

# Community Training and Participatory Action-Research: Mixed methodology for the architectural project

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## Abstract

The training of professionals involves an integrated mission for universities' internal processes among teaching, research, and social responsibility. The article presents the results of the research project "Amanecerá y veremos" which inspired actual projects developed by the researcher in the city of Ibagué (Tolima, Colombia). Its importance lies in inter-institutional liaison and professional training based on Participatory Action-Research (PAR). Beginning with an infrastructure improvement of the University of Tolima campus with community participation, through two phases. In Phase One, "It will be dawn and we will see-2012", twenty-eight brainstorming proposals for the improvement of Ducuara Park were developed. Later, in 2014, Phase two: "Bio-architecture and sustainability" were achieved by the design and construction of an information module in a vertical garden, made with sustainable materials. The methodology was based on participatory developments by the Colombian Organization of Students of Architecture (OCEA) and the Social Latin American Workshops by the Latin American Coordinator of Students of Architecture (CLEA). This linked management enabled an unprecedented project of almost three thousand participants. Recently this methodology is used as a basis for the author's doctoral thesis focused on the city for Latin American children.

*Keywords:* Professionals Training. Participatory Action Research. Social Urban management. Social responsibility. Community Training. Mixed methodology.

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## Introduction

The "Amanecerá y veremos" project joined the institutional development plans of the University of Ibagué (UI), and the University of Tolima (UT). Aimed by the training of professionals, it recognised the academic excellence based on the discernment of the professional role from a particular field versus professional practice with social and environmental commitment. The Development Plan of the UI specifically expresses that research for development and learning should be

The promotion of the critical and creative analysis of our reality to contribute as an institution for the development of the country and to provide its professionals and graduates with principles and knowledge that will allow them to assume their commitment to society with full responsibility (University of Ibagué, 2019, p.14).

For its part, the UT's Development Plan 2013-2022 (2014), in its general objectives, frames the need for

To carry out research aimed at obtaining knowledge to formulate questions that solve regional problems [...] To share the benefits of teaching, research, and social projection activities with the social sectors that make up the Colombian nation [...] To carry out, on its own or in collaboration with other entities, extension and support programmes for community organisation processes, to link academic activities to the study of and intervention in social and economic problems (University of Tolima, 2014a, p.86-87).

In this sense, it is important to recognise that these plans are transversal to the aim of Latin American universities that recover the role of the academy as a manager and support of proposals that allow for social transformations, as García Guadilla (2003) states

Thinking about higher education, and especially the Latin American university, taking into account multiple and complex dimensions In the first place, and from the point of view of institutional and academic aspects, the university must be thought of from the perspective of organisational changes, the renewal of knowledge, and its most effective transfer to the majority of society. (García Guadilla, 2003, p. 25)

Schön (1998) states that “reflecting from practice and professional work” (Schön, 1998, p. 72). As an invitation for working from our to do work, it commits us to think about research problems that involve ourselves and our environment with initiatives from the classroom as a laboratory of ideas, and in turn encourage us to work among peers, to continue to reflect and contribute ideas and solutions in permanent improvement processes.

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However, the classroom activity should not remain there, it should be taken outside; in other words, by leading the participation of the entire community. Therefore, the university needs to comply with the mission processes: teaching, research, and social responsibility from the practice and action. In other words, as Hernández & Saldarriaga (2009) point out: “[...] first and foremost, Social Responsibility refers to ethical behaviour and consists of seriously, decisively and assuming the effect, whether positive or negative, of decisions, where the collective interest prevails” (Hernández & Saldarriaga, 2009, s. p.).

This collective interest can be found in the project closest to the UT: the campus, with a lack of infrastructure and spaces for interaction, but also supported by a reflective and critical community committed to moving from theory to practice, untargeted resources, and initiated research from the classroom. As Mejía (2007) remarks the geo-pedagogies, “allow us to move from critical discourses to proposals in concrete spaces of practice, where pedagogical approaches take shape in methodological achievements and the urgency of making necessary the construction of the new pedagogies from practice constituted from these new realities” (Mejía, 2007, p. 87).

The main thing here is interlinked relation between the campus and the environment, perceived as a city centre for the community improvement like an Edutrópolis, as Dober (2006) argues:

[...] higher education institutions offer the public an interesting range of activities and events that contribute to improving the quality of life of citizens. [...] a change of perspective and a greater

commitment to the resulting enrichment that has led to remarkable results that go beyond the confines of the University (Dober, 2006, p.18-19).

Then, we found a real problem. Ducuara Park, located at the centre of the campus, was in decline without enough spaces for study and some existent were made of metal, and not at all friendly to the environment; on the other hand, the environmental policy called “Green University Territory” was looking beyond the recognition and appropriation of the environment on the campus.

All of this led to the beginning of a strategic alliance with the UI, organised based on a team of administrators, teachers, and students, who began to lead research-based on work in interdisciplinary teams, as Francisco & Moliner (2010) explains when referring to communication and education:

An interdisciplinary space that has enriched the knowledge and viewpoint of the teachers involved. This process has led to a change in the conception of university curricula by teachers, who understand the learning of subjects as part of a whole that is not parceled out. In this sense, the university should find more channels of interaction so that students understand their training in a comprehensive manner (Francisco & Moliner, 2010, p.74-75).

Therefore, by the improvement needings of the campus, the collective was gradually brought together around public space and various disciplines interests. The project “It will be dawn and we will see-2012” convened architects, cartoonists, and foresters versus administrative offices of the academic and human development vice-rectories of both Universities. Later, in 2014, this participation extended to other faculties such as Education Sciences, Agronomy, Economics, Humanities, from UT, and the Faculty of Human Sciences from UI, with the support of other local universities.

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All of the above led to the search for a strategy and methodology from the teaching management, which would allow for the joint and permanent participation of actors with diverse interests, characteristics, and levels of training; in the same way that, in a time frame following the needs, based in social participation as a strategy for habitat transformation; as Rincón (2011) indicates

Leadership within your management process, where your competencies, skills, and attitudes serve as support to develop your professional performance and you can influence, direct and motivate your team, guiding it towards the achievement of shared goals through a permanent improvement of performance" (Rincón, 2011. P. 21).

