in the following order:

**1. Strategy**

Finding the common belief, a shared vision was the fundamental output of this phase. This alignment drew from Cocreation Meetings, a space built to put together professors and staff from different areas that would never have the time and place to meet and collaborate. These meetings were facilitated by the Innovation Department that organized a series of workshops to build the new identity for the institution educational model;

**2. Culture**

Finding the right tools to scale the strategic change, reaching the extent of all internal and external stakeholders, is the output in this moment. The University used the open calls for funding programs and projects as the best cultural tool to shape the perception of the new vision;

**3. Action**

The ultimate level that closely consolidate the new educational model for the University. The action phase is the creation of real problem solving experience for the students on the essence of interdisciplinary approach and local positive impact. Research and outreach programs and projects were identified as the great lever of the new model.

**Results: building a meaningful education**

**Strategy**

Newton educational model was struggling with changing forces from inside, the need to engage more its academic community, engage a complete unique generation of students, and from outside, the new global agenda and the ongoing raise awareness in social impact.

Internal and external perspective were important input for the process. The shared vision to inspire collaboration for change came along the creation of the Cocreation Meetings, a space for professors and staff change ideas, discuss and converge into actions. The physical distance of the academic community, separated in three *campi* around the city, made impossible cross sector collaboration. All coordinators and professors that lead research and outreach programs and projects were invited to this cocreation, being able to have all knowledge areas represented and contributing.

Following are the fundamental guidelines designed in the Cocreation Meetings, representing the desire of Newton academic community:

1. Outreach and Scientific Research are the catalyst of the education model change needed to foster the protagonism in the students;
2. Cocreating and implementing positive impactful solutions will be the main experience for Newton students in order to make the university readiness for today's and future challenges;
3. Impactful solutions are designed based on real challenges and are cocreated when they integrate and transcend Newton courses, programs and innovation centers;
4. The student experience engaging in outreach and scientific research is completed when a learning cycle is connected with a social impact cycle by solving real local and global problems;
5. All projects should bring inspiring and measurable indicators to evaluate the extent of our activities.

An inspiring vision to the new educational mode was established: "To leverage a new generation committed in solving real problems with a global awareness and a sense of local impact".

After all, two agendas were chosen to guide Newton new vision:

- Global Awareness: the Sustainable Development Goals

In 2015, the international community established the 17 Sustainable Development Goals (SDGs), spearheaded by the United Nations, as a post-2015 agenda replacing the Millennium Development Goals. The SDGs stimulates actions in critical areas for humanity and have as a mean of implementation the collaborative partnership between countries, companies, civil society initiatives and other stakeholders (United Nations 2015).

- Local Impact: Belo Horizonte City Strategic Plan to 2030

The sense of local impact drives from understanding how the university is contributing to make our city more human, smart and sustainable. The roadmap to influence the 5 million population begins in understanding the opportunities and relations with the communities that are neighbors of the University *campi*.

Belo Horizonte city hall designed the city strategic plan for 2030. Developed in 2009 and reviewed in 2015), this long term plan for the city was adapt based on local, national and global perspective (Prefeitura de Belo Horizonte n.d. a). Midterm plans are structured around the Pluriannual Government Action Plan, known as PPAG, elaborated during 4 years of the elected mayor local administration.

Belo Horizonte Strategic Plan for 2030 and its PPAG for 2018-2021 were developed aligned with the Sustainable Development Goals, turning this planning innovative, universal and transformative by its nature. Each program and project is committed with at least one SDG, guaranteeing the local administration contribution to Brazil reaching successfully the targets (Prefeitura de Belo Horizonte. n.d. b). The city hall already has relevant data, categorized by different microregions and by action pillars, which may give

enough support to deepen the comprehension of our academic community on local challenges.

Newton became, then, the first higher education institution to commit its programs and projects with the Sustainable Development Goals and the Belo Horizonte City Strategic Plan for 2030.

