

## The construction of the “void”: an experience anchored in the theory of meaningful learning

## A construção do “vazio”: uma experiência ancorada na teoria da aprendizagem significativa

## La construcción del “vacío”: una experiencia anclada en la teoría del aprendizaje significativo

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### Abstract

This article establishes relationships between Ausubel's theory of meaningful learning



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(1968) and the trajectory of the Design Workshop during the sixth stage of the Mackenzie School of Architecture and Urbanism. The concept defined as "subsumer" or "anchor idea," present in the mentioned theory, is associated with the construction of "void," the public space as the most relevant articulating element among those used in the didactic conduct of the exercise. The text is organized in three parts. Initially presents the recent trajectory of transformations that occurred in this academic exercise, highlighting as the main turning point the consummation of the unconstructed public space as the principal delineator of the reasoning and statements, to the detriment of the building as an isolated object. Then, it presents the theories and concepts in Ausubel's work and the didactic possibilities of this association of theory, concept, and applied academic exercise. It is understood that a relationship of prior knowledge between teachers and students can be unified by invigorating the didactic relationship between the parties. Finally, it presents graphical analyses of the student works from the last years of the exercise's production to illustrate the exposed reasoning and some results.

**Keywords:** Public Space; Meaningful Learning; Urban Design; Urban void; Interstice

## Resumo

Este artigo procura estabelecer relações observadas entre a teoria da aprendizagem significativa de Ausubel (1968) e a trajetória do Ateliê de Projeto ocorrido na sexta etapa da Faculdade de Arquitetura e Urbanismo Mackenzie. O conceito definido como "subsunçor" ou "ideia âncora", presente na teoria mencionada, é associado à construção do "vazio" e do espaço público como sendo os elementos articuladores mais relevantes dentre os utilizados na condução didática do exercício. Dividido em três partes, o texto apresenta inicialmente a trajetória recente das transformações ocorridas no exercício acadêmico em questão, destacando como principal ponto de inflexão a consumação do espaço não construído como delineador principal do encaminhamento dos raciocínios e enunciados, em detrimento do edifício como objeto isolado. Em seguida, são apresentadas as teorias e conceitos presentes na obra de Ausubel, além das possibilidades didáticas trazidas por essa associação de teoria, conceito e exercício acadêmico aplicado. Entende-se, neste momento, que há uma relação de conhecimentos prévios tanto docentes quanto discentes que podem ser unificados, revigorando a relação didática entre as partes. Ao final, será apresentada uma análise gráfica de alguns trabalhos discentes produzidos recentemente, o que procura ilustrar o raciocínio exposto, assim como a qualidade dos resultados obtidos.

**Palavras-chave:** Espaço público; Aprendizagem significativa; Desenho urbano; Vazio urbano; Interstício

## Resumen

Este artículo establece relaciones entre la teoría del aprendizaje significativo de Ausubel (1968), y la trayectoria del Taller de Proyecto en la sexta etapa de la facultad de Arquitectura y Urbanismo Mackenzie. El concepto definido como "subsunsores" o



“idea ancla”, presente en la teoría mencionada, se asocia a la construcción del “vacío”, al espacio público como el elemento articulador más importante entre los utilizados en la conducción didáctica del diseño. En tres partes, el texto inicialmente presenta la trayectoria reciente de transformaciones ocurridas en este ejercicio académico, destacando como principal punto de inflexión la consumación del espacio no construido público como delineador principal de los razonamientos y enunciados, en detrimento del edificio como objeto aislado. A continuación, se presentan las teorías y conceptos presentes en la obra de Ausubel y las posibilidades didácticas traídas por esta asociación de teoría, concepto y ejercicio académico aplicado. Se entiende que existe una relación de conocimientos previos tanto de docentes como de discentes, que pueden ser unificados revigorizando la relación didáctica entre las partes. Al final, se presentan análisis gráficos sobre los trabajos discentes de los últimos años de producción del ejercicio, que buscan ilustrar el razonamiento expuesto, así como algunos de los resultados obtenidos.

**Palabras clave:** Espaço Público; Aprendizaje Significativo; Design Urbano; Vazio Urbano; Interstício

## INTRODUCTION

The design studio that takes place in the sixth stage of the Architecture and Urban Planning course at Universidade Presbiteriana Mackenzie, over the last few years, has adopted the construction of the urban emptiness as its theme and, to make this concept viable, it also relies on the idea of a building with multiple programs. This approach implied considerable transformations in the theoretical and practical approach of the exercise, the most significant being associated with the idea of “emptiness,” or the creation of the interstice, that is, the desire to build a lively and dynamic public space, which directly reflected on the teaching and learning relationship, and enabled new formative perspectives for both teachers and students.