At the same time, the Participatory Action Research (PAR) was chosen as a methodology, which has support beyond research in pedagogy and works from the curriculum versus research. According to Martínez (2009):

It has taken two aspects: one rather sociological developed mainly from the works of Kurt Lewin (1946/1992, 1948), Sol Tax (1958) and Fals Borda (1970), and another more specifically educational, inspired by the ideas and practices of Paulo Freire (1974), Hilda Taba (1957), Lawrence Stenhouse (1988), John Elliot (1981, 1990) and others. Both have been successful in their applications [and we would not be the meaning] (Martínez, 2009, p. 240).

However, Colmenares' experience was compelling when

This methodology allows the development of research in which the protagonist participation of the researchers themselves - who in turn become co-researchers - together with the permanent processes of self-reflection, followed by pertinent actions to contribute to the solution of the selected problems, mark a milestone among the range of qualitative methodologies (Colmenares 2012, p.114-115).

Fals Borda quoted by Colmenares (2012) stated “from research and social action it is possible to promote permanent processes of knowledge construction with rigour, developing instruments and demanding continuity (evaluation, control, monitoring)” (p.109), which is fundamental for institutional processes that permanently require qualified and high-quality records, and important for Unesco in “The development of research capacities in higher education institutions with research functions, since when higher education and research are carried out at a high level within the same institution, mutual enhancement of quality is achieved” (Unesco, 1998, s. p.).

Thus, a focus group was initiated, made up of members of both institutions with students, teachers and administrative staff (the university community), external staff (specialists in urban planning, design, and sustainability), and members of the neighbourhood (the neighbouring community). As García Ramírez (2012) states: “a way of making architecture, more democratic than autocratic, based not on what the architect can devise in an office, but on what he can hear directly from the community” (s. p.).

This alliance between institutions allowed the recognition of the exercise of institutional management as fundamental in processes of urban transformation of public spaces. Therefore, the environmental theme was taken as a basis for "generating inter-institutional agreements that allow the conservation and harmonization of urban development with the environment" from the Ibagué Development Plan 2012-2015 (Alcaldía de Ibagué, 2012, p.16). This document supports part of the UT's environmental policy which the UI also embraces in its daily practice. The Plan, according to the Inter-American Development Bank (IDB) and with the support of Findeter, favoured Ibagué becoming one of the Latin American cities committed as a sustainable city

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that offers a dignified quality of life to its inhabitants, without compromising the resources and possibilities of future generations. A city with an urban infrastructure on a human scale, which minimises its impact on the natural environment and is capable of adapting to the effects of climate change; a city that has a local government with the fiscal and administrative capacity to maintain its economic growth and to carry out its urban functions with broad citizen participation. Based on this definition, it is understood that such a city must excel in four dimensions: 1.) environmental and climate change, 2.) sustainable urban development, 3.) economic and social, and 4.) fiscal and governance (InterAmerican Development Bank - Findeter 2018, p. 23).

Of course, the project frames the above, as follows in phase one (2012), by the sponsorship plan achieved with the planting of 100 trees on the campuses donated by the Municipality, and in phase two (2014) by the implementation of bamboo as working material to build the study and the information module. Additionally, this is also valued even more by the fact of a green garden built with recycled bottles by the children of the university community and nearby.

This shows the importance of the application of PAR in this project, as referred to by Colmenares:

Participatory action research promotes the integration of knowledge and action, as it allows users to become involved, to know, interpret and transform the reality under study, through the actions they propose as alternative solutions to the problems identified by the social actors themselves, and whose main interest is to generate definitive and profound changes and transformations. (Colmenares, 2012, p.114).

In other words, individual interests must be recognised and aligned with collective objectives that allow various forces to be managed, increasing the interest in participation in the search for a result that generates a sense of belonging.

### **The problem**

The UT has a lack of infrastructure improvements. To do so, the first initiative was to improve the Ducuara Park and new study modules that counteract the negative impact of the existing ones, (metal made); likewise, to make known and appropriate a recent institutional environmental policy. The UI and other regional institutions in alliance seek to support their mission processes by joint projects. Also, students and teachers will work in the classroom about issues related to the city and the environmental context. For that purpose, brainstorming unrealistic projects, with the participation of cultural groups of the University, was accompanied by several experts in urban planning and scholars of bamboo architecture and other sustainable materials. This was shared with the surrounding community around the campus to achieve a better relationship with them.

According to the above, the institutions worked individually on their budgets in search of a solution for the two announced spaces; teachers reflect on their teaching task and the role of the profession through practice, theory, and research, as far as possible with real problems; the students asked themselves about their role and the application of their training in a society, cultural groups (theatre, dance, music, among others) and thought about how to show their talent and generate a sense of belonging to cultural traditions; the experts on the university's payroll aimed to generate proposals for inclusion in academic processes and to provide training in bio-sustainable issues based on their knowledge of the environment and materials such as bamboo, which is underestimated on the campus. Last but not least, the surrounding community normally felt distant from the campus, even though participated permanently in the programmed activities (forums, conferences, courses, among others).

Given the above scenario, the reality of global university life or institutions; means however as Toro states:

Teamwork is a concept that contains in itself the cohesion, union, and transformation of an organization, it is synonymous with productivity, competitiveness, and achievement of objectives, based primarily on the need for continuous improvement and changes that occur within organizational structures to fulfill the mission and vision established and to guide the behavior of individuals to achieve maximum quality and productivity (Toro, 2015, p.4).

This principle plus the PAR methodology made it possible to create the working focus group that led the project and which in turn was organised by UT-UI with a clear main objective: To improve the infrastructure of public space on the campus and to strengthen the environmental policy. As a result, the focus group found that study areas and green spaces were a priority in the results of the one hundred and fourteen surveys conducted in the Ducuara Park area (See Figure 1).



Figure 1: Location of the Ducuara Park at UT campus. Source: Author.

The aspects included in the Ducuara surveys were about cultural activities, recreational activities, circulation, furniture, and vegetation. To justify the project, two aspects were taken into account: circulation and furniture. The first one (See Figure 2), shows that 63% of the population requires spaces for rest and contemplation; this result generates in the focus group the projection of ideas of pedestrianisation, cycle routes, management of public space, and landscaping.