## **Culture**

Newton University has an Institutional Fund to support research and outreach programs and projects. Annually, the Innovation Department launches a call to receive proposals of programs and projects submitted by students and professors. Since this is one single document that everyone on campus accesses and must read in order to get their project approved, the institution identified this as the major tool to shape the culture of our academic community.

In November 2016, Newton launched two calls: the 2017 Scientific Research Call and the 2017 Outreach Programs and Projects Call. Both presented the innovative requirements:

1. All proposals submitted must commit to the two new agendas: at least one of the Sustainable Development Goals and at least one of the challenges in the Belo Horizonte Strategic Plan for 2030;
2. All proposals must present the reason to its choice.

Attached to the call, annexes explaining both agendas, its purposes and targets. The application form has specific input fields so the proponents can indicate their choices.

The last topic presents in detail the increase engagement from professors and students. These numbers are an important feedback, showing us that, when a simple change in the purpose of something that was a routine connects with the audience interests, it is a more meaningful experience for all involved, from makers to beneficiaries.

The proposals evaluation for selection changed to attend the new concepts and valuing more the two aspects that the institution was interested in: the alignment to both agendas and the interdisciplinary potential. The evaluation consisted in meeting the eligibility criteria and then the aspects were scored according to their performance for the ranking, as shown below:

1. Eligibility criteria:
  - a. Commitment to solving real problems: the alignment with the Sustainable Development Goals and Belo Horizonte Strategic Plan for 2030;
  - b. Viability and feasibility.
2. Performance criteria:
  - a. Social impact potential;
  - b. Interdisciplinary and Interprofessionalism;
  - c. Interaction between teaching, research and outreach;
  - d. Partnerships with governments, NGOs, private sector, civil society movements and international organizations.

By these evaluation criteria, if the proposal does not present a good defense on how it will make a positive impact on real problem improving a local indicator of a global issue, it would not even be considered for the performance criteria evaluation. For the second part, those proposals with proved interdisciplinary approach to the problem were better ranked.

The launching of the Call were followed by invitations to join Cocreation Meetings, facilitated by the Innovation Department staff. Professors from different courses are located in the University buildings spread across the city. The innovative approach of inter and transdisciplinarity requires putting at the same table talents from all knowledge areas. The University had to create the spaces where people, projects and ideas could easily connect. The Cocreation Meetings were also one important tool to create a SDG awareness in our academic community.

The last culture tool to consolidate the new meaning was the official University communication channels mentioning the Sustainable Development Goals in every campaign. Figure 1 shows cases of the International Day for the Elimination of Racial Discrimination campaign and the International Women's Day. The messages reinforces that our University is committed with the SDG, inviting students, professors and staff to know more about it.



Fig. 1: Institutional campaigns indicating the related SDG

## Action

Cocreating a new vision and using culture tools to consolidate the new agendas for our academic community are strategies to prepare the foundations for the programs and projects reach the expected impact. In the end, the hands-on experience for the students, interacting with local communities, experimenting solutions and measuring impact is the reason for all effort of this strategic change for the University.

The sense of alignment and the sense of community that the Culture part created in our University should continue during the implementation of the projects selected in the open

call. Students and professors leaders of the selected programs and projects were ought to send a monthly short report, with photos and activities implemented during that time. The Innovation Department gradually organized the University portfolio, making accessible the information about all activities on campus.

The following are some statistics to show the evolution in engagement inside and outside the University and the final number of the extent of our actions in the city.

### **Student engagement**

The graph bellow presents the performance in student participation in Newton programs and projects. The numbers are consolidated including scientific research and outreach.

