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# Sustainable Development and Accessibility in Brazil: Universal Design at the Campus of the Federal University of Rio de Janeiro

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Este artigo é resultado de uma extensa pesquisa na Universidade Federal do Rio de Janeiro que contou com o apoio do Fundo de Amparo à Pesquisa no Estado do Rio de Janeiro (FAPERJ) e do Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq).

**Veja no rodapé como mencionar este artigo.\***

## ABSTRACT

Universities are universally recognized as paradigms for democracy, and their physical design should provide accessibility for all - understood as the elimination of all physical and social barriers for people with disabilities. Universality and sustainability should direct the design of all buildings and spaces within the campus, and a research from the schools of architecture, design, engineering, social sciences, etc.

Initiated with the support of the university's president, this research project addresses the relationship between university, built-environment and accessibility, through the fundamental concepts of sustainable development and universal design. We are particularly interested in: a) the study and development of architectural and urban design solutions and guidelines for campus environment; and b) the implementation, testing and evaluation of these solutions and guidelines in the campus of the Federal University of Rio de Janeiro.

## RESEARCH PROBLEM

The campus of the Federal University of Rio de Janeiro suffers from a two-fold set of problems. On one side, distances between buildings are enormous, open spaces are arid and carry many barriers, landscaping is non-existent: neither the campus original modernist master plan nor its day-to-day management considers the needs of individuals and groups carrying disabilities. On the other side, building materials are inappropriate, design solutions are excluding, technological improvement is ignored: in the Brazilian public context of severe economic limitations, sustainability and universal design should always be considered as fundamentals for project development.

Because this project seeks the betterment of the quality of life of people with disabilities and - because of its sustainability and universality - of every user of the university campus, its results and recommendations will serve as a demonstration project and will certainly contribute toward a change of mentality in Brazilian society.

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## PROPOSAL

This research project address how the lack of care in spatial and architectural design afflict individuals and disability groups when utilizing facilities at the campus of the Federal University of Rio de Janeiro, a situation which may ultimately result in social segregation, learning and competence problems.

Because of the wide range of disabilities, at this initial stage the research only focus on people with walking and mobility disabilities, that is: wheelchair users, pregnant women, obese and elderly persons, etc. It is expected that these studies will result in a series of design solutions and recommendations that will help adapting the campus master plan toward a sustainable development and universal design.

To attain this purpose, the research project pursue the following objectives:

- a. to study the use of campus built-space, behavioral and cognitive manifestations by those individuals and groups with walking and mobility disabilities;
- b. to evaluate the impacts that spatial and physical barriers have upon academic performance and inter-personal relationships;
- c. to generate design solutions and guidelines for the adaptation of the university campus for sustainable development and universal design;
- d. to contribute toward awarding design professionals and the public at large of the importance of such a built environment for the quality of life;
- e. to contribute to the creation of new and more humane architecture and urban design paradigms.

## METHODOLOGY

The plan for this project research includes the following major stages:

### **Stage 1: Definition of Theoretical Framework**

Identification of state-of-the-art, major concepts and theories on sustainable development, accessibility, universal design and university campii design, concluding on the ideal relationships between them.

### **Stage 2: Case-Study - The Campus of the Federal University of Rio de Janeiro**

Studies on the development of the university campus, and on the spatial, physical and social aspects of the master plan. Definition and application of field research methods and techniques for the study of cognition and behavior patterns, with emphasis on individuals and groups with disabilities. Studies on prejudice and their real integration to academic life and to the scientific community.

### **Stage 3: Interpretation of Data, Design Guidelines and Recommendations**

Systematic and integrated analysis of all data obtained, with special attention to spatial and physical categories. Development of a multi-criteria system for design guidelines and recommendations for architectural and urban design in general.

### **Stage 4: Conceptual Re-Design of the Master Plan for the Federal University**

Development of preliminary plans and schematic design solutions for the adaptation of the existing master plan, taking into account time-frame, cost and other applicability limitations.

## ANALYSIS

A self-sustainable, responsive and universal built-environment is the major benefit that may result from the implementation of this research project. In the case of the Federal University of Rio de Janeiro, education would be truly democratic as all individuals will have a barrier-free access to class-rooms, libraries and other facilities.

On the verge of a new century, society is living a time of intense changes, including great scientific, technological and cultural advances, which resulted mostly from efforts, creativity and competence of universities and research centers.

However, a university does not brew a mere professional: it must educate a true citizen. The construction of a better world and a higher quality of life depend on ideological principles such as equality, diversity, and liberty with solidarity, all coincident with the paradigm of sustainable development and universal design.

The Federal University community will be the major beneficiary of this research project, as it will permit a better understanding of the various spatial and physical problems that afflict individuals and groups with disabilities. The eventual implementation of the design recommendations may decrease health hazards and lead to solving social conflicts, group discrimination, and learning disabilities.

The implementation of this project may serve as a "demonstration project" for the city and the country as a whole, so that a more humane built environment may result. Two are the major reasons why the results of this project will probably obtain wide public visibility. Firstly, the Federal University of Rio de Janeiro is the largest public university institution in Brazil - with more than 35,000 students - and several of its programs and research centers are recognized among the best in the country.

The development of such a research and the implementation of its recommendations will most certainly influence and inspire other research institutions.

Secondly, Rio de Janeiro is experiencing a very particular moment in terms of local and national politics. In fighting the bad image, the loss of identity, the lack of neighborhood self-esteem, and the low quality of life, for the past couple of years the city government has implemented various major urban design projects. In this sense, the public realm is serving as an important laboratory for the testing of different streetscapes, infrastructure and furniture design solutions by different architects through a series of public competitions.

## CONCLUSIONS

Checking the existents and our own strategies we intend to adopt new perspectives in the urban and architectonic planning, contributing to a real sustainable development. With our conclusions we'll be fomenting the awareness that persons with mobility difficult spatial and temporal experiences will only be concrete and positive when transformed in action possibilities.

So, the main focus of the project is the contribution for the teaching space understanding. This space will exist on its complete form, when it is, above everything, lived and utilized by all the groups of the brazilian society, including the persons with mobility difficult, on the realization of their many everyday life activities.

## REVIEW OF LITERATURE

Some authors were still investigated for this research project elaboration. We're also looking for accessibility and universal designs definitions in some scientific researches, in universal design web sites and in the brazilian technical norms or legislation used in the country.

The project will also utilize the results of a research for a master's dissertation: "Accessibility, Identity and Urban Everyday Life of Persons with Mobility Difficult: the Rio-City Project", presented by Regina Cohen in the School of Architecture and Urbanism of the Federal University of Rio de Janeiro.

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