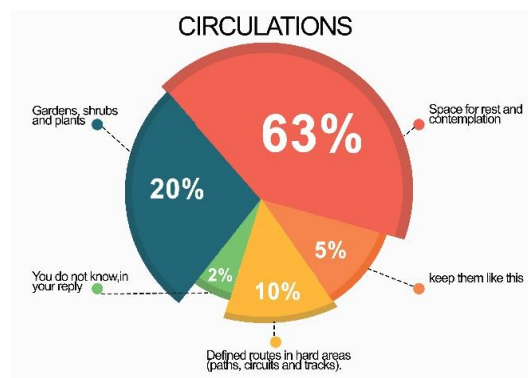


Figure 2: Statistics 2, result of the 2012 surveys. Source: Author

The second one (See Figure 3) trends to 58%, by choosing the furniture for resting and staying into the park. The results directed to the proposal of a study module accompanied by an information panel.

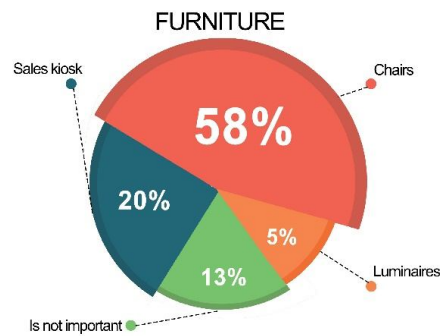


Figure 3. Statistics 3, result of the 2012 surveys. Source: Author.

Also, it was found that 61% of the respondents support spaces for storytelling and open-air theatre, 17% suggest that there should be spaces for outdoor exhibitions and displays, 39% agree with reinforcing the environmental part by increasing trees and protecting the existing ones. In other words, the community surveyed opens up the panorama towards teamwork, interdisciplinary work, and the themes that frame the project: the appropriation of spaces, environment, and sustainability, interdisciplinarity.



Figure 4: Metal-made study module at UT campus. Source: El Cronista.co, November 24, 2018.

**Context**

Located in Colombia, Ibagué (See Figure 5), according to Ospina (2019): Located in the central-western part of the department of Tolima on the central mountain range of Colombia and according to the Instituto Geográfico Agustín Codazzi, it is the centre of the department of Tolima (4°15' and 4°40' N and 74°00' and 75°30' W), it comprises an area of 149. 800 Ha and extends from the Magdalena Valley in the east at 500 m to the snow-capped Tolima in the northwest at 5280 m.a.s.l.<sup>1</sup>. It is also located in the middle of the Combeima Canyon and the Magdalena Valley with a population of 553,524 inhabitants according to the Ibagué Development Plan 2016-2019 (Alcaldía de Ibagué, 2016). It has an altitude of 1285 m and an average temperature of 22°C. Its urban area consists of 13 communes. For the project, the UT is located in Comuna 10, and the UI in Comuna 6.

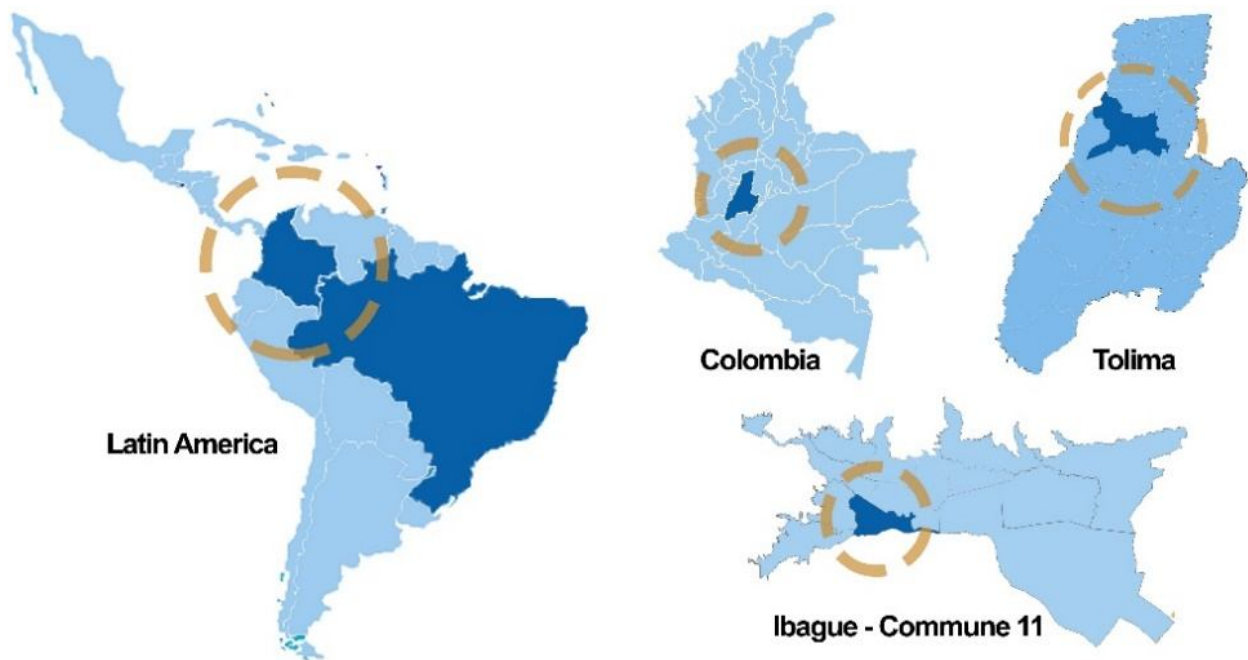


Figure 5: Location references of Commune 6-UI and Commune 10-UT. Source: Author.

Related to the intervention area inside the UT (See Figure 6), the framed zones correspond to the location of the interventions carried out in phase One-2012 (improvement of the Ducuara) and phase Two-2014 (green wall, information, and study module).

