

# The Importance of Pedestrian Ways in Universities Campuses Design

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**Abstract—** Walking is the first way of displacement, which has been reduced considerably due to motorized transportation. The communications inside every university are of great importance on university campuses, especially in major universities that have various buildings and departments with different applications (laboratory, library, restaurants, etc.). This subject is considered from various aspects. When the university area is not appropriate for pedestrians, the need for motorized transportation increases, which has some consequences as noise, visual, and air pollution. Moreover, the roads specialized for automobiles require and occupy much space. On the contrary, pedestrian-oriented developments have great effects on positive environmental and psychological parameters such as social interactions, scientific conversations, creating a lively environment. Apart from these factors, walking is crucial for health and the environment. All these factors cause that pedestrian-oriented developments included in designing educational spaces. The present paper studies the importance and a review of this subject's literature, then the benefits of pedestrian-oriented areas and walking are discussed, and the significance of this issue is considered in designing the universities. Finally, some environmental factors affecting increasing pedestrian-oriented developments are reviewed. The research methodology is library research.

**Keywords —** Pedestrian-oriented, Walking Paths, University Campus Designing, Sustainable Development

## I. Introduction

The university campuses and universities are considered as the main part of promoting science and information development. Students spend so much time during their education in these areas, and considering the rapid increase of the number of students and universities, the issue is more significant. Many universities have been established on large grounds. Unfortunately, the large size of these grounds led to the development of various buildings without planning and without considering urban design issues, so that the need for automobile and public transportations in universities is now required. In contrast, the need for motorized transportation could be reduced by focusing on walkways and locating the buildings properly.

Studies demonstrated that the proper design could increase the quality and quantity of walking considerably [1]. Many urban designers have emphasized Pedestrian-oriented developments. It has many benefits such as supporting the environment, creating sustainable areas, increasing interaction among students, etc.

## II. Definitions

### a) Pedestrian-oriented (Pedestrianism)

There are various interpretations of the concept of Pedestrianism. The simplest of them is to eliminate the traffic of vehicles from the streets. The Hong Kong transportation department defines this issue as "restricting the accessibility of vehicles to a street or an area for exclusive usage of pedestrians."

Pedestrian-oriented developments now have become increasingly important in many countries, specially developed countries. The reason is the increasing dominance of vehicles in the cities and subsequently decreasing pedestrians' presence in urban areas. [2]

### b) Sustainable Development

Walking is one of the most sustainable methods of displacement which utilizes from body energy and has an insignificant impact on the environment. According to the Brundtland Commission, a sustainable development is defined in the report as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs. "The concept of need in this

The definition is related to the basic needs of people, especially from the worlds poor people. Sustainable development is based on the following three main components:

- 1- Economic growth
- 2- Social justice
- 3- Environmental protection

## III. Research Methodology

The research methodology of the present paper is applied research and different library resources has been utilized.

## IV. Importance of Walking ways (sidewalk)

### a) Significance of the Study

The subject of walking and pedestrian-oriented developments are very important regarding its extensiveness in different areas and the sciences.

In recent years, some international charters have been developed, for instance the International Charter for Walking in Australia and Toronto, which has emphasized on various benefits of walking such as health, sustainability, safety and access. Walking is one of the most sustainable methods of displacement which utilizes from body energy and has an insignificant impact on the environment [4].

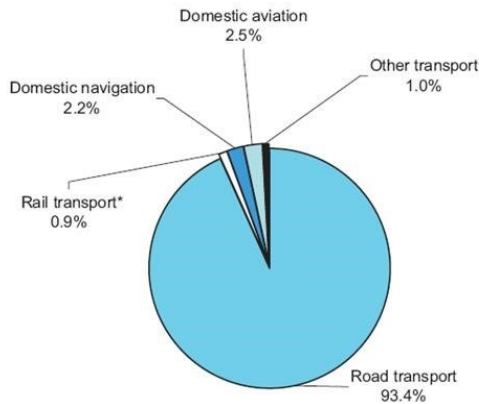
### b) Physical and Mental Health

The fact that lack of body activity could be a dangerous factor for cardiovascular diseases has been widely confirmed [5]. The related studies carried in European countries demonstrated that walking is the first activity in many countries, except for Denmark, Germany and Netherlands in which cycling and gardening carried on more than any other physical activities [6].

Regarding the significance of walking, it could be referred to the study done by Dunn. In this study, individuals asked to incorporate 30-minutes of any additional physical activity every day; they added 19-20 minutes walking to their daily activity on average. In other words, walking could be considered as a preferred activity by sedentary individuals [7]. Today, people, especially students, don't have enough time for gym and stadiums, so walking could be one of their chances for more activity. Walking has significant impact on increasing the level of community health, especially for the majority of sedentary individuals.

