Aesop Excellence in Teaching Award 2024

The city and the environment

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Figure 1: Course opening ceremony, 2024 (© The city and the environment)

Abstract

'*The city and the environment'* is a compulsory urban planning course taught in the 3rd year of the Foundation Degree in Architecture at the School of Architecture of the Universidad Politécnica de Madrid. It deals with the relationship between the city and its physical-climatic environment through the study, analysis, diagnosis, and proposals at the territorial and urban scale. It is organised based on a practical workshop exercise but requires students to gain concrete and exhaustive knowledge of the basic concepts and relationships established between urban centres and the physical environment.

In the first part of the workshop, an approach to the city and its territory will be made at different scales, carrying out different analysis exercises: physical and climatic environment, environmental aspects, landscape, etc., to end with a synthesis and territorial diagnosis to determine the suitability of the land for certain uses (urban, agricultural-livestock and protection). This part will be supported by an instrumental block, which will help students to learn the analysis tools used in practice, based on the Geographic Information System (GIS).

In the second part of the workshop, an environmental assessment of a specific urban area will be carried out with the aim of proposing microclimatic improvements, focusing on healthy urban design, in its outdoor public spaces (streets, squares, urban edges, facilities, etc.)

During the workshop classes, a debate will be established between all the working groups, which will constitute the main scenario for the development of the practical work and for its follow-up by the teachers.

Institutional setting and students enrolled

'*The city and the environment'* is a compulsory urban planning course taught in the 3rd year of the Foundation Degree in Architecture at the School of Architecture of the Universidad Politécnica de Madrid.

Around 450 students take the course each academic year. Thus, since 2016, the year in which this methodology was initiated, more than 3,000 students have participated in the educational project. The common objective has been the environmental improvement of outdoor public spaces in a selected municipality of Madrid. Each academic year a different one is chosen.

Over these eight years, the municipalities of Talamanca de Jarama (2016), Ambite (2018), Bustarviejo (2019), Pezuela de las Torres (2020), Santorcaz (2021), Anchuelo (2022), Olmeda de las Fuentes (2023) and Titulcia (2024) have participated in the educational project. The project is supported by municipal technicians and the government team, from the first parts of the analysis and diagnosis process to the final phase of proposals and interventions and benefits thousands of people living in these cities.

Planning concept

The theoretical-practical course includes a significant amount of studio work. This is necessary to understand and analyse the complexity of the territorial scale and to link it to real proposals adapted to local needs, especially urban ones. The aim is to introduce students to the problems and interventions of urban planning, starting from an understanding of the dynamics and genesis of climatic, urban, and territorial processes that influence different scales and their consequences.

For the final proposal, it is essential to start from the premise that the same piece of territory can have characteristics that are equally suitable for different uses.

This analysis and reflection, carried out during the course, makes it possible to establish parameters for a coherent territorial planning and organisation, in accordance with its configuration characteristics and the people who inhabit it.

Learning objectives

The learning objectives that the students are expected to be able to demonstrate upon completion of the course are to:

1. Develop theoretical and practical skills by combining theoretical and practical analysis in relation to urban and environmental contexts.
2. Understand theoretical concepts at the urban and territorial scale, providing concrete knowledge of theoretical concepts related to cities and territories at different scales.
3. Apply acquired knowledge to address real problems and needs by proposing interventions in public spaces.
4. Carry out research and diagnosis by analysing communities and public spaces, including data collection, analysing community needs analysis, and areas for improvement.
5. Work in teams to analyse, discuss, and plan solutions to identified problems in public spaces.
6. Communicate with the community, including local technicians, mayors, and residents, to understand their perspectives and needs, demonstrating effective communication and active listening skills.
7. Use theoretical and practical knowledge to design proposals for improvements to public spaces, including the production of plans, models, graphics, and explanatory documents.
8. Undertake field visits to communities and public spaces for practical understanding, including observation,

interviews, and field data collection.

9. Develop proposals with the community and municipal technicians, effectively communicating ideas and solutions.
10. Use analytical and graphical tools such as Geographic Information Systems (GIS), 3D modelling or photomontage.
11. Communicate and disseminate academic results through exhibitions and publications directly related to the working community.

Learning and capacity Development

The educational project aims to propose alternatives for the use and design of existing public spaces that promote equity, social integration, and intergenerational coexistence, while raising awareness among the population of the importance of these spaces as meeting places, social hubs, and the need for them to be thermally comfortable, safe, healthy, and accessible all year round. Students achieve not only academic learning goals, but also personal and social goals:

1. Promote civic engagement and active citizenship by contributing to the development of social awareness and personal responsibility.
2. Building confidence and security by interacting with different stakeholders and presenting proposals in public.
3. Promote motivation and interest in learning by participating in projects that have an impact on the community.
4. Promote a sense of achievement and personal satisfaction by contributing to the well-being of the community through their projects.
5. Develop communication and presentation skills through the opportunity to present proposals in public.
6. Engage students in community service projects by proposing improvements to the community's public spaces, encouraging active student participation in projects that have a direct impact on the community.
7. Encourage collaboration between the university and local government to address urban problems and needs. Students learn to work with public institutions and understand how their proposals can contribute to improving the quality of life in society.
8. Develop a sense of social responsibility by trying to improve the quality of life and social inclusion in the community through proposals.
9. Encourage collaborative and cooperative learning by working in groups and collaborating with municipal technicians, professors, and residents to develop interpersonal skills and work together to address complex challenges.
10. Improving the community's quality of life: The projects aim to improve of the bioclimate of public spaces.