<sup>1</sup> Instituto Geográfico Agustín Codazzi-IGAC (1996). <https://www.igac.gov.co/>



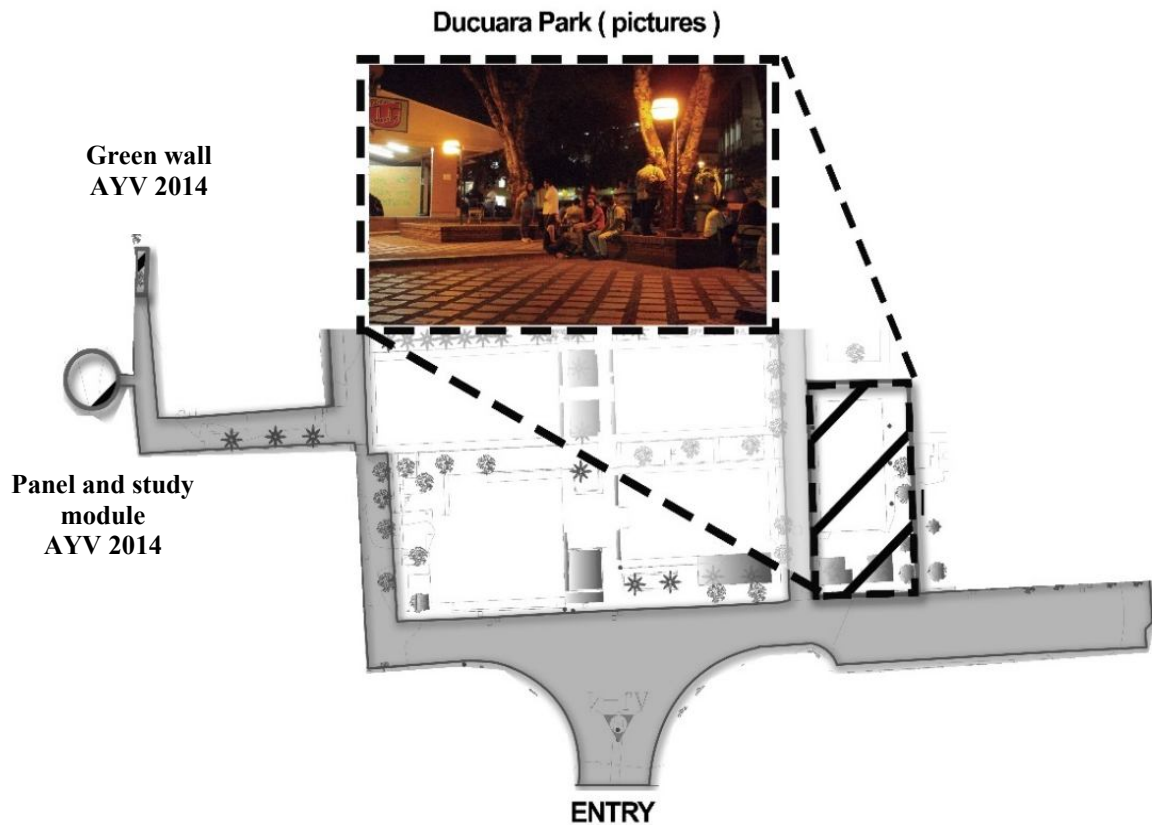


Figure 6: Location of stage 1 and 2. Source: Author.

## Methodology

The methodology is based on two references. The first was carried out by the Colombian Organization of Students of Architecture-OCEA. According to Ramírez (2012) is:

The organization seeks to integrate students of architecture in the country for the development of academic exchange activities, institutional cooperation, study and research, the deepening and promulgation of architecture, urbanism, and the city, and will also promote academic excellence in the various schools and faculties of architecture. (Ramírez, 2012, s. p.)

The activity is based on work under pressure. During the course of one night, the students of architecture work together around a creative challenge, whether architectural or urbanistic; after theoretical knowledge shared by leading teachers. Later the group visits the place and runs diagnostics. Then begin a continuous workday in which by groups they develop design ideas with the support of tutor-teachers and experts. As the purpose is real, the day is usually accompanied by cultural groups from the area and refreshments, to help them stay awake.

The second reference points out to the Latin American social workshops organized by the Latin American Coordinator of Students of Architecture-CLEA<sup>2</sup>, also announced by Ramírez (2012): “They are spaces where, in addition to other objectives, we seek to encourage students to participate in providing solutions to the global problems of architecture”. The activity consists of organising a focus group made up of team members of the university community versus the community. The teams manage, coordinate, and carry out an academic event to solve a specific issue. Generally, this is a one-off project in a specific place. It will be held a few workshops with a duration of 10 to 15 days. In addition to the designs, to work with the community and build the idea together. The workshop is divided into 5 activities 1. Academic, 2. Cultural, 3. Academic practice, 4. Design, and 5. Construction.

Our proposal in 2012, was developed with the authorization of the OCEA group. These two methodological proposals were integrated and a mixed methodology was formed, applicable to the entire university community, the local community, and the municipal government, with a common purpose.

The 2012 project and “brainstorming the Ducuara Park”, allows us to take advantage of the situation to strengthen the agreement between the UT and the UI. It also was linked up with the student organisations that have emerged from the UT, such as OCEA and the University Forest Organisation of Tolima (OBUT), which are proposing a sponsorship plan among officials and administrative staff for planting trees under the needs detected in the previously mentioned surveys. At the same time, to help to promote the management of the academic and human development vice-rectorships through collaborative work integrated with the Municipality, which donated 100 trees. The UI led to the work of the workshops based on the experience of the annual vertical workshops<sup>3</sup> with students of architecture. During three days, they worked around the Ducuara Park theme.

Experts and teachers from the areas of design, urban planning, and art, respectively, provided support for the theme and the process. For the elaboration of the proposal, all students and teachers received previous training and a list of instructions. The dance, theatre, and fine arts groups accompanied the proposal with interventions during the day and night, in the same way, the orchestra played again and children from some schools joined in an artistic and cultural presentation. It is also were planted the one hundred trees donated by the Municipality.