### c) Air Pollution

Greenhouse gas emissions due to transportation in Europe show that more than 90% of emission gases are related to road transportations.



Source: European Environment Agency

\* Data cover diesel (and some coal-powered) trains only; electric traction is therefore excluded.

Figure 1. The amount of emission greenhouse gas in Europe, 2013 [8]

## V. The History of pedestrian paths

In 1858, the first attempt in the world has been carried out in order to separation of vehicles from pedestrians by American landscape architect Frederick Law Olmsted. He established a bridge made of stones on the vehicle roads in designing Central Park of New York City. After the Second World War, in the United States of America, such pedestrian paths were formed and named "Mall" which was mainly consistent with commercial purposes in the center of the cities with the aim of creating desirable environments for shopping and leisure in the cities. In Europe, pedestrian paths were first established in late 1940 after the Second World War during reconstruction processes. The main reason of it, was overcrowding of vehicles. In the late 50s, personal automobiles pushed out of central and historical areas of European cities. So that until 1975, all the important and historical cities of Europe have restricted the entrance of automobile to main districts of the city and established some commercial historical walkways in them [3 &9].

## VI. Communications Inside University Campuses

In university areas, there are three communication systems with interaction, including service vehicles, access and car parking, pedestrian movements. Many university

areas suffer from the dominance of vehicle ways which leads to leaving pedestrian ways and make the area as a place for struggling between stopping vehicles and service areas. The areas which are designed properly, give priority to pedestrians and make some wide public areas for walkers and allocate a minimum area for vehicles in order to service support of the area. Unfortunately, most of the main policies of the universities (directors, professors and so on) prefer their vehicle access to the entrance of their offices which lead to the development and continuity of vehicle ways into the center of the university area [10].

It is necessary to equip the communication system regarding disabled persons access, transportation access in emergency situations and daily service to properties and lands of the university. Generally, such equipment is possible via creating common areas for vehicles and pedestrians [11].

## VII. Environmental Impacts

Aesthetics could not be measured quantitatively but could be judged indirectly through its impacts. Walkings in an attractive environment seems shorter. The attractiveness of each walking is associated with how much it seems shorter and if the travelers have some positive motivation, that seems more noticeable. This positive motivation could be created artificially through designing the surroundings (12). The walking traveler is exposed to climate changes and it should be considered as a factor in designing, tree planning could moderate the local climate. A questionnaire which performed in Munich city shows that two-thirds of the subjects studied tend to see plants, fountains, benches, public facilities, electric vehicles, and rental lockers [12].

## VIII. Facilities Required for Pedestrians

- a) Health Services
- b) Health services are essential in areas with high traffic.
- c) Fountains

In addition to affecting on the temperature and humidity, fountains also make the feeling of visual freshness for pedestrians.

#### **d) Furnitures**

Establishing some benches and designing some areas for rest and stop in walkingways seems necessary, especially for the elderly and children, which are the main group of people which enjoy the public spaces.

Especial Boxes for the Pedestrian's Baggages  
Establishing some boxes in the main streets, cinemas, restaurants and etc. are necessary for pedestrians temporarily is required [13]. Also, security and police forces are essential in such areas.

#### **e) Canopy**

The canopy is designed to protect against sun and creating a proper place for pedestrians. Also, some schedule should be considered for creating a canopy for benches.

#### **f) Lighting**

Walkingways should have enough light which provides a feeling of secure moreover the light required for walking, this would lead to an increase of the hours of walkings.

### **IX. Conclusion**

Architects, environmental designers and urban designers attend to design the environment with the aim of providing some opportunities for personal communications. If the social and administrative systems support the use of such areas, it is more likely that the predicted capabilities of the environment to be properly applied. In case of lack of such support, the probability of using these services would be declined [14]. If the ways which facilitate walkings be properly established and the facilities required to be provided, it is obvious that people would have more tendency to walk. The communications inside the university campuses should be considered as a network composed of walking movements which its major and minor nodes are placed in the functional focus points. The rhythm of movements in

university campus reflects the deployment plan of main buildings and the time schedule of lectures or courses. Regarding modern sectional plannings, the time of walking from one class to another one indicates the configuration of the area. According to the usual time schedule of England universities and considering 10 minutes distance between two classes, so the distance between the two sides of the area could not be more than 500 m. The displacement of pedestrians indicates the size of the area, but leads to creating a lively mood in that. Walking in the university campus is the most efficient method of displacement for professors and students. The paths should be direct, secure, understandable, enjoyable in using and impressive on the people's spirit [10].

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