It is understood here that from the moment the exercise began to consider public space as a leading element within the urban design process, a sequence of changes was triggered that brought the didactic actions of the studio closer to the theory of meaningful learning presented by David Ausubel (1968). This article then aims to demonstrate, through a description of the exercise’s trajectory and recent results, the didactic importance brought by the insertion of public space as the main articulating element of the curricular component in question, both in its theoretical and practical aspects, and the perceived relationship with concepts present in Ausubel’s theory.

A brief history of the exercise approach process will be presented, describing the main turning points that changed its recent trajectory. The new urban design concepts applied to the exercise have enhanced discussions about the value of



collective spaces and active emptiness, as opposed to the isolated and private objects commonly adopted.

Next, we will briefly describe the main concepts that define meaningful learning, and, to do so, we will base our reflections on two authors: David Ausubel, mentioned above, and Marco Antonio Moreira. From the considerations presented by Moreira (2010) and Moreira in co-authorship with Masini (1982), we are particularly interested in the clarification of Ausubel's original concept called "subsunçor" (subsumer) or "anchor idea."

Finally, to understand and verify the importance of the concepts described, some works developed by students of the architecture and urban planning course in the sixth semester of the Mackenzie Faculty of Architecture will be presented. This presentation aims to observe the validity of the considerations that guided the design process, which has as its anchor idea the design of public space, more precisely of the urban emptiness, since this, in some way, is present in our collective unconscious. Understanding the scope of the anchor idea allowed teachers and students to expand their communication skills and move in the same direction, a very positive fact that changed the motivation and interest of the people involved in the process.

### **The trajectory of academic practice**

The curricular component Project Studio VI: Technology corresponds to the sixth stage of the Architecture and Urban Planning course at FAU-Mackenzie. Focused on design exercises, the discipline's focus is traditionally linked to the building's constructability. In this sense, the project's relevance has always been associated with the understanding and design of the architectural object. Questions relating to its urban insertion or the establishment of certain contextual relationships were ignored at that time. On the other hand, technical questions prevailed, which in itself has a valuable meaning within the learning process. After all, technical construction knowledge is part of architecture training. However, from a certain point onwards, the simplification of this approach generated an inevitable exhaustion, and, therefore, urban discussion began to be involved in the project's teaching process.

There are several theorists – Cullen (1986 [1961]); Argan (2000 [1964]); Rossi (1995, [1966]), and Rowe (1981 [1978]) – who defend the idea that when we design any building we are also planning the city. Within this principle, it was recognized that the insertion of the building in the territory is a primary issue and that it must be considered within the process of designing the architectural and urban space. This attitude completely changed the relationship between those involved in the design exercise; teachers and students began to understand the new challenge as quite stimulating. Within this process of change, the fact that



the discussion regarding the surrounding urban space established a theoretical connection with the teaching sequence of the Design Studio was also considered since in the next stage, the seventh stage, the approach is guided by the reading and analysis of the urban space, to later arrive at the programmatic proposition of the architectural object.

Consequently, this new approach required a consistent review of content, which led to the adoption of different concepts to guide the spatial design process. In this case, it is worth highlighting the distinction between two critical elements: morphology and typology. The first refers to the design of the implementation itself, of the spatial relationship to be established with the immediate surroundings, that is, it is the result of the analysis of flows, among other conditions; the second refers to the design of the building itself, to the architectural element that is verticalized from the morphological design.

Based on understanding the two elements mentioned (morphology and typology), some concepts were incorporated into the repertoire, which are presented as a minimum condition for developing the exercise. Regarding typology, we can mention programmatic diversity, overlapping uses, active facades, typological diversity, and connection. As for morphology, we could say density, public enjoyment, active perception, and the design of the emptiness, of the “Between.” The latter is considered the most relevant issue regarding the configuration of public space, which deserves a specific approach.

The design of the emptiness of the interstitial space, configured by the arrangement of the typological elements, became the guiding element of the methodological transformation proposed in the course. Its use, of an eminently collective nature, can bring people together and provide encounters capable of altering interpersonal relationships, transforming public space into a place full of surprises and emotions. Therefore, the configuration of this space gains prominence and evidence. The objective of the exercise is no longer just the search for a beautiful building designed with all the technical rigor it deserves but also the establishment of a place conducive to meeting people. In addition to being used as an element that enhances the place, the importance and value of the issue of “scale” also stand out and cannot be ignored. Scale is responsible for the correct measurement between people and the built space, which establishes a high affinity between both, which Yi-Fu Tuan (1980) would define as “topophilia.” The treatment or design of the elements that make up the emptiness must also be considered, as they actively participate in the process of recognition and appropriation of the place. In this sense, the language of the adopted landscape elements plays a fundamental role: vegetation, pavements, street furniture, urban equipment, public lighting etc.

In light of the considerations presented, it is reaffirmed that the new condition proposed for the design exercise to be developed in the sixth stage of the architecture and urban planning course has as its leading element, or “anchor



idea" (Ausubel, 1968), the design of the emptiness. This theoretical premise guided the entire reformulation. From this moment on, as mentioned, the public space acquires a distinct conceptual value until then overshadowed, or obscured, by the idea of the object building.