Finally, the work was presented and with the support of the vice-rectors, three groups of four of the 28 participants were awarded. In addition to the winning group, many of these designs have been taken up again by the University Management and have been replicated (Exhibition panels of works of art by students of Arts, Drawing and Architecture, among others, permanently displayed around the UT, which generated a subsequent competition of murals in the year 2015 achieving 2 winning murals made in the Ducuara Park). Around the 24-hour event of continuous work<sup>4</sup>, the 2012 project is summarized in the work schedule in Figure 7.

<sup>2</sup> CLEA is the Latin American Coordinator of Students of Architecture, a non-profit organization made up of architecture students from 16 Latin American countries. <https://clealatioamerica.com/acerca-de/>

<sup>3</sup> "The vertical workshops at the University of Ibagué are consolidated as a space for dialogue between programmes and the construction of learning communities". (University of Ibagué, 2016, s.p.).

<sup>4</sup> Video summary of the activity “Amanecerá y Veremos” Ducuara Park, 2012, OCEA Colombia (2012, November 17)



Figure 7. Timeline of “It will be dawn and we will see” project activities, 2012. Source: Author.

The second stage or phase Two of the 2014 project was called “bio-architecture and sustainability”. It was extended to 10 days, taking into account a 2-year process of previous organisation and awareness. The main goal was to integrate the university community through collaborative work by promoting a sense of belonging to the campus as a green territory. It followed the specific objectives:

1. To design and build a study module according to the Development Plan 2013-2022, implemented by the UT.
2. To promote environmental awareness among administrative staff, teachers, and students through the construction of green walls.
3. To recover the value of the Botanical Garden of the campus using an experimental information panel referring to the diverse species existing in it
4. Integration of the university community in an environmental and cultural work axis.

To comply with this, the parameters of the previous phase have been preserved; however, new ideas were converted into real urban improvement projects in the chosen area of interest. To this end, the focus group made up of members of faculties from various disciplines, university offices, bamboo designer’s experts, and members of the surrounding community, carried out a preliminary brainstorming workshop exercise. The winning project produced plans, a model, a budget, and a work schedule, and included in the Institutional Development Plan to guarantee its implementation.

The interdisciplinary work allowed the participation of other private institutions, such as Universidad la Gran Colombia Manizales, SENA Espinal, Guadua International Centre, and the Bamboo Construction factory, who carried out the complementary practices to the theory on guadua. Similarly, Antonio Nariño University and the Cooperative University joined the project by linking students and tutors. The environmental issue encouraged the participation of the children in the community and their inclusion. As a real project, the exchange of students was involved in the Final Design and Construction stage. The University was joined by the Administrative Vice-Rector’s Office; and the support by the Rector’s Office<sup>5</sup>.

The distribution of the activities was held according to the methodology planned in the 12 points described in the phase one project (OCEA) and melted with the CLEA workshops (See Figure 8). Besides, this opened up to the participation of other disciplines in addition to art and culture groups from the region linked to the theme. It is worth to mention that this fusion can be replicated in any organized community willing to manage similar projects, committed to the city and its urban development.

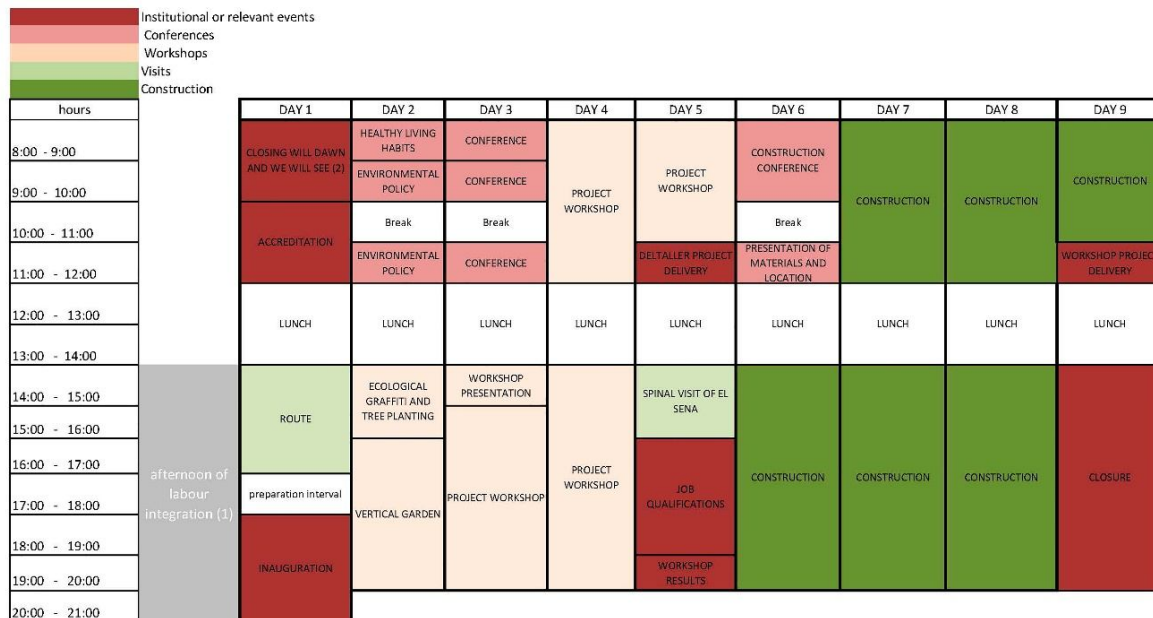


Figure 8. Project 2014 phase Two Schedule “Bio-Architecture and Sustainability”. Source: Author.

<sup>5</sup> José Herman Muñoz Ñungo, Ecos del Combeima (2012, November 2).

## The results

According to the first main objective of the project: it was achieved by 100%. As for the specific objectives in the first stage 2012, a local event of 24 hours of continuous work was developed, which resulted in the achievement of the first specific objective: 28 worksheets of brainstorming proposals to improve the campus (See Figure 9), from which the circuit was born in one direction of the access road to the current University, the bicycle area, the process of planting 80 trees under the sponsorship plan, the permanent exhibition areas of work over panels, the implementation of OCEA and OBU.



Figure 9: Students activity 2012 Source: Author.