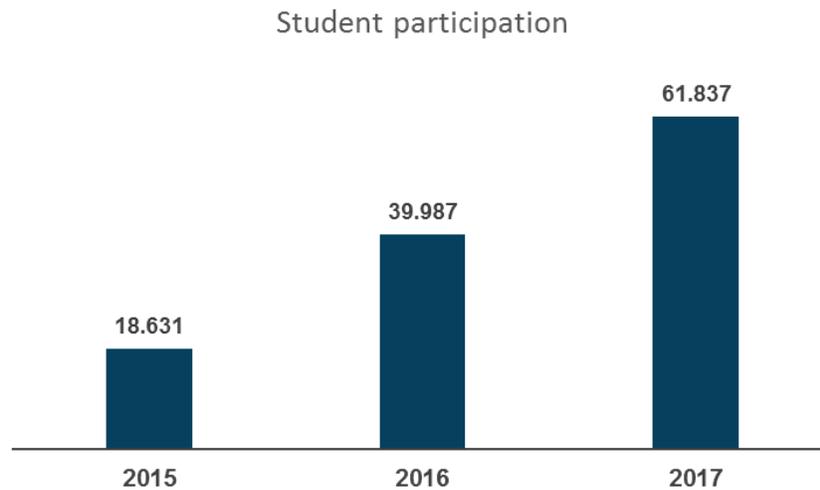


Fig. 2: Total number of participations from students in research and outreach initiatives

It is notable the increase in the engagement of the students since the strategic change in 2016. This means that the University was able to create more opportunities for the students to experience solving real problems projects, developing important skills for their employability. The University learned that when projects have a new meaning for its implementation, a meaning that connects with a social change, students easily engage and want to be a part of this.

### **Professor engagement**

Figure 3 presents the performance of the professor's involvement in scientific researches and outreach activities.

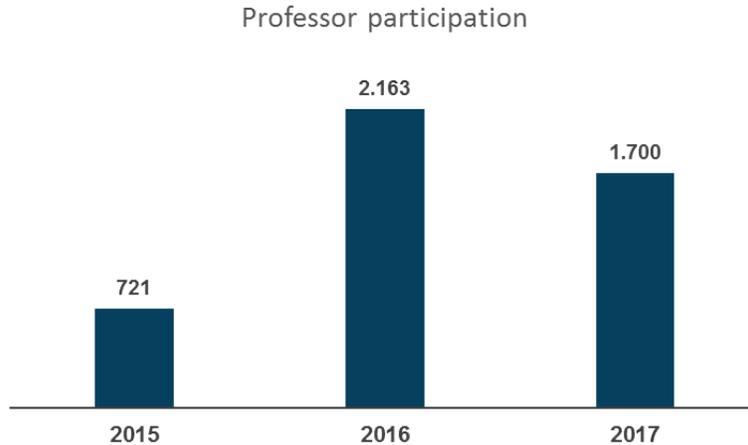


Fig.3: Total number of participations from professors in research and outreach initiatives

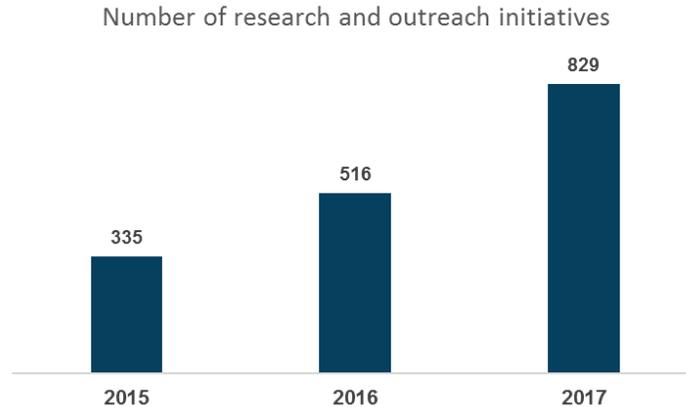


Fig.4: Total number of research and outreach initiatives

Although 2017 participation was more concentrated in fewer professors, they were able to produce more research and outreach initiatives, increasing 150% from previous year. This number, according from their feedback, is due a new motivation in working on problems that seem more challenging and more worth dedicating time to find interdisciplinary solutions.

### **Stakeholder's engagement**

To include partnerships as a performance criteria evaluated in the submission phase forced the applicants to look beyond the University. Bringing closer the organizations and movements that are working on the same purpose and objective as our programs and projects ended up building around Newton an engaged community that saw value in being together. In 2017, the first year of the implementation of this requirement, was also the first time formal agreements with stakeholders were counted, reaching 140 different partnerships, ranging from government, private companies, NGOs and civil society movements.