It can be said that the emptiness, understood as an essentially public place and therefore present in the collective unconscious of all people, is capable of awakening the student body's interest by simply composing the experiences lived in their daily lives. The city, as the typical place for our human activities (Lynch, 1984 [1960]), presents us with infinite situations that affect our behavior, actions, and deeds. Awareness of this perceptive and behavioral process directed teaching actions towards a new theoretical and conceptual path, changing the understanding and focus of the proposed exercise. The recognition of the lived urban experience as something capable of making people involved in the urban design process interested in the values related to the imposed reality is of fundamental importance to create new stimuli since the analysis and understanding of reality, based on accumulated experience, has the power to break down possible gaps between expectations and design.

Two other factors also contributed to bringing the proposed exercise closer to the urban reality considered. The first is related to the approval of the São Paulo Master Plan, which took place in 2014. Until then, the guidelines and concepts adopted in the exercise, as they were a theoretical proposition, did not find support in the city's legislation, which changed with the precepts existing in the new São Paulo plan, which even became a conceptual reference for master plans in other cities. The second factor is associated with interdisciplinary horizontal integration, establishing a fruitful contribution between theoretical and design disciplines. This situation led to an apparent rapprochement between the components of Urban Planning Studio, Landscaping, Theory and History, and Environmental Comfort. In particular, the relationship between the Urban Planning Studio and Architectural Design Studio components, among other issues, implied the definition of a common place for the development of the exercise, as well as the urban guidelines that guide design decisions, such as the need to establish proximity to an intercity transport mode.

Finally, the extensionist character acquired by the exercise through the so-called Integration and Contextualization Workshop, which has taken place at the beginning of each semester since 2021, also stands out, in which the specific demands of the cities where the project experiences will be developed are presented. Students and teachers come into contact with public managers and civil society representatives, who present requests, specific legislation, and desired scenarios incorporated into the academic exercise. At the end of the semester, feedback and the course students' presentation of results are given. The most recent experiences occurred in cities along CPTM's Coral 11 line, including Mogi das Cruzes, Itaquaquecetuba, and Suzano. The primary condition for choosing the area to intervene is that it is close to train or subway stations in their respective municipalities.



### Meaningful learning: the “interstitial” space as an “anchor idea”

David Ausubel's (1968) theory of meaningful learning seemed to elucidate what, until then, was an empirical observation by teachers, that there was a change in the environment within Project Studio 6 after the insertion of the public space as the central articulating axis for conducting the exercise. Marco Antonio Moreira, professor at the Physics Institute of the Federal University of Rio Grande do Sul and one of the leading scholars of Ausubel's theory, seeks to elucidate it in his text “What is meaningful learning after all?”

Meaningful learning is that in which ideas expressed symbolically interact in a substantive and non-arbitrary way with what the learner already knows. Substantive means non-literal, not word-for-word; and non-arbitrary means that the interaction is not with any prior idea, but rather with some specifically relevant knowledge already existing in the cognitive structure of the learner. (Moreira, 2010, p. 2).

One of the main concepts presented by Ausubel (1968) is defined as “subsumer” or “anchor idea,” which is specific knowledge previously existing among the understanding of each individual and which gives meaning to new knowledge that is presented or discovered. Marco Antonio Moreira, when describing the concept, adds:

Whether through reception or discovery, the attribution of meanings to new knowledge depends on the existence of specifically relevant prior knowledge and interaction with it. The subsumer may have greater or lesser cognitive stability, it may be more or less differentiated, that is, more or less elaborated in terms of meaning. However, as the process is interactive, when it serves as an anchor idea for new knowledge, it itself changes, acquiring new meanings, corroborating already existing meanings (Moreira, 2010, p. 2).

For Ausubel (1968), the cognitive structure of each individual is formed by previously existing subsumers that form, among themselves, a particular hierarchical set. The hierarchy of this knowledge is organized by use. That is, some are always active, while others are static. The process of assigning new meanings through continuous use of the same subsumer generates new layers of understanding and refinement, which teachers and students can appropriate in a reinvigorated teaching and learning relationship.





In simplified terms, using this line of reasoning associated with the Design Studio 6 exercise, it is understood that every individual has a prior definition of public space arising from personal experiences of coexistence, use, observation etc. There is, for example, an individual pre-judgment related to the possible safety in these spaces since we cannot disregard episodes related to urban violence.

Although there are differences in these individual filters, we have here a common starting point between the parties, teachers, and students, and it is from this exchange of experiences and arguments, added to the programmatic specificities and the locations where the exercises will take place, that new meaning will be given to this knowledge. The subsuming public space is transformed and finds an intersection in previous individual definitions, eliminating apparent differences, resolving inconsistencies, and expanding common meanings.