Similarly, the main goal of the second stage “Architecture and Sustainability 2014”, an international event of 10 days’ work, was managed to integrate the university community through collaborative work, fostering a sense of belonging to the campus as a green territory, and the specific objectives fulfilled:

1. Design and construction of a study module according to the Development Plan 2013-2022, implemented by the UT.
2. Strengthening environmental awareness among administrators, teachers, and students through the construction of green walls.
3. Recover the value of the University Botanical Garden employing an experimental information centre on the various species that exist there
4. Integration of the university community by the consolidation of an environmental and cultural work axis. (See Figure 10).

Expectations in terms of socialisation and environmental recognitions were exceeded by giving an environmental card to schools, and in the various events among them the Institutional Bulletin (2014a)<sup>6</sup> as follows:

Gobernación Feria del Mueble 2015-Tolima; Ágora 2015-Universidad Católica de Manizales and Minga UT, 2015; MACDES 2016:18<sup>th</sup> Scientific Convention of Engineering and Architecture 2016; in Cuba; and the 15<sup>th</sup> National Congress of Architects of Peru and 1<sup>st</sup> Binational Congress of Architects Peru-Bolivia<sup>7</sup> 2017, in Peru.

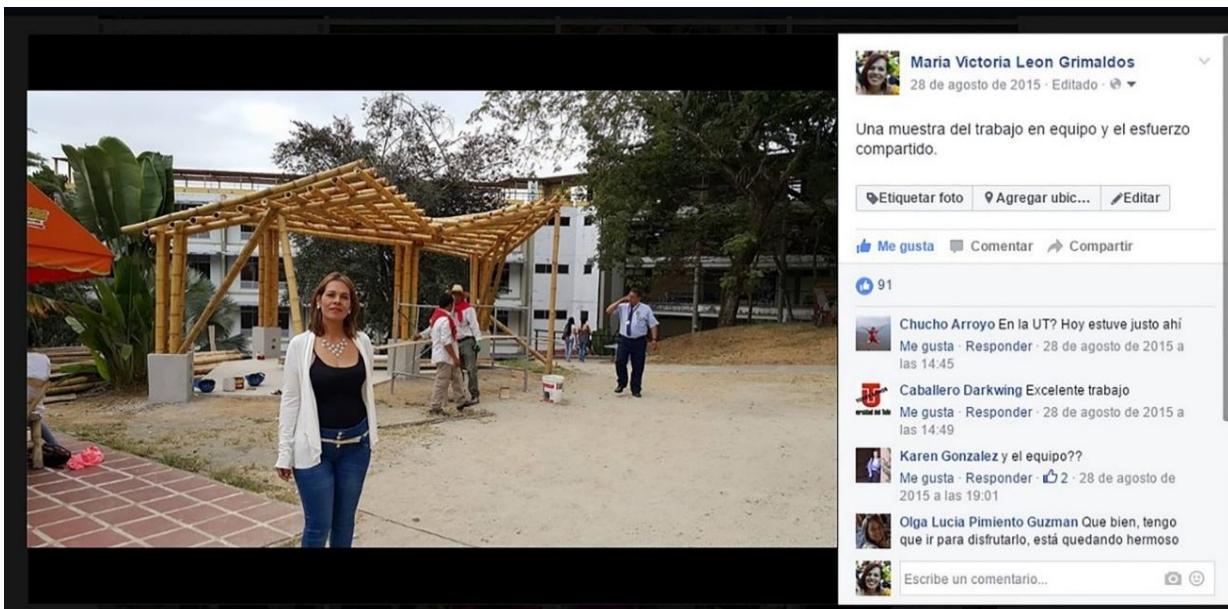


Figure 10. Facebook page sharing project building. Source: Author.

The community accepted the project proposals and the experience lived in Tolima. To date, it is an input for two projects within the Rastro Urbano (Urban Trail) Research Group<sup>8</sup> related to public space, art and the training of architects and generated the creation of the Hacer Comunidad (HACO), the students seedbed of young researchers at the University of Ibagué, which currently incorporates the mixed methodology in a project in the Comuna 6 of Ibagué.

In summary, the event achieved the participation of more than 3,000 people (See Figure 11). This was an unprecedented activity on the campus of the two leading universities<sup>9</sup>.

<sup>6</sup> Considers that 2014 project was an “Event from the University of Tolima to integrate social sectors in the Environmental Policy of the Development Plan”.

<sup>7</sup> On behalf of the University of Ibagué: Participatory Architecture, HACO (Hacer Comunidad) project led a participation workshop with students from different universities in Peru and Bolivia, and was a member of the jury for the working groups on teaching architecture and traditional cultures, and professional and ethical practice.

<sup>8</sup> Rastro Urbano is an interdisciplinary research group that deals with the forms of appropriation and permanent transformation of the territory, around the study of configuration of citizenship in the department of Tolima. <https://investigaciones.unibague.edu.co/rastro-urbano>. Accessed: 2 December 2020.

<sup>9</sup> Institutional video (27 November, 2012), OCEA Colombia.



Figure 11. Projects activities 2012-2014. Source: Author

## Conclusions

All the above was achieved by the implementation of collaborative, inter-institutional, and interdisciplinary work, which makes participatory architecture possible. Based on the model of participation, action, and reflection from the academy inside. Some comments of community members are extracted as follows:

“In general, doing events of this kind brings our community together to create things for us and our use and benefit, especially that they are for the benefit of the environment.

I would like it to be able to be taken to other places as well. I consider the event was successful and is a unique experience in every way. Besides the experience, it links a group of people in a common goal, which despite the different visions converge, to generate an innovative idea.

What I have experienced at the project has become a quite experience, as it gives me a new conviction of what it is like to work with a group of people with whom I have not had any interaction and therefore, dealing with them was somewhat tedious in my case; but in itself, this whole process has served me well, both in my career and in my social life.

The talks, the shouting, etc., are all part of what convinces me that this event prepares me for real life. In itself, it makes me happy to know that I learned a lot and I am and will be looking forward to participating again.

I liked the practice at Quindio, this motivates me to participate in the design.

The event as a stimulus to creativity and generation of ideas for the University seemed excellent to me since it increases its appropriation feeling”.

According to these notes, it is important to note that this model is repeatable. Its result depends on the work and willingness of the group with a common and viable purpose. For the work team made up of campus members and the community surroundings, the project is the result of four years of work, and it will be remembered.