Figure 2: Exhibition of works and debate with citizens in Olmeda de la Fuentes (Madrid), 2023 (© The city and the environment)

Innovation in pedagogical / thematic approaches

The educational project aims to help small communities in Madrid, with limited resources, to involve local stakeholders in the improvement of their public spaces.

The methodology used is called Service-Learning (SL), which combines learning and community service in a well- designed project. Participants work on real social needs to improve the environment, making SL a socially beneficial educational project that combines learning and community service.

Learning is clearly linked to theoretical lessons and practical exercises carried out by the students, while service is manifested in proposed solutions for public spaces, streets, and squares of the locality, focusing on environmental, bioclimatic and health improvements. Students select areas based on diagnostic results, community, and neighbourhood proposals, needs, and demands, and decide on intervention strategies with the support of community technicians and faculty. It's remarkable how the students can create new links, structure itineraries between the locality and the surrounding landscape, or organise activities and new uses that are well received by the local population.

Regarding the project's premise of community service, the aim is to help municipalities visualise the problems they face and how they affect the quality of life of their inhabitants, through specific urban and bioclimatic analyses and diagnoses for the locality.

Figure 3: Residents of Pezuela de las Torres (Madrid) and UPM students, 2020 (© The city and the environment)

The aim is to provide these communities with a new perspective on their public spaces from an environmental and citizen participation perspective, empowering citizens to characterise their needs and demands.

The aim is therefore to create a university that is ethically committed to its territorial, environmental, socio-economic, and cultural context, with the participation of different social actors. It is a practice of university social responsibility that focuses on teaching and learning and aims to respond to real needs in urban contexts with limited economic resources

Theory and practice integration

The course integrates theory and practice through a multifaceted approach that prepares students for real-world application. By combining theoretical instruction with practical exercises, students gain a comprehensive understanding of concepts while developing the necessary skills necessary for practical implementation.

Figure 4: Field visit in Olmeda de las Fuentes (Madrid), 2023 (© The city and the environment)

The primary approach used to link theory and practice is direct work on a practical case: improving the bioclimatic conditions of the community selected for the course. By analysing a real-life case, students apply theoretical knowledge to practical situations and develop problem-solving and critical

thinking skills. The course also incorporates practical activities and experiential learning opportunities. Through workshops and field trips students actively engage with the subject matter, translating theoretical concepts into tangible outcomes and fostering a deeper understanding of the material.

Collaborative projects and group work are key to the integration of theory and practice, allowing students to communicate, collaborate and apply theoretical concepts to practical tasks, gaining real-world experience. Reflective practice and self-evaluation are also emphasised, encouraging students to identify areas for improvement and set goals. This reflective approach helps to transfer theoretical knowledge to practical contexts and promotes lifelong learning habits, which are essential for professional growth.

Student assessment

Students carry out practical exercises and projects and oral presentations, divided into the following phases of the course.

Stage 1: The scope of the analysis is selected, which typically involves the selection of a community with physical and socio-economic conditions conducive to the development of workshops and the application of the theoretical concepts taught in the course.

Stage 2: The case is presented to the community representatives at the opening of the course.

Stage 3: In the classroom, an approach to the population and its territory is carried out, providing theoretical lessons are given and various sectoral analysis exercises are carried out. The development and results of this phase are presented in class, with a debate between students, community representatives and professors.

Stage 4: The educational project is developed both in the classroom and in the community itself, with various group visits at the beginning and during the course. These visits include explanations of the characteristics, needs and problems identified by the local administration, professors, and residents.

Stage 5: Based on the theoretical content presented in class, the students, in different groups, carry out an environmental assessment of the urban environment to propose microclimatic improvements.

Stage 6: According to the needs of the intervention areas, the students make their proposals and work on the dissemination and communication of the results.

Stage 7: At the end of the course, teachers and people designated by the municipality will select the best works, which will be exhibited in different formats and cultural spaces in Madrid and in the municipalities themselves.