In the recent logic of the exercise, public space represents the application of this concept even more, as it functions as the "anchor idea" that guides the initial decision-making in search of architectural design. It is no longer a matter of solving just the building, which is often generic, repetitive, and disconnected from a place, but instead of solving a set of built and unbuilt elements that will become part of the city, allowing the particular stories of their creators to be added to the imaginary of the future space. The submission of the architectural design to the resolution of the isolated object results typically in the cold fulfillment of a program of needs that, most of the time, caricatures users and is predominantly private; more sensitive aspects of the local culture are left aside, and, in this way, dynamics of appropriation of the space, landscapes, and buildings existing in the surroundings are denied, that is, any relations with the elements associated with pre-existing public spaces are eliminated.

The function of public space is perhaps one of the most critical debates in architecture and urban planning today. It is on the global agenda of cities that want to be more creative and sustainable, in recent changes to urban legislation, in the idea of safety and care for all age groups and genders, in the extension of the housing cell, in the debate involving digital and analog, among many others. Here, you will find infinite possibilities for teacher and student interaction, supported by shared knowledge and experiences, familiar or not, brought by personal filters and previous life experiences.

Any exercise that proposes the creation of a building with multiple programs and a significant construction quantity presupposes plastic and technical solutions to be developed. There is, of course, a necessary knowledge here that is part of the expected teaching content, given the complexity of the typological and





programmatic characteristics that the building brings together. In a simplified way, we can say that the public space and the development of the architectural object are the two articulating axes that drive the didactic actions of the exercise, and both are essential to achieving the intended result.

If we observe the characteristics of these two articulating axes throughout the trajectory of Design Studio 6, the reasons for the exhaustion of the exercise supported only by the development of the isolated object become clear. The delivery of classroom content focused on the development of a complex building naturally becomes tiring as it requires a high degree of concentration and understanding of technical aspects, which are often difficult for some students to assimilate at the end of the third year of the architecture course. Although necessary and usually familiar to those who teach, this type of content tends to increase the communication distance between those involved in the teaching and learning process. Jacques Rancière, in the book “The Emancipated Spectator” comments:

It is the logic of the pedagogical relationship: the role attributed to the teacher is to eliminate the distance between his knowledge and the ignorance of the ignorant. His lessons and the exercises he gives are intended to reduce the gap that separates them progressively. Unfortunately, he can only reduce the distance by endlessly recreating it. To replace ignorance with knowledge, he must always take a step forward and establish a new ignorance between himself and the student (Rancière, 2014, p. 13).

The teaching content required to develop the building design is essential, but it becomes repetitive for those who teach. By nature, it is a more pragmatic content, determined by standards, technical manuals, and legislation, among others, and for all these reasons, it cannot vary its narrative much. This means there are limitations to these contents when associated with student receptivity since they involve information-provided rules to be followed.

Adopting public space as the articulating axis of the design process in the exercise in question changed the teaching and learning dynamics. It brought teachers and students closer together through a more human, sensitive narrative common to all parties involved, expanding the didactic possibilities of the exercise. The new concepts now addressed are more tangible and are present in different ways in the previous lives of teachers and students. Therefore, they must build specific relationships with the places where the buildings will be implemented. The “intellectual” distance between the parties decreases to the same extent that communication between them is increased by the union of teaching and learning knowledge.



## Considerations of design practice

To illustrate the impact of the theory evidenced in the practice of the project, we will present some works developed by students in the sixth stage of the Architecture and Urban Planning course at Mackenzie University. The works reflect the rebuttal of the learning theory previously presented and its direct interference with the result of the design proposed by the student body. A process that is intended to be active and stimulating.

Initially, satisfying the extensionist character resulting from the Integration and Contextualization Workshop and meeting the urban planning guideline that the place that is the object of the proposed exercise must be located in regions bordering significant public transport modes, it can be observed that the work presented here was developed in areas close to the Train or Metro stations of their respective municipalities. Subsequently, we would like to highlight the protagonism, value, and relevance of the emptiness, or interstitial space, present in the morphological proposition of each proposal.

To highlight the design intentions, to facilitate the reading of the architectural design outlined by the design of the unbuilt spaces, as well as the breaking of the boundaries of the lots and the integration with the existing city, new designs were created that seek to synthesize the elements that make up each proposal.

We opted for a set of information that adds, in the same diagram, built, unbuilt, covered, uncovered spaces, green areas, and possible positions of vertical circulations. The permeability of the block, given by the horizontal circulation encouraged by the implementation strategies of each proposal, was reinforced by a specific flow demarcation.

Added to these new drawings for each proposal are perspectives created by the students that demonstrate the volumetric result of the set as a whole or even the evolution of the volumes based on the reasoning already presented.