### Difficulties

For future projects, it is necessary to take into account the exercises scheduled. As indicated above, the work took 4 years for the results present; however, if these observations are taken into account, it could take from 1 to 2 years. A replicable project must be inscribed within the work and development plan of the institution after establishing clear budgets and responsible parties. For us, not having a clear view about this step cost one year of the calendar to building management, due to the time allowed in elections and its restrictions on spending public resources by Colombian Law.

On the other hand, the participants must include in their work plans, lesson plans of the proposed activities so that they can participate without interrupting their current activities of academic training and, on the contrary, having the project as an opportunity to involve in a conjunctural space for their interdisciplinary training and social responsibility. Aligned with this, the PAR methodology strengthens the work in all project stages.

Also, permanent monitoring and evaluation must be carried out before, during, and after the project, as noted by Bonsiepe, quoted by León (2012). In design processes, project research must be taken into account and carried out in three stages: the first one, research within the project (design); the second one, research through the project; and the third one, the project as the object of research.

Currently, the mixed methodology is used by the author in her doctoral the thesis focused on the feelings of school children on the platforms in the city of Ibagué.

### Acknowledgements

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The same to the advisors, specialists in bamboo building public space, sustainability, and the environment. To all the teachers and special guests, workshop leaders, and tutors who believed in the project and shared with us in the focus group unforgettable knowledge and experiences.

To the Guadua National Centre, the Universidad la Gran Colombia, and the Bamboo Builders, who received us at their headquarters for the academic practices and built the ideas generated by the students. To the basic working group in both stages, because without their perseverance and values, it would not have been possible to present this international paper. I thank all of you because of gratitude for your credibility, management, energy, support, and team. We continue to dream about the development of our communities.





Figure 12. Teamwork sessions. Source: Author.

## References

Alcaldía de Ibagué (2012). Ibagué Development Plan 2012-2015. Retrieved from <https://www.ibague.gov.co/portal/admin/archivos/publicaciones/2015/12759-DOC-20151201.pdf>. Accessed: 3 December, 2020

Alcaldía de Ibagué (2016). Development Plan 2016-2019. Ibagué. Retrieved from <https://www.ibague.gov.co/portal/admin/archivos/publicaciones/2016/14981-PLA-20161104.pdf>. Accessed: 3 December, 2020

Colmenares, A. M. (2012). Investigación-acción participativa: Una metodología integradora del conocimiento y la acción. *Voces y Silencios: Revista Latinoamericana de Educación*, 3 (1), p.102-115. Retrieved from <https://revistas.uniandes.edu.co/doi/pdf/10.18175/vys3.1.2012.07> . Accessed: 3 December, 2020

Colombian Organization of Students of Architecture-OCEA Colombia. (Producer). (2012). Amanecerá y veremos- Ducuara 2012 - University of Tolima [Video Youtube]. <https://www.youtube.com/watch?v=7yY48P1VKSA>

Dober, R. P. (2006). Edutrópolis: The emergence of a 21st century paradigm. In Bellet, C. & Ganau, J, editors. *City and university. University cities and urban campuses*. Lleida: Editorial Milenio. p. 15-22. Retrieved from <http://www.upv.es/contenidos/CAMUNISO/info/U0638968.pdf>

Ecos del Combeima (2012, November 2). José Herman Muñoz Ñungo elected as the new rector of the University of Tolima. <http://www.ecosdelcombeima.com/politicas/audio-22238-elegido-jose-herman-munoz-nungo-nuevo-rector-de-la-ut-escuche-todas-las-reacci?page=2>

El Cronista.co (2018, November 4). Classes are suspended at the University of Tolima. <https://www.elcronista.co/salud/suspenden-clases-en-la-universidad-del-tolima>

Fals Borda, O. (1999). Universal origins and current challenges of PAR (Participatory Action Research). *Análisis Político*, (38), p.71-88. Retrieved from <http://biblioteca.clacso.edu.ar/ar/libros/colombia/assets/own/analisis38.pdf>. Accessed: 3 December, 2020.

Francisco, A. & Moliner, L. (2010). Service Learning at the University: A strategy in critical citizenship training. *REIFOP*, 13 (4), p.69-77. Retrieved from [http://aufop.com/aufop/uploaded\\_files/articulos/1291992629.pdf](http://aufop.com/aufop/uploaded_files/articulos/1291992629.pdf). Accessed: 3 December, 2020

García Guadilla, C. (2003). Assessment of the 1990s and reflections on the new forces of change in higher education. In Mollis, M. (coord.), *Las universidades en América Latina: ¿reformadas o altadas? La cosética del poder financiero*. pp. 17-37. Buenos Aires, Argentina: CLACSO. Retrieved from <http://biblioteca.clacso.edu.ar/clacso/gt/20101109010429/mollis.pdf>

García Ramírez, W. (2012). Participatory Architecture: The Forms of the Essential. *Architecture Magazine*, 14 (1), p.4-11. Retrieved from [https://editorial.ucatolica.edu.co/ojsucatolica/revistas\\_ucatolica/index.php/RevArq/article/view/721/931](https://editorial.ucatolica.edu.co/ojsucatolica/revistas_ucatolica/index.php/RevArq/article/view/721/931). Accessed: 3 December, 2020.

Hernández, R D. & Saldarriaga, A. (2009). Management of university social responsibility. Case: School of Engineering of Antioquia-EIA. *DYNA*, 76 (159), p. 237-248. Retrieved from <https://revistas.unal.edu.co/index.php/dyna/article/view/13060/13764>. Accessed: 3 December, 2020.

Martínez, M. (2009). *Science and art in qualitative methodology*. Mexico City: Trillas.

Mejía, M. (2006). *Education in Globalisation I*. Bogotá, Colombia: Ed. Desde Abajo.