## City engagement

Newton became the first higher education institution to work with the city hall project managers on the strategic and transformative projects described on the Pluriannual Government Action Plan (Prefeitura de Belo Horizonte n.d. b). Furthermore, the university engaged in the Belo Horizonte Millennium Observatory, a network to analyze and publish information about the social and economic reality of the city.

## Social impact

This indicator measures the number of people inside and outside the university that engaged in one activity from our programs and projects. A local community attended by as engineering project, a health measurement mobilization and opened workshops to share discoveries and results are the diversity of activities drawn on the scientific researches and outreach programs and projects.

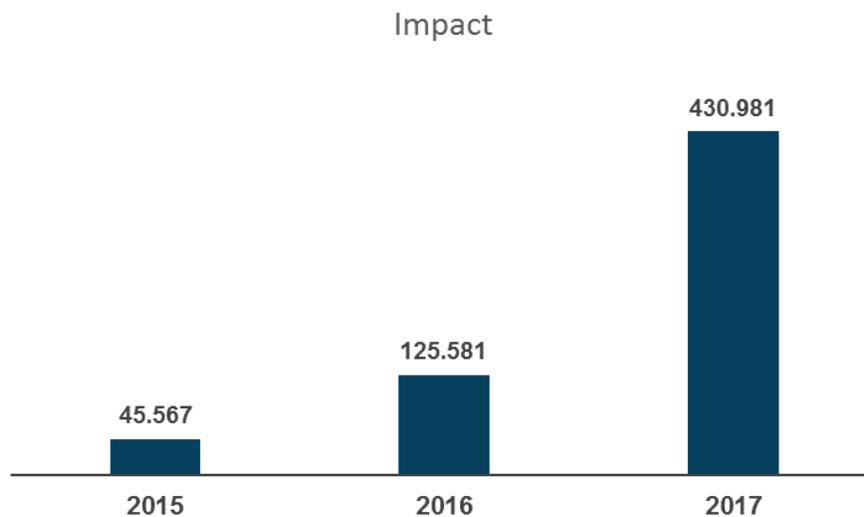


Fig. 5: Total impact of the university's initiative

These numbers show that higher education institutions have a great potential to promote and scale social positive impact in our society, contributing to improve local, regional and global state.

Measuring the extent of the impact at any level of our programs and projects is the first step to consolidate an indicator culture. From 2018 and on, the bar raised for this measurement, adding more two layers. Based on the concept of Impact Value Chain (Clark, Rosenzweig, Long and Olsen 2004), the measurements will be on:

- Output: a result that can be assessed directly;
- Outcome: ultimate change that the activity is trying to make;
- Impact: portion of the outcome that happened because of the activity above that would have happened anyway.

Changes in the submission form and Cocreation Meetings explaining the new measurement method is underway in 2018 activities.

## **Conclusion and outlook**

A global awareness with a sense of local impact. Newton case on how the SDGs served as a guide to a new education model that connected learning with social positive impact was successful so far based on three key elements: Strategy (a cocreated shared vision), Culture (the change in the open calls, the Cocreation Meetings and the change in the institutional media channels) and Action (the implementation of interdisciplinary social impact driven programs and projects).

The increase in student and professor engagement and impacting 430 thousand people by the University research and outreach programs and projects are relevant indicators for this process to inspire our next steps in this process. The method used can simply be replicate by any educational institution that seeks for an interdisciplinary approach to solve local problems.

Further work for this, regards using the Impact Value Chain as a method for measuring punctual and long lasting change in the participant's life, in his community and in the city indicators.

The Sustainable Development Goals agenda were created to show that the current model of our society cannot be sustained. Universities have their role in bringing a new model leveraging the next generations that will be responsible to address and sustain it. The industrial mindset that persists inside the classrooms may change in order to attend the new demands of society.

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