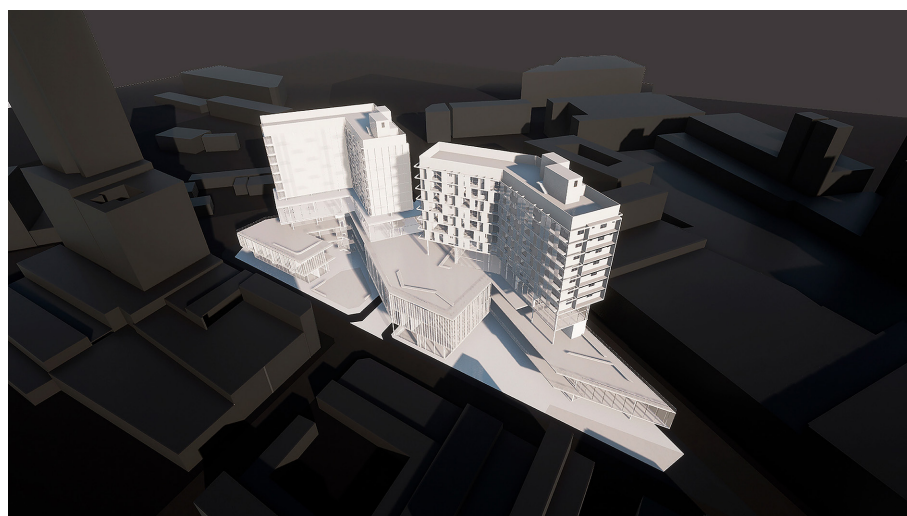
The project developed is located in the central region of São Paulo, close to Estação da Luz. The initial challenge consisted of designing an architectural and urban complex capable of integrating and connecting the two lots, until now fragmented by Rua dos Gusmões. The result reveals a proposal that is extremely sensitive to the condition of the place, which values and enhances the urban space, freeing up the block for public and collective activities.



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Year: 2020\_1o. Semester

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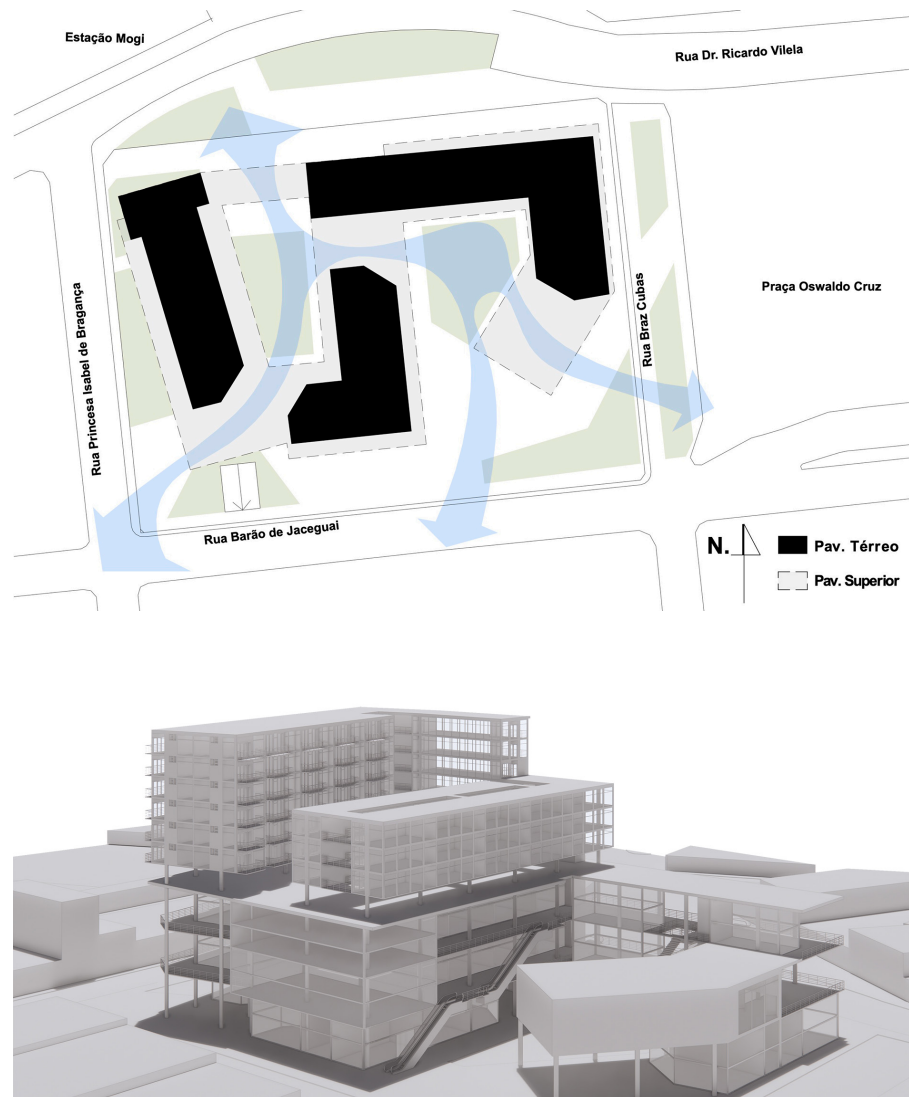


Figures 1 and 2: Diagram 1 – built, unbuilt, and covered spaces, prepared by the authors.  
Perspective 1 – volumetric result in the model created by the student.