Mejía, M. (2011). *Education(s) in globalisation(s). Between Unique Thinking and the new critique*. Vol. II. Bogotá: Colciencias. Retrieved from <http://repositorio.uch.edu.pe/bitstream/handle/uch/38/mejia-marco-raul-educacion%28es%29-en-la%28s%29-globalizacion%28es%29.pdf?sequence=1&isAllowed=y>. Accessed: 3 December 2020

InterAmerican Development Bank - Findeter. (2018): Action plan Ibagué. (*Connecting, Collective and Competitive Territory*). Retrieved from <https://www.ibague.gov.co/portal/admin/archivos/publicaciones/2018/21195-DOC-20180814.pdf>. Accessed: 3 December, 2020

Pérez, A. L. (2010). Participation as a strategy for a sustainable transformation of the habitat within the academic and professional "acting". *Revista Traza*, 1 (1), p.115-123. ISSN: 2216-0647. Accessed: 3 December, 2020.

Rincón, L. (2011) *Leadership Oriented to Competitiveness and Human Development*. Bogotá: UNAD-Ecacén.

Schön, D. (1998). *The reflective professional. How professionals think when they act*. Barcelona: Paidós.

Toro Suárez, L. Y. (2015). The importance of teamwork in today's organisations [Thesis]. Universidad Militar Nueva Granada, Bogotá, Colombia. Retrieved from <https://repository.unimilitar.edu.co/bitstream/handle/10654/13939/LUZ%20YOLANDA%20TORO%20SUAREZ%20%20TRABAJO%20FINAL.pdf;jsessionid=CEF8ACF9F7F0FA4321A977744080F462?sequence=2>. Accessed: 3 December, 2020.

UNESCO (1998). World Declaration on Higher Education for the 21st Century: Vision and Action and Framework for Priority Action for Change and Development of Higher Education. Retrieved from [http://www.unesco.org/education/educprog/wche/declaration\\_spa.htm](http://www.unesco.org/education/educprog/wche/declaration_spa.htm). Accessed: 3 December, 2020.

University of Ibagué (2016) Vertical Workshop - Design and Architecture Programmes. Retrieved from <https://diseno.unibague.edu.co/news/130-taller-vertical-programas-de-diseno-y-Arquitectura>. Accessed: 3 December, 2020.

University of Ibagué (2017). Teachers from the Faculty of Humanities participated in academic events: University of Ibagué. Retrieved from <https://www.unibague.edu.co/noticias-institucionales/1145-docentes-de-facultad-de-humanidades-participaron-en-eventos-academicos>. Accessed: 3 December, 2020.

University of Ibagué (2019). Institutional Development Plan 2019. Retrieved from [https://www.unibague.edu.co/documentos\\_institucionales/informe\\_a\\_fundadores\\_marzo2019\\_f.pdf](https://www.unibague.edu.co/documentos_institucionales/informe_a_fundadores_marzo2019_f.pdf). Accessed: 3 December, 2020.

University of Tolima (2014). Institutional Development Plan 2013-2022. Retrieved from [http://administrativos.ut.edu.co/images/universidad/Plan\\_de\\_desarrollo\\_2013\\_2022\\_V.pdf](http://administrativos.ut.edu.co/images/universidad/Plan_de_desarrollo_2013_2022_V.pdf). Accessed: 3 December, 2020.

University of Tolima (2014a). Boletín Proyección Social: Universidad del Tolima. Retrieved from [http://administrativos.ut.edu.co/images/VICEACADEMICA/proyeccion\\_social/boletines/Boletin\\_3.pdf](http://administrativos.ut.edu.co/images/VICEACADEMICA/proyeccion_social/boletines/Boletin_3.pdf). Accessed: 3 December, 2020.

### Recommended references

Burbano, P. & Ospina, C. (2013). *Architectural training, research integrated into the curriculum*. Bogotá: Escala.

Cañaveral Usuga, C. (2018). Memories of the International Congress on the Built Environment and Sustainable Development (MACDES 2018). Retrieved from [https://www.academia.edu/38069843/Memorias\\_Congreso\\_Internacional\\_Medio\\_Ambiente\\_Construido\\_y\\_Desarrollo\\_Sustentable\\_MACDES\\_2018\\_](https://www.academia.edu/38069843/Memorias_Congreso_Internacional_Medio_Ambiente_Construido_y_Desarrollo_Sustentable_MACDES_2018_). Accessed: 3, December 2020

El Olfato (2015, January 20). In trouble the University of Tolima by agreement with the San Martín. El Olfato. <http://www.elolfato.com/en-lios-la-universidad-del-tolima-por-convenio-con-la-san-martin/>. Accessed: 5 December, 2020.

Ibagué Como Vamos (2011). Ibagué Quality of Life Evaluation Report 2009 (baseline) – 2010. [http://redcomovamos.org/wp-content/uploads/2014/03/CALIDAD\\_DEVIDA\\_IBAGUE\\_2009\\_2010.pdf](http://redcomovamos.org/wp-content/uploads/2014/03/CALIDAD_DEVIDA_IBAGUE_2009_2010.pdf)

Lope, M. (2017, July 27). Puno: National Dean of Architectural College, questioned CEPLAN policies. Puno. <https://diariocorreo.pe/edicion/puno/puno-decano-nacional-de-colegio-de-arquitectos-cuestiono-politicas-del-ceplan-764329>. Accessed: 5 December, 2020.

Martínez, M. (2009). *Science and art in qualitative methodology*. Mexico: Trillas

Miranda Beltrán, S. (2016). Management: a concept built on the understanding of the teaching directors of Bogota's public schools. *RIDE. Rev. Iberoam. Research. Develop. Educ.* [online]. 7 (13), pp.562-589. Retrieved from <http://www.scielo.org.mx/pdf/ride/v7n13/2007-7467-ride-7-13-00562.pdf>. Accessed: 5 December, 2020.

Monguí Vargas, G. S. (2016, July 22). What are the steps to be taken by the University of Tolima. Las 2 Orillas. <https://www.las2orillas.co/cuales-son-los-pasos-que-debe-seguir-la-universidad-del-tolima/>. Accessed: 5 December, 2020.

Ortiz, M. & Borjas, B. (2008). Participatory Action Research: Fals Borda's contribution to popular education. *Espacio Abierto*, 17 (4), p.615-627. Retrieved from <http://www.redalyc.org/articulo.oa?id=12217404>. Accessed 3 December, 2020.