Figure 5: Student proposal. Michael Angelo Burgos, Marta Esteban-Infantes and Pablo Ruiz Vallejo. 2022

Stage 8: A further selection of the exhibited

works will be part of a digital publication that will become part of the course's own bibliography and will serve as a roadmap for future interventions in the community with a bioclimatic and environmental focus (currently the course has 7 own publications):

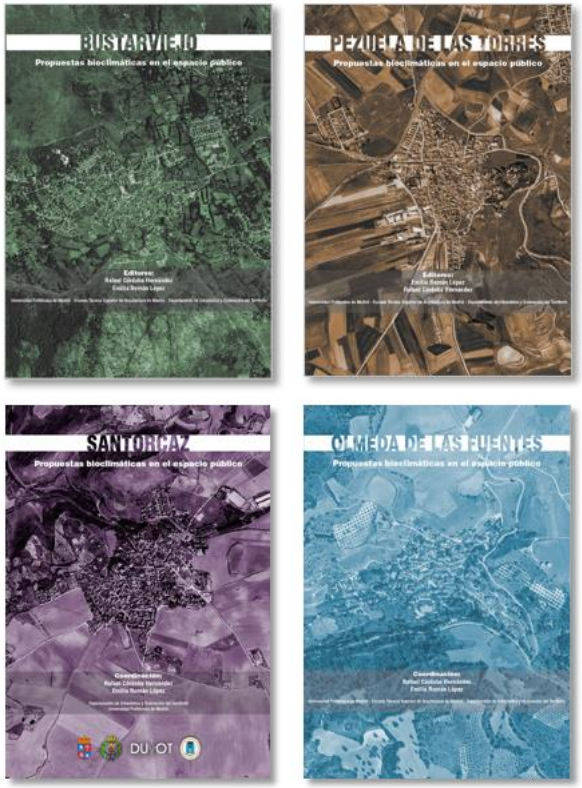

Figure 6: Resultant books

Student feedback & third-party feedback

The teaching evaluations carried out by students on the subject and the professors who teach it are also very good.

In the final presentations of the course, which take place in Madrid's cultural centres and in the municipalities themselves, many students come accompanied by friends and family, to whom they show their work to.

These results are due, among other factors, to the high level of involvement and personal motivation they have during the course, which deals with real people and contexts.

Some comments from students:

"I really liked the subject, I learnt a lot and, especially above important issues related to the environment and how I can contribute it to my career. I also really liked the way the classes were run; you can tell that everything is very well organised. In addition to the extra classes, like the one on drones, which I found very interesting. And it reassures me to know that there are more job opportunities than just designing and calculating structures... Thank you for your work!"

"The bioclimatic approach with which the subject is taught seems to me very timely and necessary. I have really reached the third year without anyone, in any subject, properly explaining topics such as orientation, solar exposure, wind function or vegetation."

The educational project was recognised or awarded in:

- The 1st Call for Service-Learning Projects at the Universidad Politécnica de Madrid (2022)
- The 12th Ibero-American Biennial of Architecture and Urbanism.
- The European Observatory of Service Learning in Higher Education.
- The educational innovation group AMA-Active Methodologies Learning, in which this project is integrated , has been awarded in the "2023 Call for Consolidated Educational Innovation Groups (GIE) Awards" at the Universidad Politécnica de Madrid

Lessons learned and transferability

The educational experience developed has significant potential for replication and adaptation in different educational and territorial contexts. In addition to its application in other subjects within the bachelor’s degree in architecture Fundamentals at the Higher Technical School of Architecture of Madrid, there is research into its export to other universities and territorial contexts, both nationally and internationally.

The replicability of this experience is based on its ability to create interdisciplinary and transversal links between different fields of knowledge and professors, enriching the training of students and promoting a more complete understanding of the subjects addressed. This leads to greater satisfaction on the part of the students, who see how the knowledge acquired in different subjects is coherently and practically integrated in concrete projects.

To transfer this experience to other settings, it is crucial to adapt the methodology to the specific characteristics of each educational, urban, environmental and socio-economic context. This requires careful consideration of the needs and characteristics of each community, as well as the flexibility to adapt the pedagogical approach to local circumstances.

A potential barrier to implementing this model elsewhere could be economic. However, this barrier can be overcome with institutional support and cooperation from local communities. It is important to establish collaborative agreements that include financial resources to cover related expenses such as student stipends, work materials, and document printing.

In conclusion, '*The city and the environment'* educational model offers an innovative and collaborative experience that can be adapted and replicated in different contexts, promoting the integration of theory and practice and the active engagement of students with their environment. Its ability to build inter-institutional collaborations and its community-centred approach make it a valuable resource for higher education and sustainable local development.

Final reflection

The environmental problems of the 21st century and sustainable development can be addressed from different disciplines, but no specialised technical vision alone will be able to solve them without integrating knowledge with others. In fact, these environmental problems have become increasingly complex and interconnected on a global scale, which requires that they be approached as complex, inseparable, and interrelated.

Universities and their schools should not be closed systems focused solely on what happens in the classroom. For the acquisition of technical and disciplinary knowledge, as well as values of responsibility and commitment to the environment, it is important to educate from the experience of everyday life, and for this it is essential to go beyond the classroom and to reconnect with the real world, establishing a process of mutual benefit and exchange of information, analysis, proposals, people, etc... Obviously, this is a matter that requires extra effort on the part of both teachers and students, but it promotes personal stimulation and motivation in the teaching and learning process and, therefore, the results of learning outcomes and social benefits.

Thus, the consideration of students' competences through this service-learning project implies the integration of disciplines, knowledge, practices, values, etc., with the aim not only of technical and professional training, but also environmental and humanistic, with critical thinking, ethics and social awareness, to achieve a common goal: the environmental improvement of the planet and the quality of life of the people who inhabit it.

Acknowledgments

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