The project was developed in Mogi das Cruzes, next to the city's central train station. The proposal respects the boundaries of the lot's edges. However, these boundaries are subtly fragmented, which results in a straightforward integration with the neighboring square, thus creating a very stimulating interstitial situation. The idea of the emptiness configured by the layout of the typology is quite evident. The adopted program is a response to requests presented by representatives of the municipal administration. The ground floor, as well as the first and second floors, are intended for public use.



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Figures 3 and 4: Diagram 2 - built, unbuilt, and covered spaces, prepared by the authors.  
Perspective 2 - volumetric result in the model created by the student.

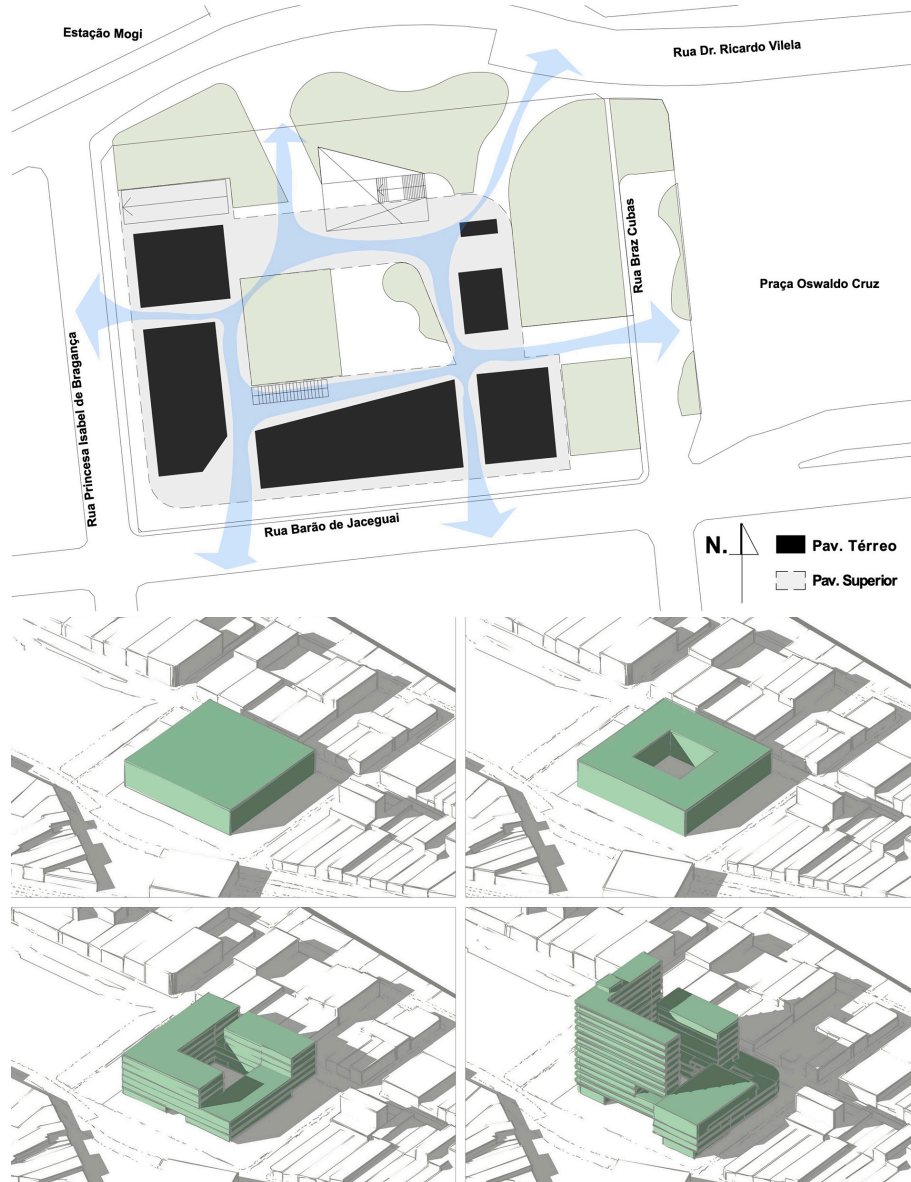
This project was developed in Mogi das Cruzes, which is the location of the previous proposal. Based on the memorial presented by the student herself, her proposal had as its "anchor idea" the creation of a central courtyard, which would bring people together and, therefore, create a socializing condition. Furthermore, the desire to develop routes and paths to establish a positive connection with the immediate surroundings was evident. Programmatic diversity, a basic condition for the exercise, favors the establishment of an active and attractive place.



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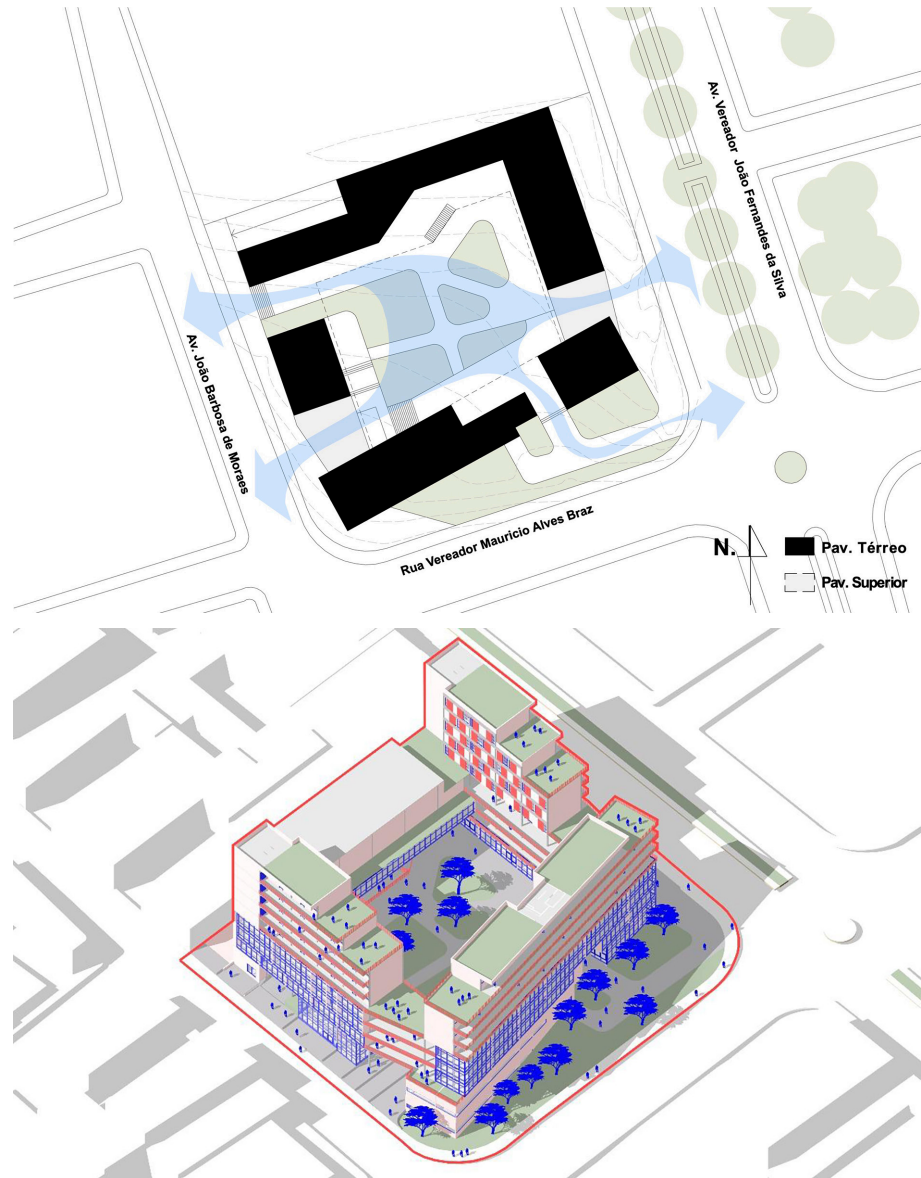
Figures 5 and 6: Diagram 3 – built, unbuilt, and covered spaces, prepared by the authors.  
Perspective 3 – volumetric evolution in a model developed by the student.

The project presented by the student was developed in the city of Itaquaquecetuba, on a lot close to the train station. The “anchor idea” that outlines the party is associated with creating a central square to establish a place with aggregating solid potential. In addition to this premise, a particular challenge was mastering the topographic condition of the lot, which had a slope of approximately 5 meters. The proposal fits into the context of designing an environment fully articulated with the conditions of the place, avoiding neutral spaces without meaning. The edges are articulated with great sensitivity to the pre-existing topography.





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Figures 7 and 8: Diagram 4 – built, unbuilt, and covered spaces, prepared by the authors.  
Perspective 4 – volumetric result in the model created by the student.

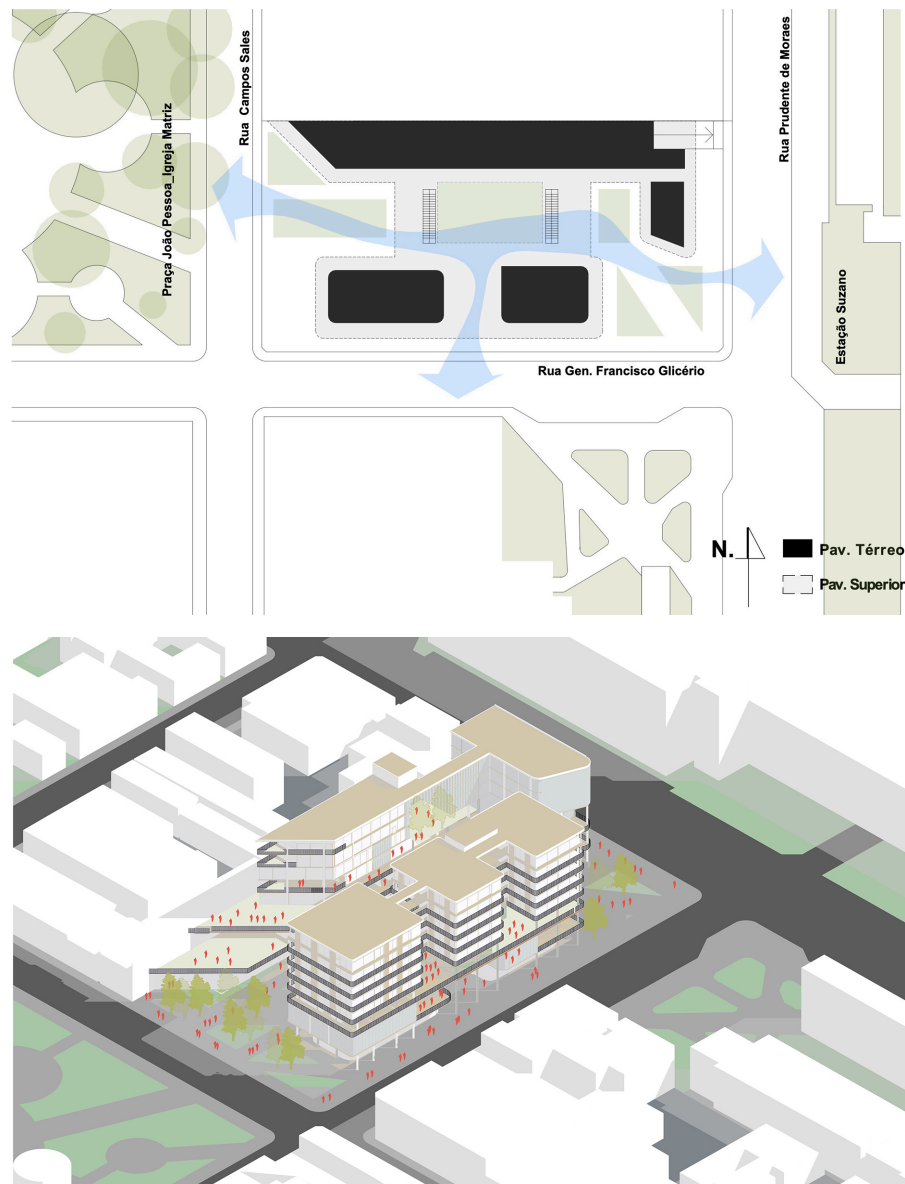
The project developed by the student is located in the city of Suzano, next to the train station. According to the memorial presented by the student, two main concepts guided the development of her proposal: the open court and the so-called “eyes of the street,” the latter defined by Jane Jacobs (2000 [1961]). Such theoretical elements are perceived in the composition of the drawing. A linear emptiness thus emerges, configuring a powerful internal space capable of bringing people together and providing them with a living environment full of interests. Programmatic diversity guarantees the dynamics of urban events.



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Figures 9 and 10: Diagram 5 – coverings, built and unbuilt spaces, prepared by the authors.  
Perspective 5 – volumetric result in the model created by the student.

## FINAL CONSIDERATIONS

Studies of David Ausubel's (1968) theory of meaningful learning, and more particularly the concept of "subsumer" or "anchor idea," associated with the public space as an articulating element of the design exercise, brought about reflection on the expanded possibilities of the relationship between teachers and students, from a formative perspective for both.





The trajectory experienced by the authors' professors at the Design Studio in the sixth stage of the Mackenzie Architecture and Urban Planning faculty allowed the observation of a change in environment, which inspired the elaboration of this article on the facts that supported these events. The prospect of more significant student presence and participation in teaching activities does not mean weakening the teaching role. It merely reveals that identifying specific, prior knowledge in the student's cognitive structure can significantly improve the relationship between the parties, allowing for a more collective teaching action posture within the various curricular components. This seems possible to be practiced as a strategy at any point in the undergraduate architecture and urban planning course, keeping in mind and respecting the differences between the initial, intermediate, and final stages.

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